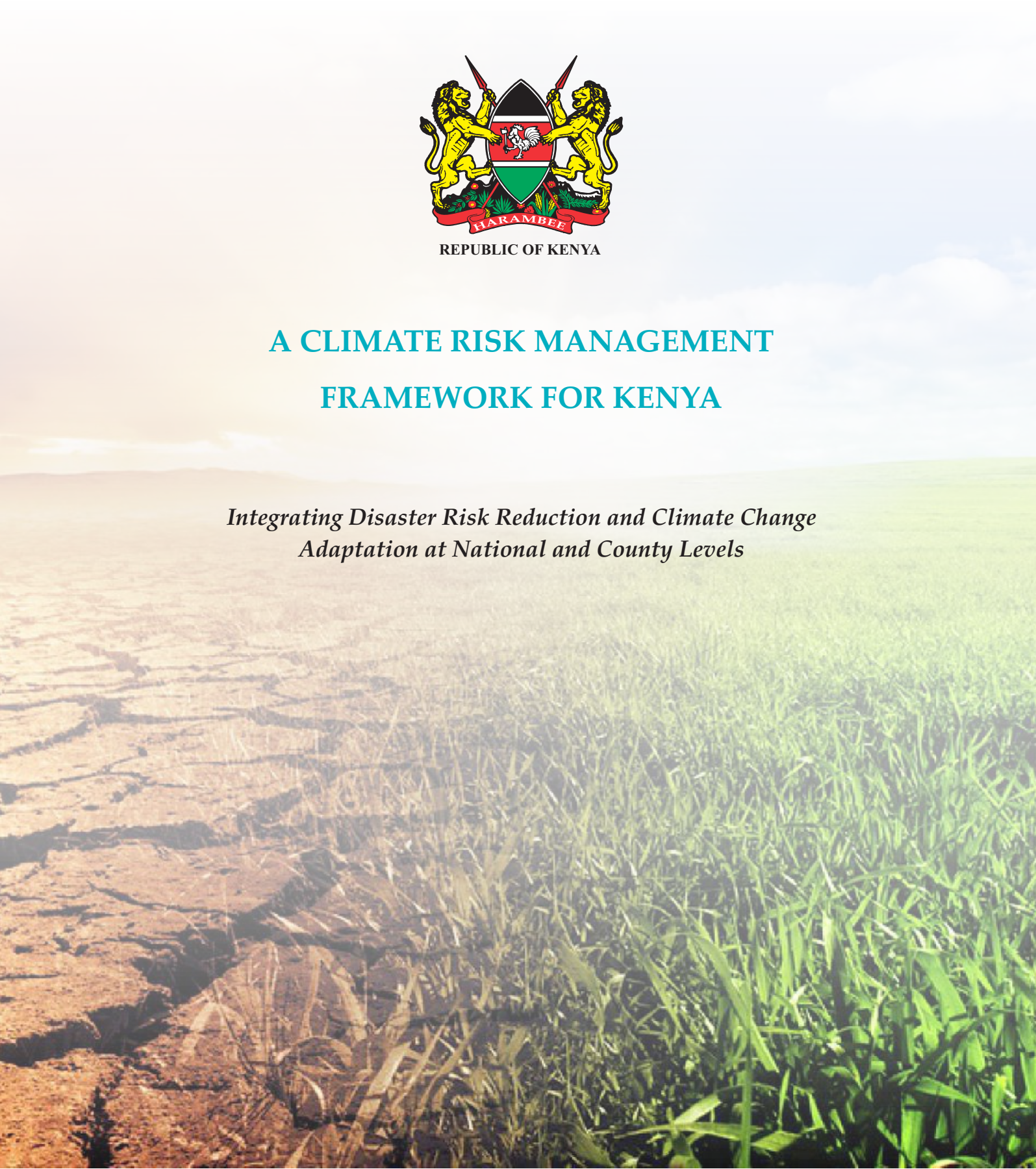
REPUBLIC OF KENYA

A CLIMATE RISK MANAGEMENT FRAMEWORK FOR KENYA

Integrating Disaster Risk Reduction and Climate Change Adaptation at National and County Levels



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FOREWORD

The Government of Kenya is acutely aware that the progress it is making towards poverty reduction and sustainable development is put at risk by the impact of climate-related disasters. Drought and floods in particular are already having devastating effects on our environment, society and economy. These effects are likely to worsen with climate change.

