REPUBLIC OF KENYA

Ministry of Environment and Natural Resources

Kenya National Adaptation Plan 2015-2030

Enhanced climate resilience towards the attainment of Vision 2030 and beyond

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Foreword

Prof Judi Wakhungu, Cabinet Secretary, Ministry of Environment and Natural Resources

Climate change has adverse impacts on our country's economic development and threatens the realisation of our Vision 2030 goals of creating a competitive and prosperous nation with a high quality of life. Kenya's economy is highly dependent on natural resources, meaning that recurring droughts, erratic rainfall patterns and floods will continue to negatively impact livelihoods and community assets.

The Government of Kenya recognizes the threats posed by climate change and has taken action to address them. In this regard, my ministry coordinated the development of the National Climate Change Response Strategy in 2010, and the National Climate Change Action Plan (NCCAP 2013-2017) in 2012. This National Adaptation Plan (NAP) marks yet another landmark in efforts to address the country's vulnerability and resilience to climate change.

The NAP was developed through a cooperative and consultative process that included stakeholders from the Government, the private sector, and the civil society; with the support of international development agencies. All of these partners continue to support the implementation of the NAP through the design, financing and implementation of priority actions. Effective implementation of the NAP will be supported through the establishment of enabling governance structures, including those set out in the Climate Change Act, that was enacted into law by His Excellency, the President in May 2016. Additional support and increased partnerships will be required for Kenya to achieve its adaptation goals.

The Government of Kenya is fully committed to addressing climate change domestically, as well as demonstrating leadership in the global fight against climate change. Kenya submitted an ambitious Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC). INDCs are anchored in the Paris Agreement as five-year Nationally Determined Contribution (NDC) iterative cycles. It is informative that the Paris Agreement, indeed, recognises the role of NDCs and NAPs as the vehicles for delivering on mitigation and adaptation obligations, respectively, under the Agreement. Our INDC reiterates that adaptation is Kenya's priority response to climate change, and this NAP is the foundation of Kenya's contribution on adaptation.

This NAP demonstrates Kenya's commitment to the Paris Agreement, and will help bring to life our critical responses to the impacts of climate change. Building climate resilience in as low carbon a manner as possible will ensure that Kenya contributes to the goals of the Paris Agreement and the Sustainable Development Goals.

Cabinet Secretary
Ministry of Environment and Natural Resources

Preface

Charles Sunkuli, Principal Secretary - State Department of Environment

This National Adaptation Plan (NAP 2015-2030) is a critical response to the climate change challenge facing our country. The NAP is Kenya's first plan on adaptation, and demonstrates our commitment to operationalise the National Climate Change Action Plan by mainstreaming adaptation across all sectors in the national planning, budgeting and implementation processes. Our mainstreaming approach recognizes that climate change is a cross-cutting sustainable development issue with economic, social and environmental impacts. The NAP was validated at a national workshop held in Nairobi on 18 November 2015.

The NAP sets out Kenya's national circumstances, focusing on current and future climate trends, and describes the country's vulnerability to climate change. The NAP also elaborates institutional arrangements, including monitoring and evaluation processes. Priority actions are identified in 20 planning sectors for the short, medium and long term. This builds on the premise that all our socio-economic sectors are vulnerable to climate change impacts, although the manifestation of these impacts may vary from one sector to the other.

The NAP was prepared through an extensive consultation process. The consultations cut across stakeholders from within the Government, and non-state-actors like civil society, academia and the private sector; at both national and county levels. The process was coordinated by personnel from the National Climate Change Secretariat, whom I would like to recognise for their professionalism and diligence throughout the process. The technical inputs of the Adaptation Thematic Working Group (TWG), whose membership was inclusive and drawn from Government, civil society, academia and the private sector institutions, enriched the process. The contribution of the TWG members, both individually and corporately, is greatly appreciated. The Ministry is also grateful to the national and international adaptation experts who provided valuable technical guidance to the process.

The NAP was finalised with the support of the Technical Assistance component of the Strengthening Adaptation and Resilience to Climate Change Plus (STARCK+) programme, which is funded by the United Kingdom's Department for International Development (DFID). I would, consequently, like to thank DFID for this support.

The NAP will be distributed widely to national and county government institutions, and amongst non-state actors, to guide their expected implementation roles. It is expected that development partners will find the information helpful in aligning their funding preferences with Kenya's aspirations to attain a low carbon climate resilient economy by addressing climate change adaptation and mitigation on equal footing.

The Government is committed to the implementation and continuous revision of the National Adaptation Plan and its integration in the national development agenda, not only for the attainment of Vision 2030, but also for the realisation of the goals of the Paris Agreement and the UN Sustainable Development Goals.

Principal Secretary - State Department of Environment, Ministry of Environment and Natural Resources

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Abbreviations

AMCEN	African Ministerial Conference on the Environment
ASAL	Arid and semi-arid lands
ATAR	Adaptation Technical Analysis Report
CIDP	County Integrated Development Plan
DFID	Department for International Development (United Kingdom)
EDE	Ending Drought Emergencies
GCF	Green Climate Fund
GCM	Global Climate Model
GDP	Gross domestic product
ICT	Information and communication technology
INDC	Intended Nationally Determined Contribution
M&E	Monitoring and evaluation
MDAs	Ministries, departments and agencies
MRV	Measuring, Reporting and Verification
MTEF	Medium Term Expenditure Framework
MTP	Medium Term Plan
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NCCS	National Climate Change Secretariat
NDMA	National Drought Management Authority
NEMA	National Environment Management Authority
NIE	National Implementing Agency
STARCK+	Strengthening Adaptation and Resilience to Climate Change in Kenya Plus
TWG	Thematic Working Group
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Table of Contents

Chapter 1: National Circumstances

1.1 Introduction

Kenya, like other African countries, is bearing the brunt of climate variability and change; hence the need for a coordinated approach to address related vulnerabilities and risks. Adaptation and resilience remain Kenya's, and indeed Africa's priority response to climate change. This was affirmed by the 15th African Ministerial Conference on the Environment (AMCEN) that, in the build-up to the Paris Agreement of December 2015, called for "a global goal for adaptation which takes into account adaptation needs and associated costs, including support for developing countries, while recognizing the need to increase adaptation investments in developing nations" and "an ambitious global mitigation action in the long-run, combined with large-scale, rapidly increasing and predictable funding for adaptation."[1] AMCEN recommended that investment in building resilience must continue to be a top funding priority, including as an integral part of national development planning. This resonates well with Kenya's approach of mainstreaming climate adaptation in national and county (sub-national) development planning.

Kenya has been in the forefront of advocating for climate change. It is in this respect that it launched a National Climate Change Response Strategy (NCCRS) in 2010 and a National Climate Change Action Plan (NCCAP 2013-2017) in 2013. The action plan has been acclaimed internationally as being very progressive and comprehensive. The action plan is clear that adaptation is the main priority for the country because of the adverse socio-economic impacts related to climate change being experienced and the ever increasing vulnerabilities of the different sectors. The NCCAP clearly articulates that sustainable development is difficult to achieve in light of a changing climate that has negative economic, social, and environmental impacts; meaning that adaptation and development goals need to complement each other. Kenya's recommended approach for addressing climate change is mainstreaming of climate change actions in development planning, budgeting and implementation.

This national adaptation plan (NAP) builds on the foundation laid by the NCCRS and the NCCAP. Additionally, the NAP is the basis for the adaptation component of Kenya's Intended Nationally Determined Contribution (INDC) that was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat.

The aim of this NAP is to consolidate the country's vision on adaptation supported by macro-level adaptation actions that relate with the economic sectors and county level vulnerabilities to enhance long term resilience and adaptive capacity. This NAP presents adaptation actions that cover the time frame 2015-2030.

This NAP builds on the Adaptation Technical Analysis Report (ATAR) developed under the NCCAP.[2] The ATAR provided a detailed analysis of sectors and vulnerabilities in the various counties, identified adaptation needs in various economic processes, and developed a long list of potential adaptation actions. The ATAR was informed by a highly participatory process that included meetings with the adaptation thematic working group (TWG), NCCAP task force, civil society and the private sector; as well as consultations with counties.[3] Finalisation of the NAP was the first priority action in the ATAR and the adaptation TWG was tasked with completing this action using the NAP consultation and analytical guidelines of the UNFCCC.[4]

The NAP is anchored in the Constitution of Kenya and Vision 2030 – Kenya's blueprint for development. It also aligns itself with the Medium Term Plan (MTP) and Medium-Term Expenditure Framework (MTEF) planning processes. The NAP is also aligned with the Climate Change Act that was enacted into law in May 2016. In the MTP II sectors, climate change adaptation is represented in the drought risk management and ending drought emergencies, environment, water, energy, agriculture, livestock, and fisheries sectors. Several programmes under these sectors aim to enhance resilience and reduce vulnerabilities of communities and systems affected by climate hazards.

The NAP provides a background of Kenya's national circumstances, including socio-economic circumstances; and future climate scenarios that the country needs to consider in decision making, planning and budgetary processes. A vulnerability analysis is also presented against the identified hazards in the NCCAP, namely drought, floods, and sea level rise.

The NAP recognises the governance and institutional arrangements for implementation of adaptation actions as stipulated in the NCCAP and Climate Change Act, 2016. With drought being the main hazard, the NAP recognises that the National Drought Management Authority (NDMA) is a key institution in enhancing adaptive capacity. Established in 2011, NDMA is mandated to establish mechanisms to ensure that drought does not become famine and that impacts of climate change are addressed.

This NAP proposes macro-level adaptation actions and sub-actions in 20 planning sectors, categorising them into short-, medium- and long-term time frames. For each sector, the NAP identifies gaps, estimates costs of the macro-level actions projected to 2030, and identifies key institutions required for their implementation. Prioritised actions that have not yet been mainstreamed into Kenya's development plans are expected to be integrated in the third MTP (2017-2022). Thereafter the actions will need to be revised in each MTP to ensure that Kenya's development will be resilient to climate shocks.

The NAP proposes adaptation indicators at county, sectoral and national levels for monitoring and evaluation (M&E). These indicators will guide the collection of data and information on adaptation outcomes, which will be aggregated at the national level. These indicators are derived from an adaptation theory of change that is based on the macro-level adaptation actions and the adaptation vision. Adaptation data will feed into the national Monitoring, Reporting and Verification plus (MRV+) system – a framework for adaptation and mitigation reporting recommended in the NCCAP.

The vision of this NAP is ***enhanced climate resilience towards the attainment of Vision 2030***. Enhanced climate resilience includes strong economic growth, resilient ecosystems, and sustainable livelihoods for Kenyans. It will also result in reduced climate-induced loss and damage, mainstreamed disaster risk reduction approaches in various sectors, reduced costs of humanitarian aid, and improved knowledge and learning for adaptation and the future protection of the country.

The objectives of the NAP are to:

- Highlight the importance of adaptation and resilience building actions in development;
- Integrate climate change adaptation into national and county level development planning and budgeting processes;
- Enhance the resilience of public and private sector investment in the national transformation, economic and social and pillars of Vision 2030 to climate shocks;
- Enhance synergies between adaptation and mitigation actions in order to attain a low carbon climate resilient economy; and
- Enhance resilience of vulnerable populations to climate shocks through adaptation and disaster risk reduction strategies.

1.2 Current climate trends

Kenya's climate is influenced by global, regional and localised climate conditions. Some of the variability in the country's climate is due to the El Niño Southern Oscillation which has caused periods of drought and flooding in the country over decades (Figure 1).

Oceanic Niño Index (ONI)

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml

Figure 1: El Niño and La Niña events 1950-2015

Source: http://www.climas.arizona.edu/sites/default/files/oni.jpg

The El Niño and La Niña episodes have had disastrous effects on the country's economy and infrastructure and caused loss of lives. The El Niño Southern Oscillation periods have caused economic losses and slowed down agriculture value-added growth (see Figure 2) hence the need for adaptation across various sectors.

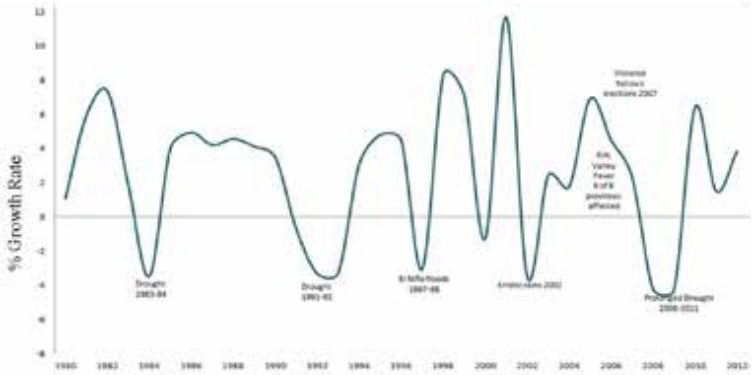

Figure 2: Agriculture growth index and major extreme events in Kenya 1980-2012.

Source: Kenya Climate Smart Programme (2015-2030), page 4. [5]

1.3 Future climate trends

1.3.1 Temperature

Future climate trends on temperature and precipitation show that Kenya's economy will continue to be affected. Global Climate Modelling (GCM) data indicates that the mean annual temperature is projected to increase by between 0.8 and 1.5°C by the 2030s and 1.6°C to 2.7°C by the 2060s.[6] Figure 3 provides a visualisation of the trend that GCMs have suggested for increased temperatures for Kenya. There is good model agreement of temperature increases of up to 3°C by 2100.[7]

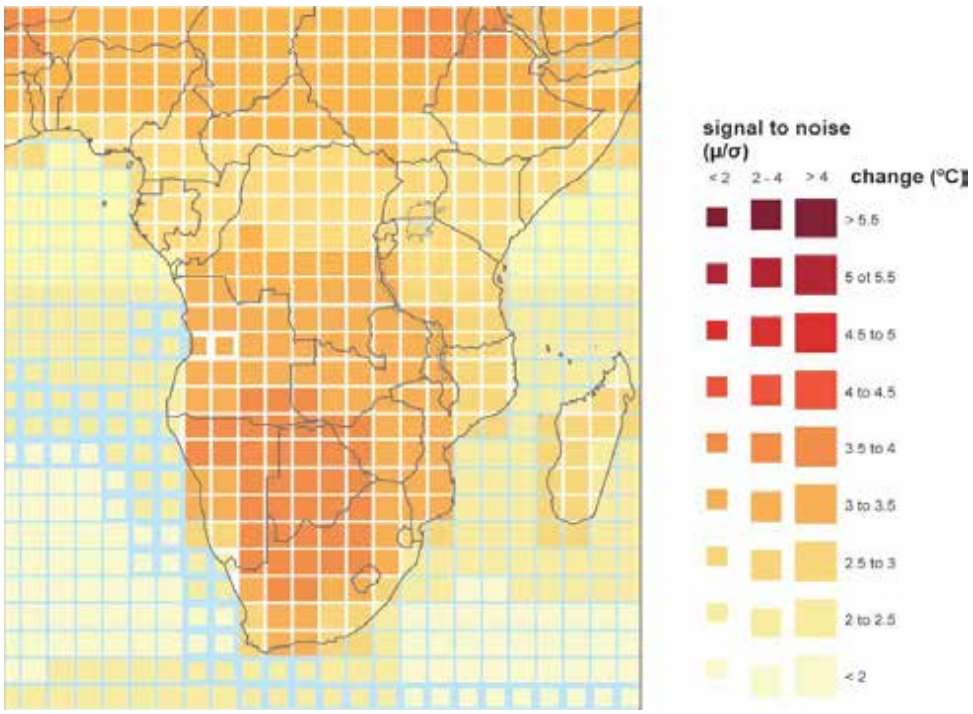

Figure 3: GCM Visualisation of the projected temperatures for Kenya. Percentage change in average annual temperature by 2100 from 1960-1990 baseline climate, averaged over 21 CMIP3 models.

Source: *Met Office. (2011). Climate: Observations, projections and impacts. Kenya. Exeter, UK: Met Office. Page 48.*

1.3.2 Rainfall

For precipitation, GCM data indicates that there will be a possible increase in average rainfall by the 2060s especially from October to December.[8] In addition the GCMs suggest with greater confidence that the proportion of annual rainfall that occurs in heavy events will increase. The range of increase varies from 2 to 11 per cent by the 2060s and 2 to 12 per cent by the end of the century. Figure 4 provides a visualisation of the rainfall trends.[9]

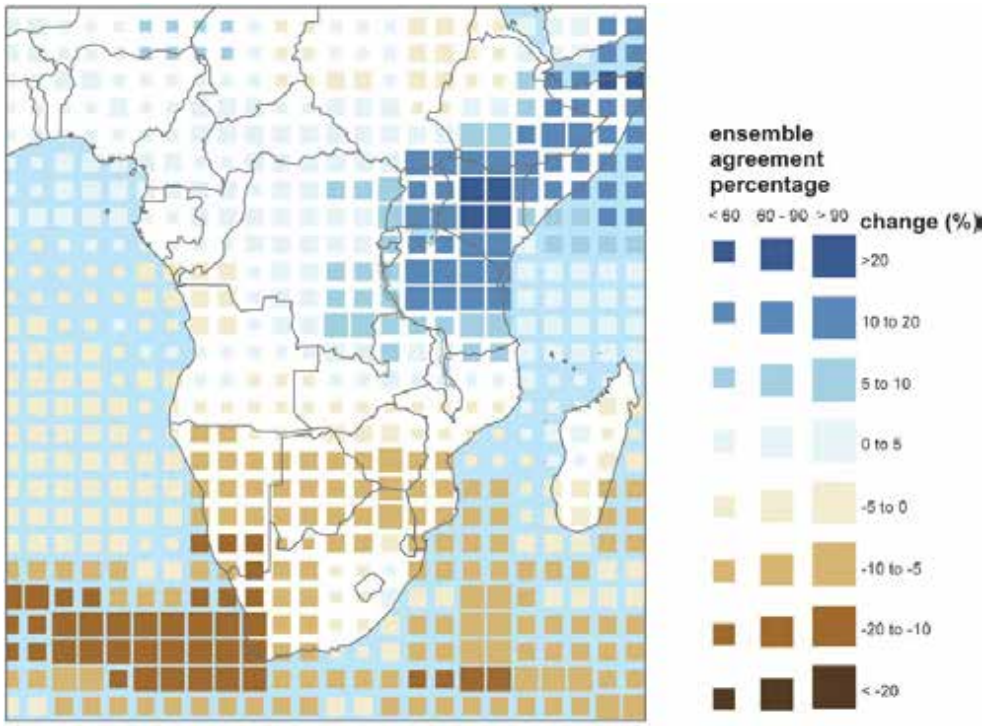

Figure 4: GCM Visualisation of the projected rainfall for Kenya. Percentage change in average annual precipitation by 2100 from 1960-1990 baseline climate, averaged over 21 CMIP3 models.

Source: UK Met Office, 2011, Climate: Observations, projections and impacts: Kenya, page 49. [10]

The future climate trends for Kenya are discussed in more detail in the Adaptation Technical Analysis Report which forms part of the NCCAP.[11]

Chapter 2: Coordination of Adaptation Actions

2.1 Introduction

This chapter presents the current coordination arrangements for climate change adaptation and those set out in the Climate Change Act, 2016, which include coordination of climate change adaptation.

2.2 Current Institutional Arrangements

The coordination of climate change activities is currently the responsibility of the National Climate Change Secretariat (NCCS) in the Ministry of Environment and Natural Resources. The NCCS is the National Focal Point for the UNFCCC. It also works with climate change coordination units in different ministries, departments and agencies to ensure that climate change is mainstreamed in the different sectors of the economy.

The NCCS works with the Ministry of Devolution and Planning to ensure the integration of climate change in the MTPs. The National Environmental Management Authority (NEMA), a semi-autonomous agency in the Ministry, is a National Implementing Entity (NIE) for the Adaptation Fund and the Green Climate Fund (GCF). The National Treasury is the National Designated Authority for the GCF. The NDMA, which is mandated "to exercise overall coordination over all matters relating to drought management in Kenya[12]", also oversees adaptation and resilience building in the arid and semi-arid areas (ASALs). It is also the secretariat of the Common Programme Framework in Ending Drought Emergencies in Kenya.

2.3 Relevant Policies

2.3.1 National Climate Change Action Plan

The NCCAP analysed the existing climate change institutional structures, and proposed a comprehensive institutional framework with defined roles and responsibilities for climate change response in the context of a devolved government system. Details of this structure can be found in the Enabling Legislative and Institutional Framework Report.[13] Among the report's key recommendations were comprehensive institutional reforms, including the establishment of a National Climate Change Council domiciled in the Office of the President, a Climate Change Directorate under the ministry responsible for climate affairs, and a Technical Advisory Committee within the proposed Directorate. The NCCAP also recommended the establishment of a Kenya climate fund domiciled in the National Treasury.[14] In order to achieve this, enactment of a framework climate change law encapsulating legislative, policy and institutional recommendations was recommended.

2.3.2 National Climate Change Framework Policy and Act

The draft National Climate Change Framework Policy updated the recommendations of the NCCAP after further analysis and stakeholder consultations. The draft framework policy specifically underlines the need to ensure internal coherence and proper coordination of functions, "in a manner that is complementary and respects the philosophy that specific sectoral functions should be undertaken by the most suitable sector or level of government[15]", in view of the devolved government system. Two specific recommendations stand out:

1) Establish an institutional framework and build capacity to coordinate and enhance mainstreaming at the sector level; and,
2) Put in place mechanisms linking climate change data and information with national and county planning processes.

The Climate Change Act (2016)[16] is much more specific in terms of institutional arrangements for climate change coordination, setting out the establishment of the institutions summarised in Figure 5 and described in section 2.4.