Climate change directly threatens the country's ambitions to prosperity, undermining attainment of the Sustainable Development Goals and the objectives set out in Kenya Vision 2030. Sustainable development will only be possible if the risks and challenges posed by climate change are addressed in all policies, plans and actions at national and county levels. The measures required include appropriate adaptation that enhances the country's capacity to cope with the impacts of climate change and build resilience, as well as development choices that minimize carbon emissions.

The government has put in place a sound policy and legislative framework to guide its response to the challenge of climate change, which is aligned with key global and regional agreements. However, this agenda should not be taken forward in isolation, but rather integrated with the efforts of those working to reduce all disaster risks, so that a coherent and comprehensive risk management strategy is pursued.

For this reason I welcome the development of this integrated climate risk management framework. I believe that it will promote collaboration across ministries and disciplines and enhance the degree of synergy between complementary areas of activity. By so doing, it is my hope that our efforts to manage disaster and climate risks will be strengthened, and the lives and well-being of Kenyans duly protected and enhanced.

Dr. Charles C. Mutai

Director - Climate Change

Ministry of Environment and Natural Resources

PREFACE

Kenya has long experience of dealing with a wide range of disasters. Over the years our approach has evolved from a rather limited focus on response to a much broader concern with preparedness, mitigation and resilience. As the Sendai Framework for Disaster Risk Reduction makes clear, our priority must be to take proactive rather than reactive measures which address the underlying factors that contribute to risk and vulnerability.

The draft policy for disaster risk management adopts this more comprehensive approach. It recognises that the drivers of disaster risk include key development challenges such as poverty and inequality. It also acknowledges the impact of climate variability and change on our exposure and vulnerability to disasters, and the likelihood that climate change will make the task of disaster risk reduction significantly more complex.

Disaster risk management, climate change and sustainable development are therefore indivisible, and yet our response to these three is still fragmented across different institutions of government. The aim of this integrated climate risk management framework is therefore to bring these three together in order to improve the quality of our actions and contribute to our overall goal of building a climate-resilient nation.

Various parts of the ministry, including the National Drought Management Authority, the Directorate of Special Programmes, and the State Department of Planning, have key roles to play in advancing and implementing this framework, which has my sincere and full support.

James Oduor

Chief Executive Officer

National Drought Management Authority

ACKNOWLEDGEMENTS

This framework was developed using a participatory and evidence-based approach with a cross-section of disaster risk management and climate change stakeholders. Their expert technical input helped ensure its alignment with relevant policies and initiatives. The contributions and guidance provided by stakeholders at every step of its development are gratefully acknowledged.

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- United Nations Development Programme
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- National Drought Management Authority
- Climate Change Directorate
- Adaptation Consortium
- Department of Land Resource Management and Agricultural Technology, University of Nairobi

A Technical Working Group led by Oliver Wesonga and its members, Yazan Elhadi, Flora Mugure, Pilly Martin, and Victor Orindi steered the process.

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CONTENTS

ABBREVIATIONS

ASALs	Arid and Semi - Arid Lands
CCA	Climate Change Adaptation
CCD	Climate Change Directorate
CIDP	County Integrated Development Plan
CPF	Common Programme Framework
CRM	Climate Risk Management
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EAC	East African Community
EDE	Ending Drought Emergencies
EMCA	Environmental Management and Coordination (Amendment) Act
FAO	Food and Agriculture Organization
GCM	Global Climate Model
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoK	Government of Kenya
ICPAC	IGAD Climate Prediction and Application Centre
ICRM	Integrated Climate Risk Management
IDDRSI	IGAD Drought Disaster Resilience and Sustainability Initiative
IFRC	International Federation of Red Cross and Red Crescent Societies
IGAD	Intergovernmental Authority on Development
IPCC	Intergovernmental Panel on Climate Change
ITCZ	Intertropical Convergence Zone
KMD	Kenya Meteorological Department
MDAs	Ministries, Departments and Agencies
MTP	Medium Term Plan
NADIMA	National Disaster Management Authority
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NDMA	National Drought Management Authority
NDMU	National Disaster Management Unit
NDOC	National Disaster Operations Centre
NEMA	National Environment Management Authority
SDGs	Sustainable Development Goals
SEI	Stockholm Environment Institute
SOPs	Standard Operating Procedures
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