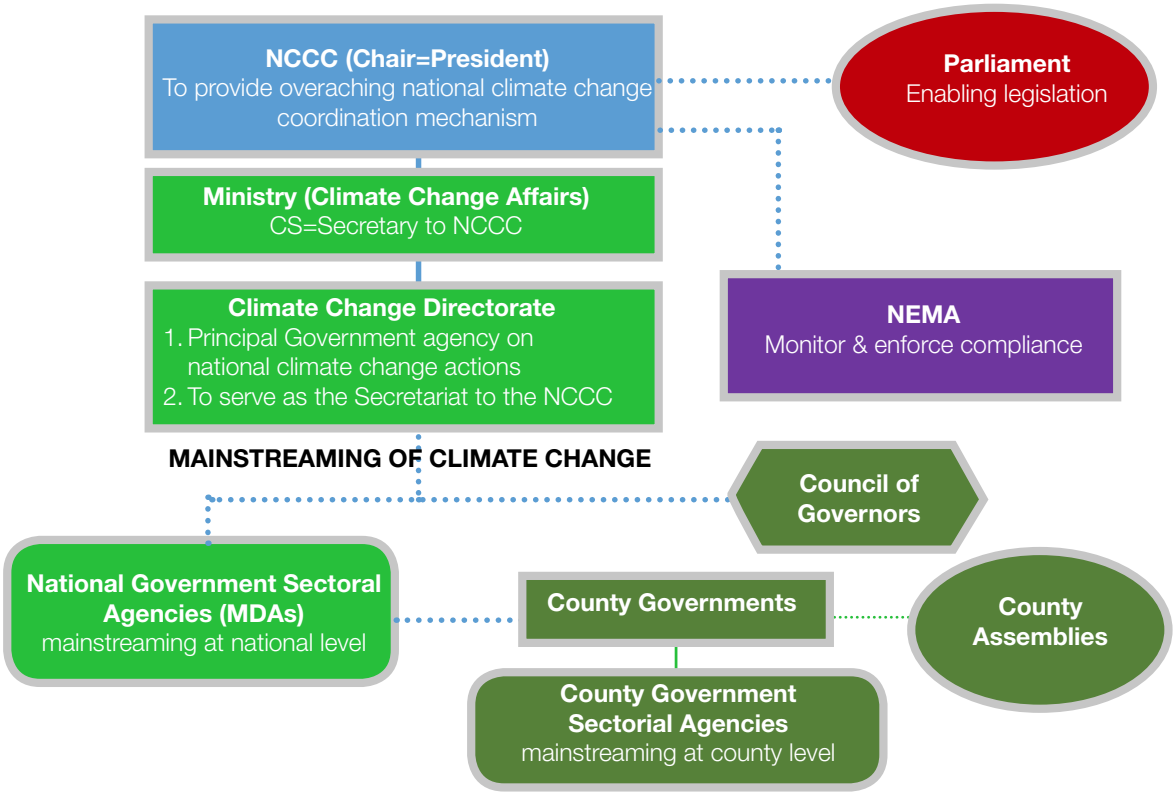

Figure 5: Climate change institutional coordination structures in the Climate Change Act (2016)

Source: Author, derived from description in the Climate Change Act (2016).

2.4 Proposed Coordination Institutional Arrangements

The institutional structures set out in the Climate Change Act 2016, and described below, provide a framework for coordination of adaptation (Figure 5).

a. The **National Climate Change Council (NCCC)** will be chaired by the President, with the Cabinet Secretary responsible for Climate Affairs as its Secretary (backed by the Climate Change Directorate). The NCCC shall, among others, "ensure the mainstreaming of climate change functions by the national and county governments", and "approve and oversee the implementation of the National Climate Change Action Plan (NCCAP)." By extension, the NCCC will have oversight on the mainstreaming of adaptation functions at national and county levels; and approve and oversee the implementation of the National Adaptation Plan.[17]

b. The **Cabinet Secretary** (Climate Affairs) is given certain powers and duties, among them, to provide, through the Directorate, technical assistance on climate change actions and responses to County governments, based on mutual agreement and needs identified by a county government. The Cabinet Secretary shall, every five years, review and update the NCCAP; and report biennially to Parliament on the status of implementation of international and national obligations on climate change, and progress towards attainment of a low carbon climate resilient economy.

c. The **Climate Change Directorate** as the principal lead agency of the government on national climate change actions, and delivery of operational coordination, shall report to the Cabinet Secretary through the Principal Secretary of the relevant State Department. Among the specific duties of the Directorate are to "set targets and coordinate actions for building resilience to climate change and enhancing adaptive capacity"; and undertake a biennial review of the implementation of the NCCAP and report to the Council.

2.5 Implementation Roles

The National Government will fast-track the rollout of this NAP by putting in place the requisite enabling environment, including the institutional structures proposed in the Climate Change Act (2016). In the implementation of the institutional arrangements, it will be important to put in place transitional arrangements to tap from the knowledge, information and lessons acquired over the years by the current coordinating institutions. The implementation of the different actions in the NAP will require the involvement and contribution of all the stakeholders across the different sectors and levels. Their specific roles are summarised below:

- **National Government Sectoral Agencies** will integrate the NCCAP into sectoral strategies, action plans and other implementation projects; and designate a unit with adequate staff and financial resources to coordinate the mainstreaming of the NCCAP and other climate change statutory functions and mandates into sectoral strategies for implementation. The government sectoral agencies will report annually to the National Climate Change Council on the status and progress of all assigned climate change duties and functions.
- **County Governments** shall integrate and mainstream climate change actions, interventions and duties into County Integrated Development Plans (CIDPs); and designate a County Executive Committee member to coordinate climate change affairs; submit a report on the implementation progress of climate change actions to the County Assembly for review and debate, with a copy to the Climate Change Directorate for information.
- **The National Environment Management Authority** will, on behalf of the Council, be responsible for monitoring and enforcing compliance of climate change interventions.

- **The Kenya Institute of Curriculum Development** will, on advice of the Council, integrate climate change into various disciplines and subjects of the national education curricula at all levels; and advise public agencies responsible for regulating universities and tertiary institutions curricula on the integration of climate change into their curricula.
- **The National Drought Management Authority** will continue to coordinate drought management and disaster risk reduction actions under the Ending Drought Emergencies programme in the 23 (ASAL) counties. They will be expected to report annually to the National Climate Change Council on the status and progress of climate change adaptation and resilience in the ASALs.
- **Private sector:** The council may, in consultation with the Cabinet Secretary (Climate Change Affairs) and relevant State Departments, impose climate change obligations on private entities, including entities constituted under the Public Benefits Organizations Act, 2013. The private sector has been impacted by climate variability and has suffered negative impacts of droughts and flood risks. They include: operational, supply chain and raw materials risk, water and energy supply priorities, financial and market risks, agriculture, food security and rural development, ecosystem threats, poor infrastructure, unreliable weather information and public health. In addition, technical interpretation of climate change issues and in particular, climate change adaptation is not clear to the sector. There is need to develop a business case for private sector investment in adaptation. While 'climate proofing' of private sector investments is important, there are also emerging business opportunities in helping communities to reduce their climate risks such as provision of financial resources for adaptation through investments, financial risk management, and the charitable provision of resources through foundations or corporate social responsibility. This sector also plays an enormous role in awareness raising and information building hence the need for their engagement in adaptation.
- **Media:** The media can provide vital information at times of emergency — from warning of imminent floods to explaining how to deal with disease outbreaks. As such it is expected that the media will be involved in the dissemination of this NAP and disseminating its progress against the key indicators measuring Kenya's adaptive capacity. Indeed, strategic actions that improve climate change journalism can themselves be forms of adaptation because accurate, timely and relevant information is a critical component of resilience.[18]
- **Academia and research institutions:** This group of actors plays a key role in building the country's adaptive capacity. They will provide the evidence for knowledge based decision making by the national and county governments, private sector, development partners and civil society amongst others. This will be done through research conducted on different aspects of climate change adaptation and resilience, including improving the understanding of climate change attribution in Kenya and providing information on the appropriate mix of adaptation actions in order to avoid maladaptation.

- **Public Benefit Organisations[19]:** These include non-governmental organisations, civil society organisations and faith-based organisations, amongst others. They have been involved in climate change adaptation and mitigation activities in Kenya, and the UNFCCC acknowledges the role of civil society in Paragraph 1(i) Article 4 in the areas of education, training and public awareness related to climate change. The Convention further encourages Parties to support the widest participation of civil society in the climate change process with an emphasis on the above areas. In Kenya, the civil society is known to be a powerful agent of change through public awareness creation, policy research and analysis, and advocacy on key socio-economic issues including climate change. They also undertake vulnerability assessments, baseline studies and research; advocacy, capacity building and awareness creation; policy development and promotion of good governance; information sharing; gender mainstreaming in climate change; monitoring and early warning systems; livelihood support; promotion of improved technologies and efficient use of energy; humanitarian support; and promotion of use of indigenous knowledge. They are expected to play similar roles in the implementation the NAP.
- **Public**: The public will play a role in the planning, implementation and monitoring of adaptation interventions in order to enhance their adaptive capacity and resilience to climate shocks.

Chapter 3: Climate Hazard and Vulnerability Analysis

3.1 Introduction

Kenya faces a number of risks from climate variability and change. The preparation of the NCCAP included detailed analyses of risks and vulnerability of the different sectors, which are included in the ATAR. This section presents an overview of the key climatic hazards in Kenya namely droughts, floods and sea-level rise with a view to informing key adaptation actions.

3.2 Climate hazards and vulnerability

3.2.1 Drought

Drought is the prime recurrent natural disaster in Kenya. In recent times intense droughts have occurred in 1983/1984, 1991/1992, 1995/1996, 1998/2000, 2004/2005, and 2008/2011. Each of these events caused severe crop and livestock losses, famine and population displacement. Climate change introduces an additional uncertainty into existing vulnerabilities, particularly in the ASALs which cover over 80 per cent of the country.[20] Increased temperatures in the future are likely to exacerbate the drought conditions and may have a significant impact on water availability and general well-being.

The 2008/2011 drought highlights some of the devastating and pervasive socio-economic consequences resulting from such events. The drought is estimated to have slowed down the GDP by an average of 2.8 per cent per annum, with total damage and losses estimated at USD 12.1 billion.[21] The most affected sector was livestock suffering a loss of USD 87.43 billion followed by agriculture with a loss of USD 1.51 billion.[22]. Figure 6 shows how drought has impacted Kenya's annual GDP growth. Figure 7 shows the costs of humanitarian aid as a result of drought, whilst Figure 8 shows the areas in the country exposed to drought risk.

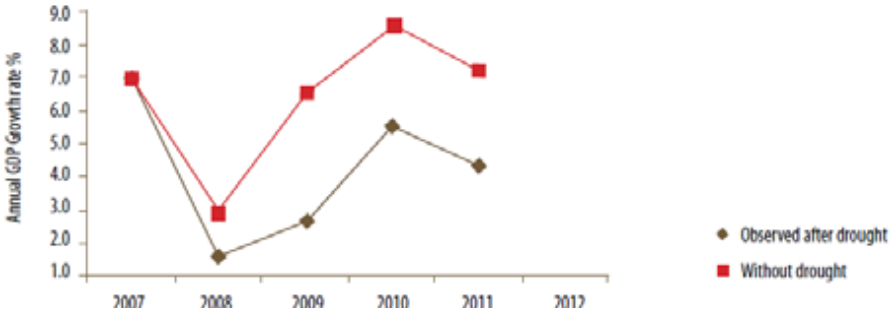

Figure 6: Kenya annual GDP growth with and without drought.
Source: Kenya Post Disaster Needs Assessment (2012, page 41.[23]

Drought Event	Number of people affected (millions)	Humanitarian aid (GoK and external, USD)
2011	3.75	427,400,000
2009	3.79	432,500,000
2006	2.97	197,000,000
2003-2004	2.23	219,100,000
1998-2001	3.20	287,500,000

Figure 7: Costs of humanitarian aid (1998 - 2011).
Source: Ending Drought Emergencies – Common Framework Programme (2014), page 6.[24]

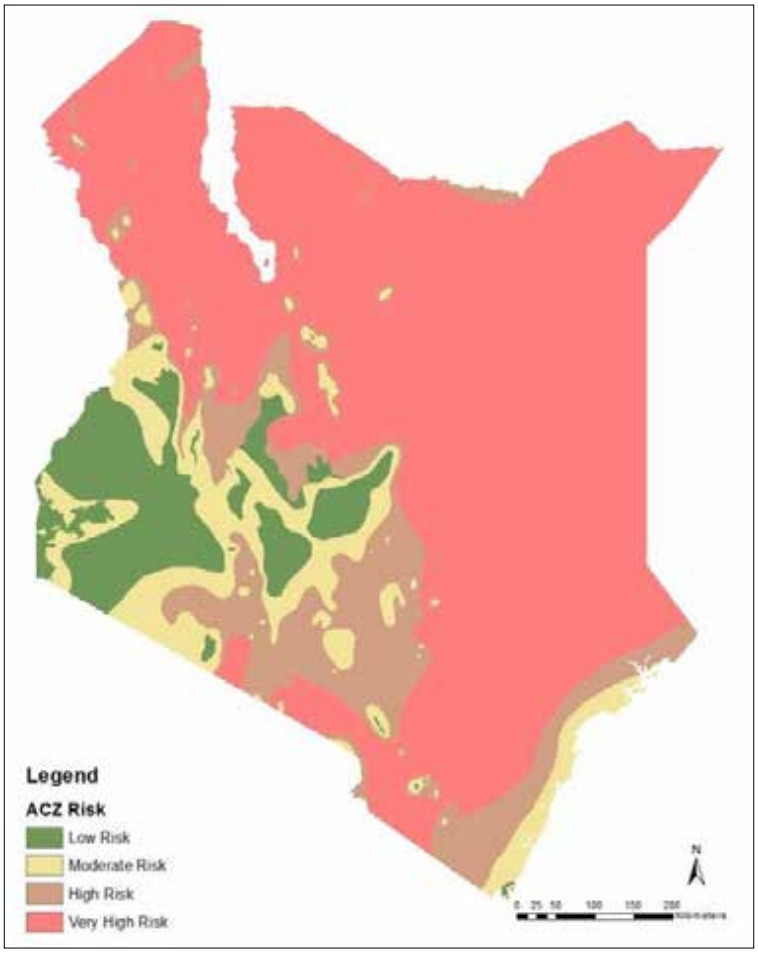

Figure 8: Climate change risk for agro-climatic zones in Kenya.
Source: Mwangi and Mutua (2015), page 16. [25]

3.2.2 Floods

Excessive flooding in Kenya occurs relatively frequently (on average every three to four years) and is linked to El Niño or La Niña episodes that can lead to extreme weather in the country and region. Annual rainy seasons in Kenya are becoming progressively wetter, with sudden and/or late onsets bringing with them floods and inundation. Major floods periodically afflict the Winam Gulf of Lake Victoria, Lower Tana basin and the coastal regions. Geographically, the western, northern, eastern, central and south-eastern parts of the country are quite susceptible to seasonal floods in the wet seasons of March-April-May and October-November-December. Riverine floods are the most dominant floods in Kenya, although the ASALs are particularly vulnerable to flash flooding. The economic costs of flooding to the country are very high, resulting to losses of 5.5 per cent of GDP every seven years[26] (Figure 9). Flood-related fatalities in the country constitute 60 per cent of disaster victims.[27] During flood events there is often an upsurge in waterborne or sanitation-related diseases, such as typhoid, cholera, malaria and diarrhoeal diseases.

Critical infrastructure that supports the national economy, such as roads, bridges, water pipelines and power lines are prone to flood damage. The 1997/98 El Niño floods seriously damaged water supply infrastructure and transport networks across the country, with dams, water pans and some pipelines in 22 counties either destroyed or severely damaged.

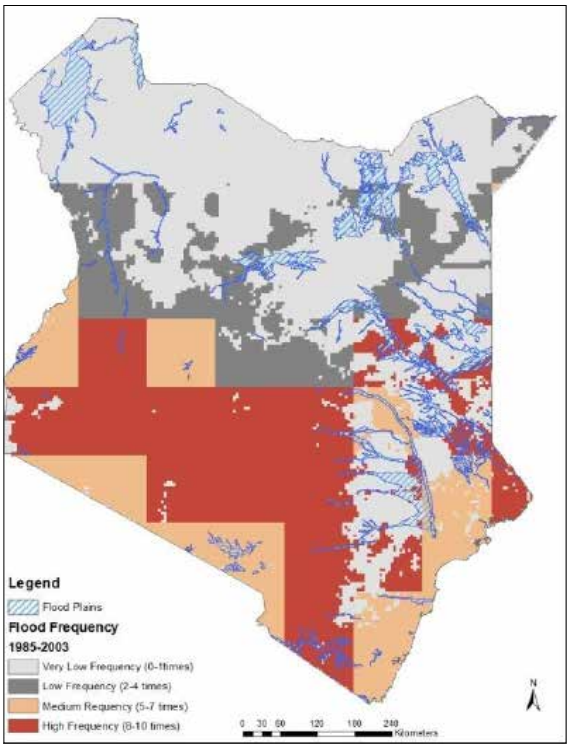

Figure 9: Flood frequency in Kenya.
Source: Mwangi and Mutua (2015), page 14.[28]

Urban flooding is also increasingly becoming an issue especially in big cities and towns. Flooding events are becoming frequent because of rapid urbanisation, poor urban planning and loss of green spaces in cities such as Nairobi and Mombasa, which leads to loss of infrastructure, loss of lives and destruction of property.

In some instances, however, flooding can have certain benefits, especially in ASAL areas. The benefits include silt deposited from flooding events being used for flood irrigation, increasing water table levels and replenishing aquifers. In the Merti area of Isiolo County, communities practice flood irrigation after a big flooding event from the Ewaso Nyiro which deposits fertile silt on flood plains.[29]

3.2.3 Sea level rise

Kenya's coastline is 1,420 kilometres in length and sea level rise is a risk to five coastal counties and their populations. Climate change impacts, including increases in sea surface temperature, sea level rise and coastal erosion, are likely to put additional pressure on coastal economies, communities and ecosystems, including islands, estuaries, beaches, coral reefs and marine biodiversity. Sea level rise in combination with extreme weather events is likely to intensify flooding as most of the coastland is low-lying, with the coastal city of Mombasa particularly exposed. It is estimated that an area of 4-6 km^2 in Mombasa is likely to be submerged with a rise in sea level of only 0.3 metres. In coastal locations, sea level rise is likely to render more acute the current water supply and salinization problem, as freshwater aquifers are contaminated with saline water. Water logging of soils and the resulting salt stress might cause reduced crop production.[30] In addition, the health of coastal populations could be affected because of increasing ground water salinity, which might also lead to permanent inundation of low lying areas making them uninhabitable, leading to migration of population and possibly the emergence of environmental refugees.[31]

Coastal and marine resources contribute immensely towards the economic development of Kenya through tourism, fisheries, shipping and port activities. Tourism and shipping are the highest contributors to the coastal economy, while small scale fishing contributes 95 per cent of the total marine catch. Rising sea levels will lead to damage and destruction of infrastructure including ship docking ports and industries located in the coast. Increasing population and expansion of urban developments are likely to compound these problems. The agriculture sector along the coast will also be impacted with the loss of income of USD 472.8 million from losses to mango, cashew nut and coconut harvest following a one metre sea level rise.[32] The overall picture of vulnerability to drought, flooding and sea level rise is shown in Figure 10.

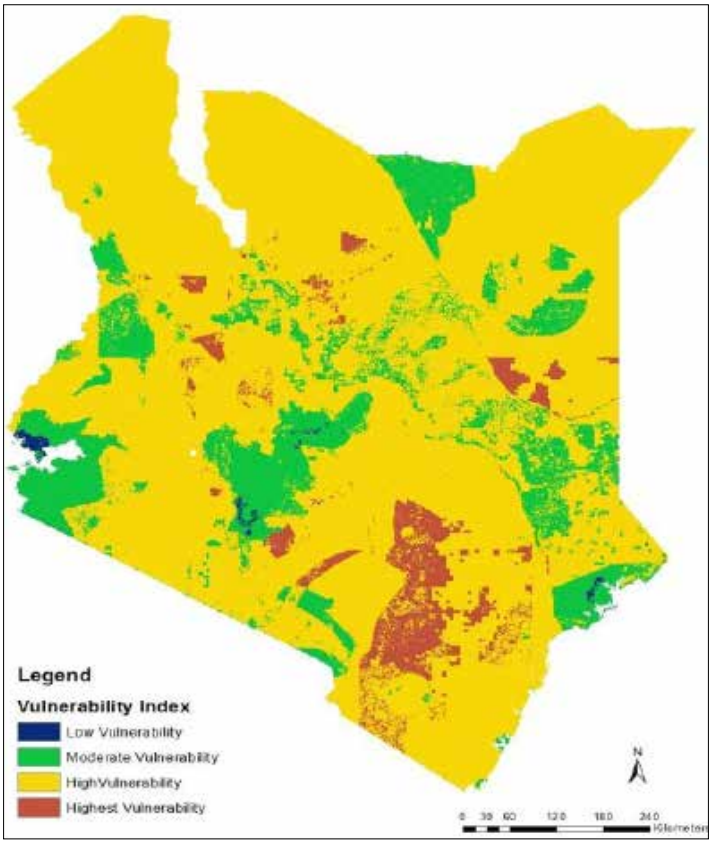

Figure 10: Kenya's vulnerability index.
Source: Mwangi and Mutua (2015), page 18.

Chapter 4: Adaptation Actions

4.1 Introduction

The Government of Kenya has been addressing climate change impacts, especially drought, for many years. These interventions have been geared towards disaster risk reduction, humanitarian action, preparedness and response actions, including efforts of the NDMA to address drought and through the department of Special Programmes for floods and other disasters. However, as climate change risks and vulnerabilities increase, additional efforts will be required to address future vulnerabilities and enhance sustainable development to enable the country to attain its goals under Vision 2030. This chapter presents proposed adaptation related actions with examples of ongoing efforts under each sector. [33]

4.2 Proposed sectoral adaptation actions

The priority adaptation actions presented in this chapter are based on the vulnerabilities described in Chapter 3. Stakeholders prioritised adaptation actions for the different sectors during the NCCAP process. The ATAR proposed long lists of priority actions and the NCCAP prioritised actions in the agriculture, livestock, water, environment, infrastructure, sustainable livelihoods, energy infrastructure and tourism sectors.[34,35] These were further refined by the Adaptation TWG after the launch of the NCCAP. The criteria used to develop a shorter list of priorities were:

- Urgency and ease of implementation in the short-term;
- Compatibility with the NCCAP adaptation actions;
- Compatibility with the MTP actions; and
- Low-regrets option if implemented.

In the process of finalising the NAP, the actions were subjected to further scrutiny by the TWG. For each planning sector, the following were identified: macro adaptation action, related sub-actions, ongoing projects/initiatives, timeframe, budget and proposed implementing agencies. It is recommended that the adaptation actions be implemented with gender considerations such that all data collected for monitoring and evaluation purposes is gender disaggregated and analysed accordingly.