Kenya is one of the most disaster-prone countries in the Horn of Africa. Disasters affect millions of people each year and therefore undermine the gains. The most common hazards to which Kenya is exposed are drought and flooding. Climate change is expected to exacerbate this situation by altering the intensity and frequency of natural hazards and amplifying their impact. The climate-sensitivity of key sectors of the economy further increases the degree of risk.

Kenya has made very positive strides towards managing disaster and climate risk, such as new policies, strategies, legislation and institutional reforms. These are aligned with the relevant international and regional frameworks. However, the mandate for disaster risk reduction and climate change adaptation is still spread across separate ministries, departments and agencies, as well as the two levels of governance following devolution. Mechanisms to strengthen joint action are therefore essential to achieving greater synergy, efficiency and impact.

The concept of climate risk management bridges the three currently separate spheres of climate change adaptation, disaster risk management and sustainable development. It is an integrated approach to climate-sensitive decision-making that is increasingly seen as the way forward in dealing with climate variability and change.

Disaster risk reduction and climate change adaptation have much in common. They share similar priorities, use similar tools, and apply similar measures. Their common aim is to reduce the impact of shocks by anticipating risk and reducing vulnerability. And since exposure and vulnerability to risk are compounded by broader social and environmental trends such as urbanization, environmental degradation and the globalization of markets, both seek to mainstream their concerns into processes of development planning and resource allocation.

The objective of this climate risk management framework is to bring together these currently separate fields of work so that disaster risk reduction, climate change adaptation and sustainable development are pursued as mutually supportive rather than stand-alone goals, and so that an integrated climate risk management approach becomes a central part of policy and planning.

The framework was developed in a participatory way with technical experts and stakeholders working on disaster risk reduction and climate change adaptation. While it recognizes that Kenya faces various forms of disasters, its focus is on hydrometeorological disasters given their magnitude, socio-economic and environmental impact, and frequency of occurrence.

The framework has ten priority areas, whose objectives are as follows:

1. ***Institutional framework:*** To harmonize programmes and projects and create a coordination mechanism.

2. ***Policy framework:*** To create an enabling policy and legal framework for integrated climate risk management.

3. ***Capacity building:*** To build capacity at national and county level for integrated climate risk management.

4. ***Exposure, vulnerability and capacity:*** To analyze the level of exposure, vulnerability to disasters, and capacity at the local scale.

5. ***Gender mainstreaming:*** To involve communities at risk, and consider gender and marginalized groups.

6. ***Resource mobilization:*** To mobilize resources for climate risk management.

7. ***Mainstreaming climate risk management:*** To mainstream climate risk management into sector programmes, plans and activities.

8. ***Pilot projects:*** To design and implement pilot projects at county and national level.

9. ***Training, research and outreach:*** To enhance research and dissemination of information aboutclimate risk management.

10. ***Learning:*** To create platforms for sharing lessons and good practices on integrated climate risk management.

The National Drought Management Authority in the Ministry of Devolution and Planning and the Climate Change Directorate in the Ministry of Environment and Natural Resources will lead implementation of this framework, working closely with a wide range of partners including the Ministry of Interior and Coordination of National Government, the State Department for Planning, the Directorate of Special Programmes, the county governments, civil society and the private sector. The next steps in operationalizing the framework will include a launch at national level and in the counties, awareness creation and training of stakeholders, and the mobilization of resources.

CHAPTER 1: INTRODUCTION

Climate Risk Management (CRM) describes a large and growing body of work that bridges the three spheres of Climate Change Adaptation (CCA), Disaster Risk Management (DRM) and sustainable development (UNDP, 2010). It is an approach to climate-sensitive decision-making that is increasingly seen as the way forward in dealing with climate variability and change (Hellmuth et al., 2007).