The budgets are estimates derived from different sources which include the NCCAP, current Treasury spending, the sector MTEFs and the adaptation costing for different adaptation activities done after the NCCAP process. The budgets have been projected to 2030. The time-scales are:

- Short term: 1-2 years
- Medium term: 3-5 years
- Long term: >6 years

In the formulation of County Adaptation Plans, counties will be encouraged to identify their priority actions from the actions presented herein and customise them to suit their county context after conducting risk/vulnerability assessments. Counties can also include adaptation actions not listed in the national priority list as long as they are in line with their CIDP priorities and do not lead to maladaptation.

The actions proposed are meant to complement or upscale adaptation actions that are ongoing through various projects and programmes being implemented by the national and county governments, civil society, private sector and academia; and not duplicate ongoing efforts.

DEVOLUTION	
Action	Mainstream climate change adaptation into County Integrated Development Plans and other county plans.
Summary	The NAP will be a national level plan led by the national government. The national government has a crucial role to play in delivering this plan and in building Kenya's resilience. Additionally, a system for decentralising the plan and its activities, and creating a two-way channel of communication and learning between national government, county level and the local level is important. The devolved county government structure introduced in accordance with the 2010 Constitution offers the opportunity to play a key role in delivering and coordinating adaptation at the county and community levels.
Ongoing projects/initiatives	Adaptation Consortium under the Strengthening Adaptation and Resilience to Climate Change in Kenya Plus (StARCK+) programme.
Gaps	Awareness, capacity building, financing.
Short Term Sub-actions	• Conduct participatory county level climate risk and vulnerability assessments. • Increase awareness of climate change impacts to communities in counties. • Build the capacity of county governments on climate change adaptation.
Medium Term Sub-actions	• Develop county adaptation plans. • Develop county climate financing mechanisms for adaptation. • Develop appropriate climate adaptation financing tracking systems.
Long Term Sub-Actions	• Implement county adaptation plans. • Upscale successful adaptation actions.
Budget	US$ 108,608,452
Responsibility	Ministry responsible for devolution, County Governments, research institutions and academia, civil society and private sector.

ENERGY	
Action	Enhance implementation of an energy generation mix plan that increases the resilience of the current and future energy systems to the impacts of future climate variability and change.
Summary	Efficient and reliable energy supply is fundamental for development of all sectors of the economy. In the past there has been heavy reliance on hydro power plants for energy production, which over recent years have demonstrated vulnerability to extreme events such as droughts and floods, projected to become more frequent with climate change. Programmes are under way to promote renewable energy, energy efficiency and extending access to electricity across the country. Rigorous incorporation of climate change considerations into current and future sectoral actions is required to build a resilient energy system that reinforces Kenya's development. Access to reliable, affordable energy is a key component of building climate resilience.
Examples of ongoing projects/initiatives	Geothermal power development in Olkaria, Menengai, Morendat-Malewa; coal development in Lamu, Dongo-Kundu, Kilifi, Kwale, Meru/Isiolo; Lake Turkana Wind Power Project; installation of wind energy storage facility in Marsabit; connection of electricity to public institutions; Reforestation of Upper Tana and Sondu Miriu river catchments; Sustainable Energy for All.
Gaps	Financing, technology, capacity building, research.
Short Term Sub-actions	• Conduct risk and vulnerability assessments of energy infrastructure. • Increase the solar, wind and other renewable energy systems network to provide power to off-grid areas.
Medium Term Sub-actions	• Increase small hydropower and geothermal power generation plants to provide electricity to communities and businesses in the rural areas enabling job creation. • Promote energy efficiency programmes.
Long Term Sub-Actions	• Continue the rehabilitation of water catchment areas in order to provide sustainable ecosystem services, including energy production.
Budget	US$ 3,508,888,462
Responsibility	Ministry responsible for energy, MDAs, County Governments, research institutions and academia, civil society and private sector.

SCIENCE, TECHNOLOGY AND INNOVATIONS	
Action	Support innovation and development of appropriate technologies and capacity that promote climate resilient development
Summary	Rising to the challenges of climate change requires innovative application of technology and science matched to local needs and risks. Kenyan universities and research institutes already possess a strong scientific foundation necessary to promote further research and development into local risks and adaptation options. Strengthening this capacity to meet short and long-term challenges complements economic development goals and promotes sustainability. Thoughtful prioritisation of research funding and policy encourages innovation that will grow Kenya's knowledge-based economy, building resilience through climate-compatible development whilst also encouraging the expansion of technology and expertise exports. In addition small and medium sized enterprises in Kenya operated by the youth are at the forefront of innovation in technology and require adequate support to upscale and increase uptake of these innovations in order to enhance resilience.
Examples of ongoing projects/initiatives	Prototype and innovation testing by the Kenya Climate Innovation Centre and African Enterprise Challenge Fund, UNDP Low Emissions, Climate Resilient Development Project.
Gaps	Knowledge on climate smart technologies, financing, capacity building
Short Term Sub-actions	• Promote development of technology prototypes. • Ensure intellectual property laws protect climate innovation and technology.
Medium Term Sub-actions	• Promote development of locally available technologies in support of adaptation to climate change. • Promote and facilitate transfer of appropriate technologies to the most vulnerable.
Long Term Sub-Actions	• Strengthen science policy and practice. • Upscale successful technologies.
Budget	US$ 22,278,657
Responsibility	Ministry (ies) responsible for science, technology and innovations, MDAs, county governments, research institutions and academia, civil society and private sector.

PUBLIC SECTOR REFORMS	
Action	Integrate climate change adaptation into public sector reforms.
Summary	Effectively responding to the impacts of climate change requires broad, cross-sectoral action and deep government involvement. Public sector employees must have the tools and knowledge to recognise and pursue priority actions, integrating sectors and stakeholder interests as they work towards climate-compatible development. While action is already being taken to build resilience by Government and numerous other stakeholders, more action and support is required to achieve Kenya's development goals, protect vulnerable groups, and sectors, and take advantage of opportunities as they arise.
Examples of ongoing projects/initiatives	Kenya Integrated Climate Risk Management Project, capacity building of civil servants on climate change through various projects from bilateral and multilateral development partners.
Gaps	Financing, capacity building, awareness raising
Short Term Sub-actions	• Re-orient the curricula of the Kenya School of Government to include climate change adaptation as a cross cutting issue. • Develop a climate change adaptation manual for public sector enforcement and compliance.
Medium Term Sub-actions	• Ensure that climate change adaptation and resilience building is captured in performance contracting for government sectors.
Long Term Sub-Actions	• Update the Kenya School of Government curricula and performance contracts as required with climate change adaptation issues.
Budget	US$ 15,038,093
Responsibility	Ministry responsible for public sector reforms, MDAs, County Governments, research institutions and academia, civil society and private sector.

HUMAN RESOURCE DEVELOPMENT, LABOUR AND EMPLOYMENT	
Action	Enhance adaptive capacity and resilience of the informal sector.
Summary	Kenya's need to increase the number of beneficial, fair-paying jobs available is closely aligned with the need for effective responses to climate risks that are organised and led by Kenyan stakeholders. Reducing the vulnerability of Kenyans through economic growth and increasing employment opportunities and improving wages is an integral part of climate-compatible development. Training young Kenyans in relevant careers and imparting new skills to those already in the workforce or unemployed will build national resilience to climate change while aiding the country's economic development.
Examples of ongoing projects/initiatives	Youth and Women Enterprise Funds, Business Advocacy Fund, all projects and programmes enhancing employment of youth.
Gaps	Capacity building, financing, awareness raising.
Short Term Sub-actions	• Risk and vulnerability assessment of the informal sector. • Conduct capacity building on 'green jobs' and enterprises.
Medium Term Sub-actions	• Enhance access to the Kenya Climate Fund for climate proofing investments to increase opportunities for small and medium enterprises.
Long Term Sub-Actions	• Upscale climate resilient enterprises.
Budget	US$ 13,924,159
Responsibility	Ministry responsible for human resource development, labour and employment, MDAs, County Governments, research institutions and academia, civil society and private sector.

INFRASTRUCTURE	
Action	Enhance climate proofing of infrastructure.
Summary	The built environment, public facilities, and infrastructure that underpin social and economic systems will be under increasing pressure to meet changing user needs (as exposures and vulnerabilities increase) in a changing climate. The physical fabric of existing buildings and public works are also at risk and vulnerable to climate variability and change. For instance, increased flooding in urban areas and droughts that drive rural populations to urban areas in search of assistance and employment increase demand on public facilities. Mainstreaming climate change adaptation into the operational management of existing assets and the design of new assets is essential. For the transport sector, an efficient and accessible transportation network underpins the operation of all sectors of the economy. Kenya's transport sector faces several challenges that are identified in the sectoral development plans. Extreme weather events and in particular flooding have already demonstrated the vulnerability of the transport sector in Kenya. The information and communication technologies (ICT) sector is important for Kenya's national prosperity. To boost economic development, several programmes were rolled out to increase country coverage, reliability, and drive down the costs of ICT across the country. In the changing climate, the physical structure of ICT needs to be climate-proofed to avoid interruptions. Moreover, ICT enables information and knowledge sharing, playing an important role in building adaptive capacity of the population and economy.
Examples of ongoing projects/initiatives	Improvement of shipping and maritime facilities programme, Roads 2000 programme, standard gauge railway, improvement of living and working conditions in government buildings, development and maintenance of coastline infrastructure, Research in Appropriate Building Technology Capacity Building Programme.
Gaps	Financing, technology, capacity building.
Short Term Sub-actions	• Conduct risk and vulnerability assessments of existing infrastructure. • Conduct risk and vulnerability assessments of upcoming infrastructure (roads, railways, marine, aviation, buildings, ICT). • Conduct an assessment of whether existing and planned infrastructural assets are compatible with a low carbon climate resilient economy; • Conduct capacity building on infrastructure climate proofing.
Medium Term Sub-actions	• Climate proof buildings, roads, railway, marine, aviation and ICT infrastructure through use of appropriate designs and building materials.
Long Term Sub-Actions	• Re-assess infrastructure vulnerability and upgrade infrastructure to withstand climate impacts with the latest technology.
Budget	US$ 20,329,274,425
Responsibility	Ministry(ies) responsible for Infrastructure development, MDAs, County Governments, research institutions and academia, civil society and private sector.

LAND REFORMS	
Action	Mainstreaming climate change adaptation in land reforms.
Summary	Climate change alters the balance of environments, creating new conditions or increasing variability that in turn can affect the economic value, cultural use or physical condition of land. Unsustainable land use practices may lead to accelerating land degradation or productivity loss. Insecure ownership created by conflicting laws and insufficient information leave the homes and livelihoods of many Kenyans at risk, especially as climate change further destabilises land ownership and management. Such insecurity hampers economic development by discouraging household investment and increasing internal migration.
Examples of ongoing projects/initiatives	Preparation of Land Use Policy, National Spatial Plan concept, Revision of Kenya National Atlas, Development of Community Land Bill, County Spatial Plans.
Gaps	Awareness, capacity building, financing.
Short Term Sub-actions	• Build the capacity of land planners in climate change land-use planning.
Medium Term Sub-actions	• Integrate climate change scenarios into spatial planning (climate resilient spatial planning). • Build the capacity of land managers in climate change adaptation.
Long Term Sub-Actions	• Update land-use plans with climate scenarios.
Budget	US$ 1,392,416
Responsibility	Ministry responsible for land reforms, MDAs, County Governments, research institutions and academia, civil society and private sector.