Given the impact of global warming, climate-related hazards such as floods, droughts, heat waves, and storms are expected to become more frequent and possibly more intense; some may also affect places that have not experienced them before (IFRC, 2013). This will undermine food security, increase poverty and deepen vulnerability. Climate change thus threatens both to increase disaster risk and to undermine the chances of achieving sustainable development. By integrating Disaster Risk Reduction (DRR), climate change adaptation and development, the impact of disasters can be reduced and the resilience of communities to future shocks enhanced.

Disaster risk reduction and climate change adaptation are closely connected. Both aim to reduce the impact of shocks by anticipating risk and reducing vulnerability (Mitchell and van Aalst, 2008). Disaster risk reduction is an important element of adaptation, while all forms of adaptation constitute DRR. Climate change adaptation addresses only climate-related uncertainties, but DRR goes further to deal with a wider range of hazards. However, DRR initiatives will only succeed if they take the changing climatic conditions, associated hazards, and adaptation needs into account.

The priority, therefore, is to bring together disaster risk reduction and climate change adaptation in a climate risk management approach rather than treat them in isolation. International agreements such as the Sendai Framework for DRR and the UN Framework Convention on Climate Change (UNFCCC) recognize the importance of this integration, but practical and actionable recommendations to create an environment that will enable it are lacking.

In Kenya, various parts of government are implementing elements of a climate risk management approach but in the absence of effective coordination and appropriate guidance. The objective of this framework is to provide this guidance and help mainstream climate risk management in policies, programmes, plans and institutional arrangements. It aims to foster coordination and complementary practices among the many actors who share a common goal, including the staff of the national and county governments and those in other development and humanitarian organizations.

The framework was developed in a participatory way (Figure 1). Interviews were conducted with representatives of relevant government departments and agencies, international and national NGOs and academic institutions in order to seek their opinions of the idea and secure their support. A literature review of approaches and tools used elsewhere helped guide the process and the framework's content; published policy documents, research papers, reports and other literature provided important evidence. Consultative workshops produced a draft framework that was later finalized by the Technical Working Group and validated by national stakeholders.

Figure 1: Steps in formulating the framework for integrated climate risk management

While this framework recognizes that Kenya faces various forms of disasters, it places particular emphasis on hydrometeorological disasters given their magnitude, socio-economic and environmental impact, and frequency of occurrence.

There are five further chapters. The next provides the background to disaster and climate risk in Kenya, while chapter three locates this framework within the various policy, legislative and institutional developments taking place at the international, regional, national and devolved levels of operation. Chapter four introduces the paradigm shift represented by integrated climate risk management and describes the framework itself, including its guiding principles and areas of focus. Chapter five outlines the institutional arrangements, while the sixth and final chapter describes how the framework will be put into practice.

CHAPTER 2: DISASTER AND CLIMATE RISK IN KENYA

2.1 Kenya's Disaster Profile

Kenya is one of the most disaster-prone countries in the Horn of Africa. It is affected by numerous hazards associated with drought, flood, fire, landslide, earthquake, structural collapse, explosion, accident, and civil unrest, but the main disasters are hydrometeorological (GoK, 2013a). In recent years it has experienced prolonged drought, frost in some of the productive agricultural areas, hailstorms, extreme flooding, receding lake levels, and the drying of rivers and other wetlands.

There is scientific evidence that the frequency of hydrometeorological disasters has increased in recent years (GoK, 2010). The impact of these is immense, affecting an estimated three to four million Kenyans each year and undermining the gains being made in economic and human development. This in turn increases the vulnerability of communities and weakens their capacity to manage such shocks. The impact of disasters is also exacerbated by local environmental degradation caused by factors such as habitat loss and land conversion, pollution, deforestation and overgrazing. Forest cover, for example, has reduced from 12 per cent in the 1960s to 6.99 per cent today (GoK, 2015a), affecting the river and lake catchments which are the main source of water in rural and urban areas.

Kenya has made significant strides towards reducing poverty and attaining sustainable development and thus achieving the goal of Kenya Vision 2030. However, the increasing frequency, complexity and scope of disasters observed in recent years are slowing the tempo of economic development. The economic cost of floods and droughts is estimated to create a long-term fiscal liability equivalent to 2.0-2.4 per cent of gross domestic product (GDP) each year, or approximately US$500 million (GoK, 2013a).