EDUCATION AND TRAINING	
Action	Mainstream climate change adaptation in education (formal, non-formal and informal) and training.
Summary	The Kenyan Government is committed to providing quality education and training to all Kenyans through the *Universal Primary Education and Education for All* programme. In order to deliver this, the Government is supporting a range of schemes to improve the access, quality, equity and relevance of education and training in Kenya (such as curriculum development and review, and delivering appropriate sectoral training). Climate change plays a role in education. Climate related-shocks such as drought, for example, can contribute to children being taken out of school. Similarly, climate impacts can lead households to divert financial resources from education towards food. As future climate change is also projected to negatively affect many livelihoods in Kenya (such as agriculture and pastoralism) and exacerbate the existing development deficit, it in turn poses a threat to achieving Kenya's educational goals.
Examples of ongoing projects/initiatives	Kenya Global Partnership for Education, Primary Education Development project targeting the arid and semi-arid areas, Digital Learning Programme, Education Reforms, Education for Sustainable Development.
Gaps	Awareness, capacity, financing.
Short Term Sub-actions	• Assess the inclusion of climate change adaptation in school curricula. • Design appropriate education material with climate change issues.
Medium Term Sub-actions	• Integrate climate change adaptation issues into the formal education curriculum. • Integrate climate change adaptation into the education policy. • Develop and implement a public awareness mechanism on climate change adaptation. • Operationalise the climate change resource centre and enhance linkages with other resource centres at all levels.
Long Term Sub-Actions	• Update curriculum and public outreach strategies on climate change adaptation as necessary.
Budget	US$ 18,316,573.84
Responsibility	Ministry responsible for education and training, MDAs, County Governments, research institutions and academia, civil society and private sector.

HEALTH	
Action	Strengthen integration of climate change adaptation into the health sector.
Summary	Kenya's recent improvements in malarial control, water-borne diseases, infant mortality and malnutrition are vulnerable to set backs from climate change. Impacts on water quality, water resources, changes in habitat, increasing exposure of vulnerable groups, sanitation and drainage, and vector-borne diseases are all areas for concern. These and many other potential impacts require not only continued investment and focus on climate sensitive health issues, but also full integration of climate change into Kenya's many existing health programmes and policies. More action and support is required to achieve Kenya's development goals and protect vulnerable populations.
Examples of ongoing projects/initiatives	Piloting Climate Change Adaptation to Protect Human Health in Kenya Project.
Gaps	Capacity building, financing, technology.
Short Term Sub-actions	• Undertake a climate vulnerability and risk assessment of the impacts of climate change and variability on human health. • Increase public awareness and social mobilisation on climate change and impacts on health.
Medium Term Sub-actions	• Design appropriate climate change related interventions for the health sector. • Design appropriate measures for surveillance and monitoring of climate change related diseases in order to enhance early warning systems which includes enhancing existing databases on health sector indicators amongst others.
Long Term Sub-Actions	• Upscale results of pilot projects in climate change adaptation in the health sector.
Budget	US$ 40,101,582
Responsibility	Ministry responsible for health, MDAs, County Governments, research institutions and academia, civil society and private sector.

ENVIRONMENT	
Action	Mainstream climate change adaptation in the environment sector.
Summary	Kenya's environment underpins livelihoods, health, ecosystem services, cultural heritage, tourism, wildlife habitats and more. It is also where many impacts of climate change are first registered, often as shifts in precipitation and temperature lead to changes in resource availability, occurrence and impact of disasters, or the valuable services ecosystem provide. Variable, widespread climate impacts threaten ecosystems and wildlife across the country with cascading economic and social impacts.
Examples of ongoing projects/initiatives	Implementing a resilience framework to support climate change adaptation in the Mt. Elgon Region of the Lake Victoria Basin Project; Lake Victoria Environment Management Programme (LVEMP); Planning for Resilience in East Africa through policy, adaptation, research and economic development programme (PREPARED); Climate for Development in Africa Programme; Catalysing Forest and Landscape; rehabilitation for climate resilience and biodiversity conservation in East Africa; Global Early Warning System for Climate Change project.
Gaps	Capacity building, financing, technology.
Short Term Sub-actions	• Improve public outreach on environmental issues. • Operationalise the climate change coordinating institutions proposed in the Climate Change Act 2016. • Review and update existing Environmental Impacts Assessment (EIA) regulations with climate change adaptation considerations. • Enhance the capacity to enforce and monitor compliance of adaptation actions. • Strengthen early warning and climate information services through improving the Climate Information Service Providers network and enhancing integration of local/indigenous knowledge into early warning systems. • Enhance participatory scenario planning with communities. • Undertake climate vulnerability and risk assessments on ecosystems and provide guidance on relevant adaptation actions. • Finalise and implement the wildlife adaptation strategy. • Develop a forestry adaptation strategy. • Strengthen tree-planting and conservation initiatives.

Medium Term Sub-actions	• Strengthen the capacity of national and county institutions responsible for coordinating climate change adaptation. • Improve and expand existing climate change modelling work by Kenya Meteorological Department.
Long Term Sub-Actions	• Provide guidance and improve access to climate resilient tree species and cultivars. • Integrate ecosystem and community based approaches in sector strategies in support of adaptation to reduce natural resource based conflicts. • Continue the rehabilitation of water catchment areas in order to provide sustainable ecosystem services.
Budget	US$ 636,149,705
Responsibility	Ministry responsible for environment, MDAs, County Governments, research institutions and academia, civil society and private sector.

WATER AND SANITATION	
Action	Mainstreaming of climate change adaptation in the water sector.
Summary	The impacts of climate change lead to increasing scarcity of water especially in the ASAL region, meaning that Kenya requires adequate water management strategies that take into account the sector's vulnerability to climate change. The water sector needs to identify current and future vulnerabilities and develop strategies and plans to manage water sources, basins, water supply and waste water. Large-scale irrigation projects need to be planned appropriately as adaptation measures.
Examples of ongoing projects/initiatives	Implementation of the National Water Master Plan (2014), Kenya Water Security and Climate Resilience Project, Adaptation to Climate Change in Arid and Semi-Arid Lands (KACCAL), Adaptation Consortium, Western Kenya Community Driven and Flood Mitigation Project, Capacity Development for Effective Flood Management Project, Water Infrastructure Solutions from Ecosystem Services Underpinning Climate Resilient Policies and Programme.
Gaps	Awareness, capacity building, financing.
Short Term Sub-actions	• Enhance capacity of institutions and bodies responsible for water and sanitation on climate change impacts and the water sector. • Promote awareness on climate change impacts and the water sector including promoting public awareness on water conservation (recycling, waste water management) and efficient water use. • Mainstream disaster risk reduction measures in the water sector planning and service delivery, particularly in vulnerable, high risk regions. • Promote the use of efficient irrigation systems.
Medium Term Sub-actions	• Enhance collaboration of trans boundary water resource management. • Strengthen water resource monitoring and assessment for early warning and planning. • Promote technologies that enhance water resource efficiency.
Long Term Sub-Actions	• Implement the National Water Master Plan.
Budget	US$ 5,075,489,183
Responsibility	Ministry responsible for water and sanitation, MDAs, County Governments, research Institutions and Academia, Civil Society and Private Sector.

POPULATION, URBANISATION AND HOUSING	
Action	Enhance the adaptive capacity of the population, urbanisation, and housing sector.
Summary	A key challenge for Kenya's sustainable development is ensuring that its large and growing population is provided safe and secure housing. However, many homes and critical infrastructure are not resilient to the impacts of climate change. A major area of concern, particularly as Nairobi and other urban areas grow, is that marginal lands vulnerable to hazards such as flooding are becoming increasingly densely populated and in particular by more vulnerable poorer people. Ensuring that continued population growth is matched with climate resilient urban development and green housing programmes is critical for Kenya's sustainable development and will provide a foundation for improving health and safety.
Examples of ongoing projects/initiatives	UNDP,UNEP, UN-HABITAT Support to low carbon climate resilient development for poverty reduction in Kenya, Shauri Moyo Housing Project, Kenya Informal Settlements Improvement Project, Kisumu Housing Project.
Gaps	Financing, awareness, enabling policy.
Short Term Sub-actions	• Conduct climate risk and vulnerability assessment of the sector. • Increase awareness on impacts of climate change on population and housing.
Medium Term Sub-actions	• Strengthen the enforcement of building codes by national and county governments. • Integrate adaptation into relevant building and urban planning policies and regulations.
Long Term Sub-Actions	• Enhance the adaptive capacity of the urban poor by increasing the number of affordable housing and related infrastructure.
Budget	US$ 2,971,388,481
Responsibility	Ministry(ies) responsible for population, urbanisation and housing, County Governments, research institutions and academia, civil society and private sector

GENDER, VULNERABLE GROUPS AND YOUTH	
Action	Strengthen the adaptive capacity of vulnerable groups* (women, orphans and vulnerable children, the elderly, and persons with disability).
Summary	Through a focus on Gender, Vulnerable Groups and Youth, the Government is committed to achieving gender equity in all aspects of society, provide children with basic rights, have a labour force inclusive of young people at all levels (15-35 year olds), alleviate the condition of vulnerable persons (including orphans and vulnerable children, persons with disabilities, the aged, widows, widowers, internally and externally displaced persons, marginalised persons and pastoralists living in ASALs) and enable the vulnerable to have equitable opportunities to participate in socio-economic activities. These groups are particularly vulnerable to a variable and changing climate and often have least access to and control of resources, (such as capital, credit, and land), live in areas exposed to a variable/changing climate (such as arid lands and urban poor areas) and are less able to cope with climate shocks and stresses. Climate-driven reductions in food accessibility are likely to lead to increased malnutrition with often irreversible consequences for young children.
Examples of ongoing projects/initiatives	Hunger Safety Net Programme; Adaptation Consortium; Ending Drought Emergencies; National Drought and Disaster Contingency Fund; African Risk Capacity; Kenya Coastal Development Project; Integrated Programme to build resilience to climate change and adaptive capacity of vulnerable communities in Kenya; Arid Lands Support Programme; Rural livelihoods adaptation to climate change in the Horn of Africa Project; Adaptation Learning Programme for Africa; Women and Youth Enterprise Fund.
Gaps	Financing, capacity building, awareness raising.
Short Term Sub-actions	• Enhance access to the youth and women enterprise funds. • Strengthen and expand social protection and insurance mechanisms against main climate hazards. • Establish affordable and accessible credit lines for the urban and rural poor, youth and other vulnerable groups. • Create awareness for climate opportunities that women and youth can access.
Medium Term Sub-actions	• Promote livelihood diversification for vulnerable groups in order to reduce rural-urban migration
Long Term Sub-Actions	• Promote and support climate resilient sustainable livelihoods
Budget	US$ 274,646,553
Responsibility	Ministry(ies) responsible for gender, vulnerable groups and youth, MDAs, County Governments, research institutions and academia, civil society and private sector.