The severity of these impacts is attributed in part to the lack of an effective framework for coordinating stakeholders. The development of the draft National Policy for Disaster Risk Management enhances the various disaster coordination mechanisms already put in place (GoK, 2013b). These include the establishment of the National Drought Management Authority (NDMA) in 2011, which builds on a long history of drought-focused projects in the arid and semi-arid lands (ASALs), and the creation of the National Disaster Operations Centre (NDOC) in early 1998 at the height of El-Nino induced floods. The NDOC continues to monitor disaster events on a 24-hour basis and mobilize the response to disaster-affected areas.

2.1.1 Drought

Drought is responsible for an estimated 8 per cent of lost GDP every five years (GoK, 2013b). Major droughts occur about every ten years, and moderate droughts every three or four years. Between 1964 and 2004, Kenya recorded 11 major episodes of drought. In the drought period of 2008-11, the sectors most affected were livestock and agriculture, with respective drops in productivity of 72 per cent and 13 percent (Table 1). The geographical areas most affected were in the former Rift Valley and Eastern provinces. Total losses and damages were estimated at KSh968.6 billion (US$ 12.1 billion) (GoK, 2012a), while economic growth slowed to an annual average of 2.8 per cent over the same period (GoK, 2013b).

Drought has adverse impacts on ecosystems and biodiversity. It lowers the vigour and productivity of vegetation and may lead to the decline or loss of certain species, or invasion by less desirable but more drought-tolerant species. These changes in vegetation composition alter ecosystem integrity and its services and could further affect wildlife migration and therefore tourism. Drought also increases the likelihood of forest fires and the clearance of forests for agriculture, grazing, and charcoal production. It reduces crop yields, thereby undermining agricultural productivity, and puts human health at risk by exacerbating the magnitude and occurrence of water-borne diseases, malnutrition, and heat stress.

Table 1: Summary of the 2008-2011 droughts damages, losses and needs by sector (KSh million)

Sectors	Impact			Needs			Indicative DRR Needs
	Damage	Losses	Total	Recovery	Reconstruction	Total	
Agriculture		121,104.1	121,104.1	5,048.8		5,048.8	13,736.8
Livestock	56,141.7	643,194.5	699,336.2	50,237	56,142	106,379	85,103.0
Fisheries	502.6	3,661	4,163.6	406.4	753.9	1160.3	2,991.2
Agro-industry		7,159.6	7,159.6			-	
Health		4,745.7	4,745.7	5,099		5099	
Nutrition		6,699.4	6,699.4	225.1		225.1	130.9
Education	41.9	3,937.8	3,979.7	590.1	55.7	645.8	3,592.1
Energy		32,392.3	32,392.3	13,000		13000	
Water & sanitation	7,736.1	80,466.9	88,203	4,964.2	12,304.1	17,268.3	78,627.3
Environment, Tourism Forestry, Wildlife		22.2	762.4	784.6	7,387.9	7387.9	647.5
Total	64,444.5	904,123.7	968,568.2	86,958.5	69,255.7	156,214.2	184,828.8

Source: GOK (2012a)

2.1.2 Floods

Floods have had similarly devastating consequences in recent years. Between 1964 and 2004, Kenya recorded 17 major episodes of floods. These killed 524 people and affected an average of 70,795 people. The 1997-98 El Niño floods are estimated to have caused damage equivalent to at least 11 per cent of GDP, including KSh62 billion (US$ 777 million) of damage to transport infrastructure and KSh3.6 billion (US$ 45 million) of damage to water supply infrastructure. The cost of flooding is estimated at 5.5 per cent of GDP every seven years (GoK, 2013b). Other impacts include lost livelihoods and damage to property and infrastructure, with ramifications for the economy. Floods also change ecosystem functioning, damage crops, and increase the risk of water-borne, vector-borne and food-borne diseases.