TOURISM	
Action	Enhance the resilience of the tourism value chain.
Summary	The tourism sector, accounts for around 10 per cent of Kenya's GDP, and contributes towards eradication of poverty by providing employment opportunities. Continuing growth in this sector to achieve its MTP goal depends on the adequate development of infrastructure, transport, and human resource skills; a stable internal security, and ecosystem protection. Climate change has the potential to restrict the expansion of the tourism sector through infrastructural disruptions, loss and degradation of natural habitats, and changes in demand. Adaptation actions are required to ensure long-term sustainable growth of the tourism industry and its positive contribution to the economy.
Examples of ongoing projects/initiatives	None
Gaps	Awareness, financing, capacity building.
Short Term Sub-actions	• Conduct a climate risk and vulnerability assessment of the tourism sector. • Build capacity and raise awareness on impacts of climate change on the tourism sector to relevant departments and partners. • Develop climate resilient action plans for the sector.
Medium Term Sub-actions	• Enhance the diversification of climate resilient tourism products. • Design a pilot project that enhances resilience in the tourism sector.
Long Term Sub-Actions	• Upscale successful pilot projects.
Budget	US$ 2,306,676,439
Responsibility	Ministry responsible for tourism, MDAs, County Governments, research institutions and academia, civil society and private sector.

AGRICULTURE	
Action	Enhance the resilience of the agricultural value chain.
Summary	The production of food crops, industrial crops and horticultural products contributes to 25 per cent of the country's GDP, supporting small-scale subsistence farmers, contributing to food security and delivering foreign exchange earnings. The agricultural sector, however, is very climate sensitive and is negatively affected by current climate variability (such as drought, flooding, and erratic and intense rainfall), leading to reduced productivity and insecure livelihoods. Negative impacts are also projected under future climate scenarios for many parts of the county, while some agricultural areas and products are projected to improve. Promotion of sustainable climate smart agriculture methods is key to making the sector more resilient to the impacts of climate change.
Ongoing projects/ initiatives	Kenya Climate Smart Agriculture Programme; Mitigation of Climate Change in Agriculture Programme; Climate Smart Agriculture, STARCK+; Building climate change resilience and food security programme; Economic Stimulus Programme: Agriculture, Kenya Agricultural Productivity and Agribusiness Project Kenya: Adaptation to Climate Change in Arid Lands.
Gaps	Awareness, financing, capacity building, technology.
Short Term Sub-actions	• Promote indigenous knowledge on crops. • Increase awareness on climate change impacts on the agriculture value chain. • Conduct climate risk and vulnerability assessments of the agriculture value chain. • Coordinate and mainstream climate change adaptation into agricultural extension. • Promote new food habits.
Medium Term Sub-actions	• Establish, maintain and promote the uptake of climate change related information on agriculture. • Develop and up-scale specific adaptation actions - promotion and bulking of drought tolerant traditional high value crops; water harvesting for crop production; index-based weather insurance; conservation agriculture; agro-forestry; and Integrated soil fertility management. • Develop and apply Performance Benefit Measurement methodologies for adaptation and development for the sector; • Support adaptation of private sector agricultural value chain actors through capacity building efforts.
Long Term Sub-Actions	• Promote and implement climate smart agriculture practices in Kenya.
Budget	US$ 375,116,887
Responsibility	Ministry responsible for agriculture and MDAs, County Governments, research institutions and academia, civil society and private sector.

LIVESTOCK DEVELOPMENT	
Action	Enhance the resilience of the livestock value chain.
Summary	Livestock and dairy production are key components of the Kenyan economy. The sector includes pastoralists in the ASAL areas where livestock production accounts for almost 90 per cent of employment opportunities, and livestock farmers working under intensive ranching and smallholder systems. It provides subsistence livelihoods, contributes to food security and delivers export earnings. The livestock sector is very climate sensitive and is experiencing negative impacts from current climate (such as drought that increases livestock morbidity and mortality). Conditions are projected to worsen in some areas over time (for example, rural livelihoods will be threatened by the increased magnitude and frequency of drought and flooding), and improve in others.
Examples of ongoing projects/initiatives	UNDP, Sustainable Land Management - Agro-Pastoral Kenya; Risk Insurance, Index Based Livestock and Crop Insurance, Complementary livestock redistribution, production, and animal health interventions support to improve pastoralists livelihood project, Dairy NAMA, Regional Pastoral Resilience Project.
Gaps	Financing, awareness, capacity building, technology.
Short Term Sub-actions	• Increase awareness on climate change impacts on the livestock sector. • Strengthen land use management systems including rangeland management, fodder banks and strategic reserves. • Conduct capacity building in indigenous knowledge, livestock insurance schemes, early warning systems, early action, livestock management and breeding.
Medium Term Sub-actions	• Develop new feeds. • Promote livelihood diversification and market access (camels, indigenous poultry, beekeeping, rabbits, emerging livestock - quails, guinea fowls, ostriches etc.). • Establish price stabilization schemes and strategic livestock based food reserves. • Restore degraded grazing lands.
Long Term Sub-Actions	• Enhance selection, breeding and management of animals to adapt to climate change. • Promote climate smart agriculture.
Budget	US$ 299,759,329
Responsibility	Ministry responsible for livestock development, MDAs, County Governments, research institutions and academia, civil society and private sector.

FISHERIES	
Action	Enhance the resilience of the fisheries value chain.
Summary	The fisheries sector contributes approximately 5 per cent of Kenya's GDP and supports approximately one million people directly and indirectly (working as fisherpersons, traders, processors, suppliers and merchants). About 90 per cent of people engaged in the sector rely on fish from freshwater bodies, particularly Lake Victoria. The sector is highly climate sensitive. The 2008-2011 drought led to reduced inflow into and high evaporation from lakes and reservoirs, which in turn reduced breeding and fishing grounds, and led to declines in fish stocks. Coastal regions also have been affected. For example, coral reefs have faced significant climate-induced coral bleaching and mortality events which threaten fisheries resources. While research has been limited on climate change impacts on fishing in Kenya, particularly on freshwater fishing, initial findings indicate that the projected changes will be detrimental to many fish stocks. The fishing sector remains at risk from climate impacts and thus further activity is required.
Ongoing projects/initiatives	Livelihood diversification, (Economic Stimulus Programme), Cage fishing projects.
Gaps	Awareness, capacity building, financing, technology.
Short Term Sub-actions	• Undertake risk and vulnerability assessment of the fisheries value chain. • Enhance capacity of the Ministry of Agriculture, Livestock and Fisheries and the Kenya Marine Fisheries Institute on the impacts of climate change on fisheries, fishing communities and the private sector. • Upscale sustainable aquaculture initiatives.
Medium Term Sub-actions	• Develop and implement a pilot project on climate resilient fish species and the related value chain.
Long Term Sub-Actions	• Strengthen monitoring capacity and capability to prevent overfishing and unauthorized exploitation in the inland waters and Exclusive Economic Zone. • Promote the up-scaling of climate resilient strategies/ technologies in fisheries and climate resilient fish varieties. • Expand the fishing zones in both inland and coastal waters.
Budget	US$ 136,861,840
Responsibility	Ministry responsible for fisheries and MDAs, County Governments, research institutions and academia, civil society and private sector.

PRIVATE SECTOR/ TRADE; MANUFACTURING; BUSINESS PROCESS OUTSOURCING; FINANCIAL SERVICES	
Action	Create enabling environment for the resilience of private sector investment.
Summary	The private sector is of critical importance in eradicating poverty and hunger, and developing global partnerships for development. In addition to providing jobs and contributing to the GDP growth, the sector can help build climate change resilience through its products and services, whilst robust national and international trade will become a crucial instrument to alleviate weather-induced food supply shortages. Climate change has the potential to curtail the success of private sector development (which is crucial to the Kenyan economy and underpins Vision 2030), through, for instance, supply chain disruptions, leading to the need of specific adaptation actions.
Ongoing projects/initiatives	-
Gaps	Awareness, financing, enabling policy.
Short Term Sub-actions	• Build the capacity build of the private sector (formal and informal) so as to enhance the resilience of their investments e.g. through identification of new products and services that are more resilient to climate change impacts. • Demonstrate an operational business case for private sector investment in adaptation.
Medium Term Sub-actions	• Develop fiscal incentive measures to encourage businesses to undertake investment in adaptation and resilience building measures.
Long Term Sub-Actions	• Implement long term private sector investment in adaptation and resilience building measures.
Budget	US$ 116,963
Responsibility	Ministry(ies) responsible for private sector/ trade; manufacturing; business process outsourcing, financial services and MDAs, County Governments, research institutions and academia, civil society and private sector.

OIL AND MINERAL RESOURCES	
Action	Integrate climate change adaptation into the oil and mineral resources sector.
Summary	Kenya has recently discovered large quantities of oil and is planning to exploit these and other mineral resources commercially. Oil and mineral resources exploitation can have impacts on ecosystems that local populations rely on. Climate change impacts will only exacerbate the impacts from oil and mineral exploration and production. Hence it is imperative that risk and vulnerability assessments are conducted before commercial exploitation to ensure that communities are able to practice their livelihoods. In addition private sector companies need to integrate climate change risks in their environmental and social safety guards.
Ongoing projects/initiatives	Magadi Siltation Project, Development of Mining Bill.
Gaps	Awareness, financing, capacity building.
Short Term Sub-actions	• Build the capacity of the Mining, Health Safety and Environment division on climate change adaptation. • Conduct an assessment of impacts of mining, oil and gas exploration to ecosystems and communities with respect to climate change variability and future change. • Develop the capacity of mining communities to integrate climate change in the community development agreements with private companies. • Build the capacity of the actors in the oil and gas sector in climate change adaptation.
Medium Term Sub-actions	• Integrate climate change in the mining, policy and regulatory framework.
Long Term Sub-Actions	• Update risk assessments. • Maintain climate resilient oil and mineral resource exploitation.
Budget	US$ 2,506,349
Responsibility	Ministry responsible for oil and mineral resources and MDAs, County Governments, research institutions and academia, civil society and private sector

4.2 Cross cutting MTP sector

Common Programme Framework for Ending Drought Emergencies 2012-2022	
Action	Fast track the implementation of the Ending Drought Emergencies (EDE) Common Programme Framework.
Summary	The EDE Common Programme Framework focuses on the 23 most drought-prone counties in Kenya. Its implementation will be led by the relevant parts of the national and county governments, working in ways that strengthen synergy between sectors and agencies and deepen accountability to drought-affected communities. A multi-sectoral approach to sustainable development is particularly important in the ASALs, owing to a number of distinctive features including remoteness, lack of infrastructure, and perennial drought. The EDE programme has six pillars; peace and security, climate- proofed infrastructure, sustainable livelihoods, disaster risk management, human capital, institutional development and knowledge management. These pillars cut across the other main MTP sectors.
Examples of ongoing projects/initiatives	Kenya Integrated climate risk management project; Partners for resilience- Climate Proof Disaster Risk Resilience Programme; Adaptation at scale in semi-arid regions project.
Gaps	Financing, capacity, technology.
Main actions	This sector hopes to deliver the following results through the six pillars: • Eliminate the conditions that perpetuate vulnerability. • Enhance the productive potential of the region. • Strengthen the institutional capacity for effective risk management. Potential actions under each EDE pillar can be found at http://www.ndma.go.ke/index.php/resource-centre/category/6-ending-drought-emergencies These actions will be delivered and reported upon by the respective MDAs.
Budget	US$ 2,118,277,952
Responsibility	Ministry responsible for devolution, NDMA, MDAs, county governments, civil society, private sector.

4.3 Resource Mobilisation

Adaptation has been financed through various mechanisms in the country. Often the actions have not been termed adaptation, their actions have enhanced resilience to climate impacts. The Government of Kenya and its development partners are already financing a number of adaptation interventions in the various sectors through the Adaptation Fund and the National Drought and Disaster Contingency Fund. A challenge is the lack of a centralised system of tracking climate finance; and thus the amount of finance that has gone into adaptation can only be estimated. The total costs of this adaptation financing will need to be determined so that additional financing complements existing financing.

Kenya needs to establish mechanisms to help increase access to climate finance, including the Green Climate Fund, and improve coordination and reporting on climate finance. The NCCAP proposed establishment of the Kenya Climate Fund whose focal point is the National Treasury. It is hoped that through this climate fund, adaptation financing from the Kenya government, development partners and other actors can be pooled in order to achieve greater impacts in enhancing resilience. This NAP envisages that adaptation actions that are not yet financed by government will attract financing from development partners and private sector through the development of a pipeline of adaptation investment grade projects and programmes.

The costs per sector in this NAP have been estimated with figures from the National Treasury, the NCCAP, the MTEF's, EDE Common Programme Framework and costs that were calculated in the finalisation of this document after the launch of the NCCAP. Yearly costs of implementing similar actions in these documents were derived and then extrapolated to 2030 with a formula used by the Treasury for similar exercises. The estimated total cost of implementing this NAP till the year 2030 is US$ 38,255,496,051.

Chapter 5: Adaptation Monitoring and Evaluation

5.1 Introduction

This chapter outlines the monitoring and evaluation (M&E) system for the National Adaptation Plan. The system is anchored in the National Performance and Benefits Measurement Framework under the NCCAP.[36]

Adaptation M&E is an essential part of ensuring that the prospective benefits of adaptation interventions aimed at building adaptive capacities and enhancing resilience are being realised and lessons learnt assist in the improvement of the Government of Kenya sector plans and programmes. Therefore, any M&E system needs to have a feedback mechanism which will ensure the continued building of resilience and reduction of vulnerabilities to climate change in the longer term.

As a result of the need to track progress in building adaptive capacity a theory of change has been developed and indicators have been proposed against the major changes expected in resilience until 2030. The proposed adaptation indicators will be useful for:

- Attracting international climate finance;
- Evaluating adaptation policy, programme and project interventions (that is the intended objectives and outcomes of the adaptation activities);
- Informing future adaptation policy development;
- Mainstreaming adaptation in development through links with related indicators;
- Comparing adaptation achievements across sectors, regions or counties;
- Communicating adaptation progress to stakeholders and the general public;
- Informing political climate change negotiations in the international arena; and
- Targeting, justifying and monitoring adaptation funding and programmes.

5.2 The Adaptation Theory of Change

The NAP M&E framework is anchored on a theory of change. The theory of change in Figure 11 represents the short, medium and long term changes expected from the implementation of the NAP under the country's four MTP pillars under Vision 2030: foundations for national transformation, and economic, social and political pillars. Table 1 outlines the various sectors under each pillar.

Adaptation activities under the foundations for national transformation pillar include implementing renewable energy projects, climate proofing of infrastructure and promotion and transfer of climate smart technology into various sectors. Outputs from these activities include increased uptake of climate smart technologies and an increase in climate smart infrastructure. This will eventually lead to an outcome on strengthened climate smart public service delivery.

SECTORS			
FOUNDATIONS FOR NATIONAL TRANSFORMATION	**ECONOMIC PILLAR**	**SOCIAL PILLAR**	**POLITICAL PILLAR**
• Infrastructure • Information and Communications Technology • Science, Technology and Innovation • Land Reforms • Public Sector Reforms • Human Resource Development, Labour and Employment • Security, Peace Building and Conflict Resolution • Drought Risk Management and Ending Drought Emergencies	• Tourism • Agriculture, Livestock and Fisheries • Trade • Manufacturing • Business Process Outsourcing and Information Technology-Enabled Services Sector • Financial Services Sector • Oil and Other Mineral Resources	• Education and Training • Health • Environment, Water and Sanitation • Population, Urbanization and Housing • Gender, Vulnerable Groups and Youth	• Devolution

Table 1: Sectors of the MTP Pillars

The economic pillar activities mainly involve building resilience of Kenya's main GDP sectors, that is, tourism, agriculture, trade, financial services, and oil and mineral resources through conducting climate risk and vulnerability assessments and implementing adaptation actions prioritised under the assessments. The investments in these pillars are expected to increase climate change adaptation knowledge and capacity within the sectors, strengthen climate smart public service delivery, and increase climate proofed infrastructure. This will lead to enhanced resilience of the agriculture and tourism value chains and private sector investments.

Enhancing climate information services and utilizing ecosystem and community based adaptation approaches are the main activities in the social pillar. These activities will lead to enhanced effective climate information services at the county level and ecosystem and community based adaptation integrated into CIDPs, ultimately leading to climate resilient county development. The political pillar focuses on devolution and mainstreaming of climate change adaptation into county planning. The output of this activity is expected to be enhanced climate change adaptation that leads to climate resilient development at the county level.

The outcomes of strengthened climate smart public service delivery and climate resilient county development will lead to the resilience of national agriculture (livestock development and fisheries) and tourism value chains and hereafter climate resilient economic growth at a national level. This climate resilience economic growth involves both the public and private sector. This is expected to lead to enhanced adaptive capacity towards the attainment of Kenya's Vision 2030.

Knowledge, learning, capacity building and climate change coordination are viewed as continuous processes taking place across all the levels of results/changes in the theory of change. Increasing knowledge, learning and capacity building on climate change adaptation actions will be encouraged across all the sectors. Enhancing climate change coordination through the key institutions anchored in the Climate Change Act (2016) will be key in ensuring that climate change adaptation is mainstreamed at all levels.

5.3 Performance Indicators for Adaptation

The National Performance and Benefits Measurement Framework of the NCCAP proposed adaptation indicators based on the Tracking Adaptation and Measuring Development (TAMD) framework. TAMD provides an explicit framework for two paths or "tracks". Track 1 entails assessing the capacity of institutions to undertake effective climate risk management actions (also called top-down), while Track 2 assesses impacts of interventions aimed at reducing vulnerability and the extent to which such interventions keep development on track (development performance or bottom-up).

As a result 10 top-down county level institutional adaptive capacity indicators and 10 bottom-up vulnerability indicators[37] were chosen based on adaptation relevant development activities that had been screened from the sector plans and programmes during the NCCAP process. These indicators were to be refined after the finalisation of the priority adaptation actions in this NAP.

In developing the NAP performance indicators, the following issues were taken into account:

- Assisting the Kenyan Government to demonstrate progress towards adaptation objectives and priority actions as outlined in this NAP, which in turn will assist it to access international finance for adaptation.
- Measuring progress towards increasing the resilience to climate change of some of the most vulnerable in society as well as measuring progress at a national level by designing a system that can incorporate community level data.
- The possibility of emerging future requirements and the need for the M&E system to be sufficiently flexible to enable compliance with future international regulations.
- The M&E system should not add significantly to the workload and be a burden to the national and county government institutions that will be involved in adaptation M&E implementation.
- The M&E system should reflect the planning hierarchy from national to county level. At county level, process based indicators may be more appropriate.
- Each indicator should be aligned to the appropriate metadata that will provide the rationale for its measurement. [38]

The indicators are dynamic and should be contextualised. Counties and various sectors can use the overall theory of change or develop their own theories of change and adaptation indicators, whose data should be aggregated at the national level.

The adaptation indicators will need to be reviewed and revised accordingly with each MTP revision.

Figure 11: Kenya's Adaptation theory of change

ADAPTATION INDICATORS		
National	**Sector**	**County**
• Human development index • Percentage of climate related national loss and damage in the public and private sectors • Population living below the poverty line • National vulnerability index	• Number of sectors planning, budgeting and implementing climate change adaptation actions • National and county performance contracting systems integrating climate change adaptation targets • Amount of loss and damage from climate hazards per sector • Amount of private sector financing for adaptation	• Number of counties that have integrated climate change adaptation in their CIDPs • Number of counties budgeting and implementing adaptation programmes; • No of national and county level programmes/projects incorporating ecosystem-based adaptation and community-based adaptation approaches • Number of households with timely access to climate information • Number of infrastructure development cases/application using climate smart designs (energy, ICT, transport) • Number of people reached through climate change adaptation public awareness campaigns • Number of public servants trained on climate change adaptation • Number of functional climate change coordination structures • Percentage of population requiring humanitarian assistance

5.4 Adaptation Reporting and Learning

Key ministries mentioned under each sector are expected to integrate the proposed adaptation actions into their sectoral and MDA plans. They will also report progress on the implementation of the actions annually to the Climate Change Secretariat whose functions of review and coordination are outlined in Chapter 2.

Learning from implementation of climate change adaptation activities in the country will need to be collected and submitted to policy makers to influence future adaptation implementation and decision making. It is proposed that lessons learnt be captured from implementing stakeholders across the country through the proposed knowledge management system as outlined in Chapter 9 of the NCCAP. The knowledge management system is housed in the Climate Change Resource Centre as well as in other web-based systems such as the Kenya Climate Change Knowledge Portal.

Endnotes

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2 Refer to the Adaptation Technical Analysis Report (ATAR), 2012, accessed at: http://www.kccap.info/index.php?option=com_phocadownload&view=category&id=30:adaptation-analysis.

3 Refer to ATAR, appendices 2, 7 and 10.

4 Refer to ATAR, Chapter 3 on impacts and sectoral risks, and Appendix 10 for county vulnerabilities.

5 *Kenya Climate Smart Agriculture Program*, accessed at: http://canafrica.com/wp-content/uploads/2015/08/Kenya-CSA-Program-June-24-.pdf.

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8 See xvii.

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27 Otiende, B. (2009). *The economic impacts of climate change in Kenya: Riparian flood impacts and cost of adaptation*. Accessed at: http://static.weadapt.org/knowledge-base/files/758/4e25a4b8c8bf61C-kenya-riparian-floods-case-study.pdf.

28 Mwangi & Mutua.

29 Information from community member from Merti, Adaptation Consortium Project.
30 ATAR, page 57.
31 ATAR, page 58.
32 Camco (in preparation). *Climate Risk Assessment of Agriculture, Water and Energy Sector in Kenya*.
33 These are some examples of ongoing government efforts. The list is by no means exhaustive. A comprehensive list of drought-related projects reference can be accessed at: http://kenya.droughtresilience.info/project/kenya-integrated-climate-risk-management-project and an IISD report on *Current and Planned Adaptation Action in Kenya*. The ATAR includes a list of ongoing adaptations efforts by various stakeholders reference and can be accessed at: http://www.kccap.info/index.php?option=com_phocadownload&view=category&id=30:adaptation-analysis,
34 ATAR, Technical Report 5.
35 NCCAP, pages 60-61.
36 NCCAP, pages 129-143.
37 NCCAP, pages 135-136.
38 LTS, AEA and Baastel, 2012, *National Performance and Benefits Framework Systems Review Report*.

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REPUBLIC OF KENYA

Ministry of Environment and Natural Resources