2.1.3 Fires

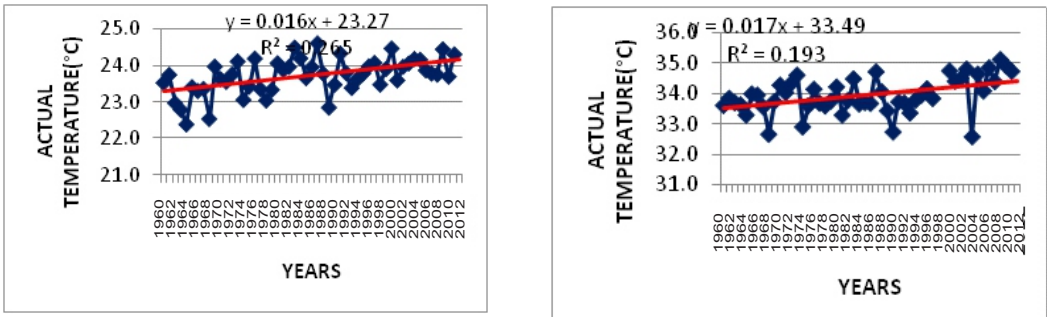
Many incidents of fire are reported in urban areas. For example, the Nairobi City Fire Department receives about 300 distress calls each month. In the dry spell of 2010-11, forest fires resulted in damage to 5,404 hectares of indigenous forest plantation, grass and shrubs (GoK, 2013a).

2.2 Climate Variability and Change in Kenya

Kenya's climate varies considerably across the country, heavily influenced by its varied topography and the north-south migration of the zonal arm of the Intertropical Convergence Zone (ITCZ). The country's geographical location makes it prone to cyclical droughts and floods. The climate has exhibited increasing variability and change as evident in the long data (over 50 years) on rainfall and temperature at various stations in Kenya.

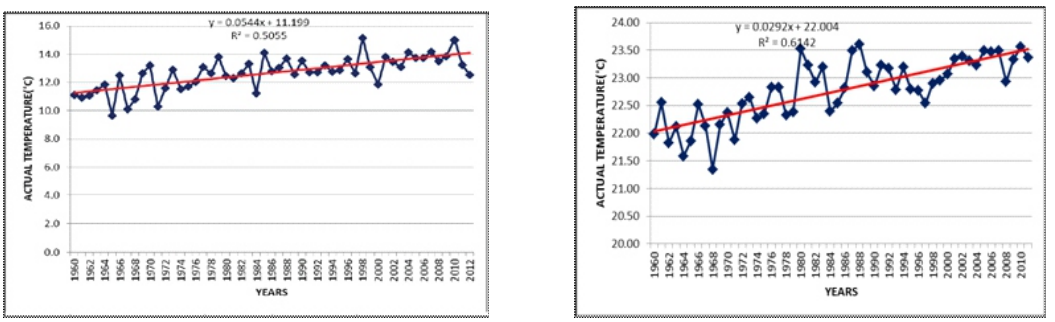
2.2.1 Temperature

There has been a distinct warming trend since the 1960s. The increase in the minimum temperatures is steeper than in the maximum temperatures. Figures 2-3 illustrate the observed trends in Nairobi and Wajir, representing the central and north-eastern parts of the country respectively.



a) *b)*

Figure 2: Maximum temperature trends for a) Dagoretti, Nairobi and b) Wajir (Data and figure from KMD, 2015)



a) *b)*

Figure 3: Minimum temperature trends for a) Dagoretti, Nairobi and b) Wajir (Data and figure from KMD, 2015)

2.2.2 *Rainfall*

On an annual basis, rainfall in Kenya is governed by the movement of the ITCZ, a belt of low pressure that forms near the equator and migrates south between September and December, returning northwards in March, April and May. The ITCZ brings wet weather to the region and so Kenya experiences two distinct wet periods: the 'long rains' between March and May and the 'short rains' between October and December. Figure 4shows the trend in the spatial distribution of annual rainfall, indicating a generally positive trend (more rain) in western, north-western and extreme eastern parts of the country annually, but a negative trend (less rain) in northern, south-eastern and coastal areas.

Rainfall Trend from 1981 - 2015

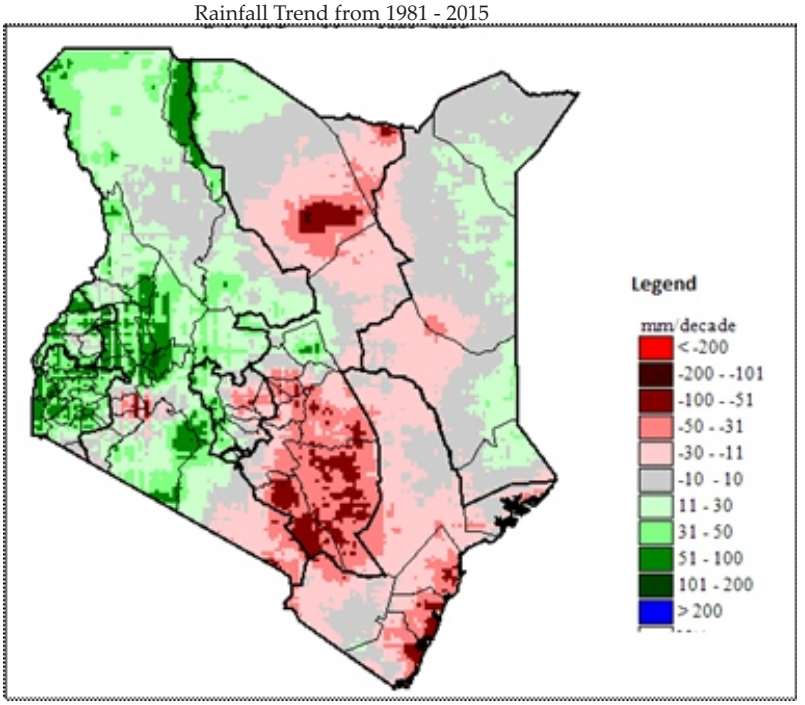
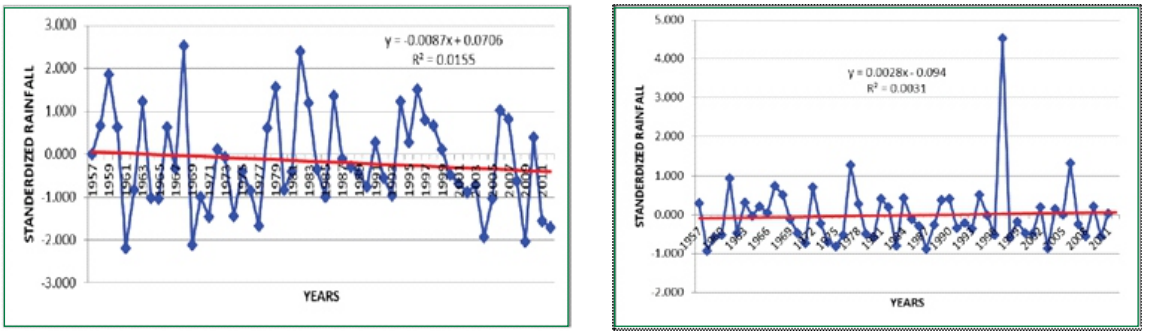


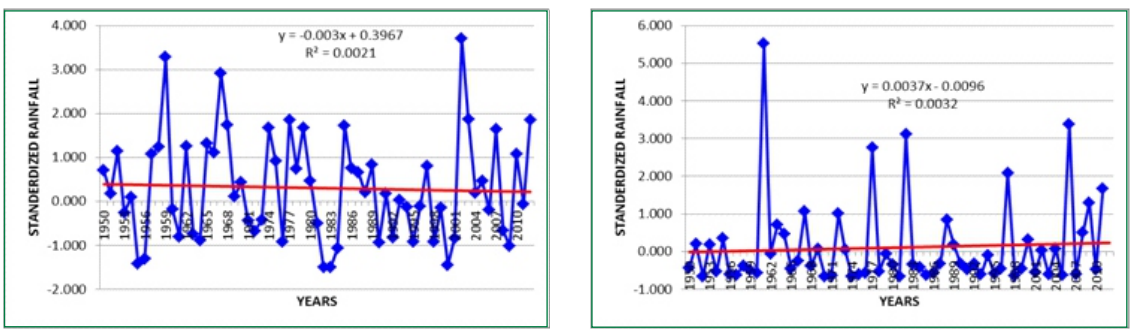
Figure 4: Annual rainfall trend spatial distribution, 1981 – 2015 (Data and figure from KMD, 2015)

The most visible feature of the changes in rainfall patterns noticed since the 1960s is the increased intra- and inter-annual variability. Figures 5-6 illustrate the observed rainfall trends in Mombasa and Lodwar, representing the coastal and north-western regions of the country respectively. While the total rainfall received during the long rains season depicts a steady decline over the years, the total rainfall received during the short rains season shows a slight but steady increase.



a) *b)*

Figure 5: March-April-May a) and October-November-December b) rainfall trend for Mombasa (Data and figure from KMD, 2015)



a) *b)*

Figure 6: March-April-May a) and October-November-December b) rainfall trend for Lodwar (Data and figure from KMD, 2015)

2.2.3 *Future temperature and rainfall trends*

Global Climate Model (GCM) data indicates that Kenya's mean annual temperature is projected to increase by between 0.8 and 1.5°C by the 2030s and by between 1.6°C and 2.7°C by the 2060s. Figure 7 presents a visualization of these projected trends and depicts a good model agreement of temperature increases of up to 3°C by 2100.

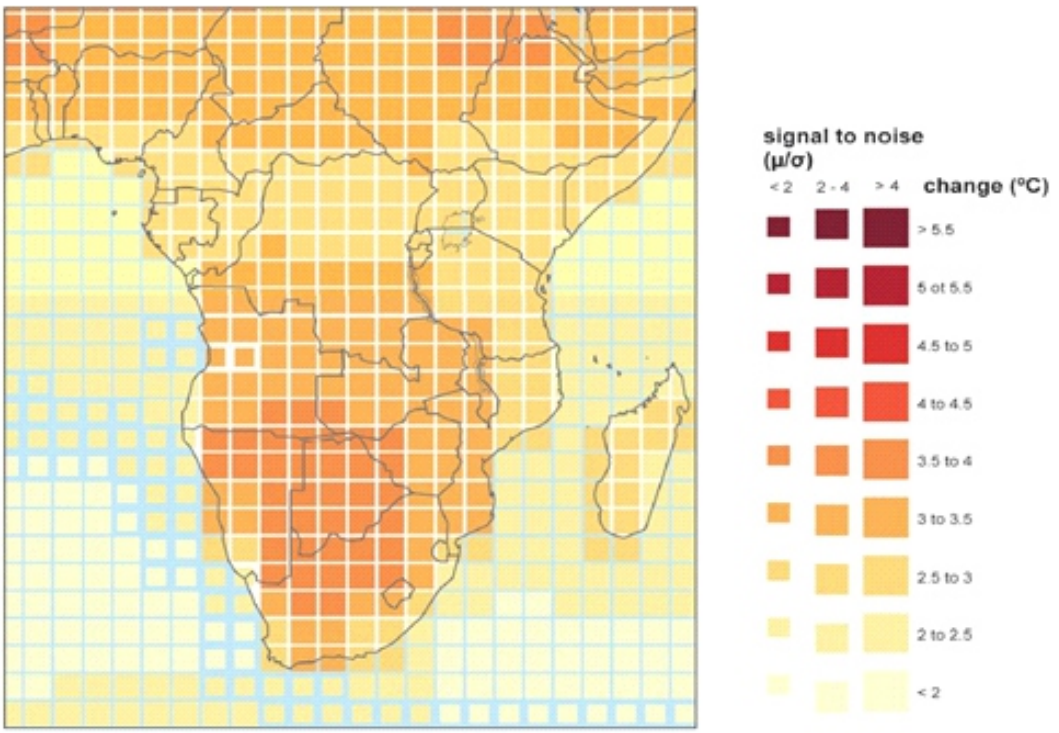


Figure 7: GCM visualization of projected temperatures for Kenya. Percentage change in average annual temperature by 2100 from 1960-1990 baseline climate, averaged over 21 CMIP 3 models. (UK Met Office, 2011)

The projections also show that there may be an increase in average rainfall by 2060, especially between October and December; however, 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 2-11 percent by the 2060s and 2-12 per cent by the end of the century. Figure 8 provides a visualisation of the projected rainfall trends for the period 1960-2100.

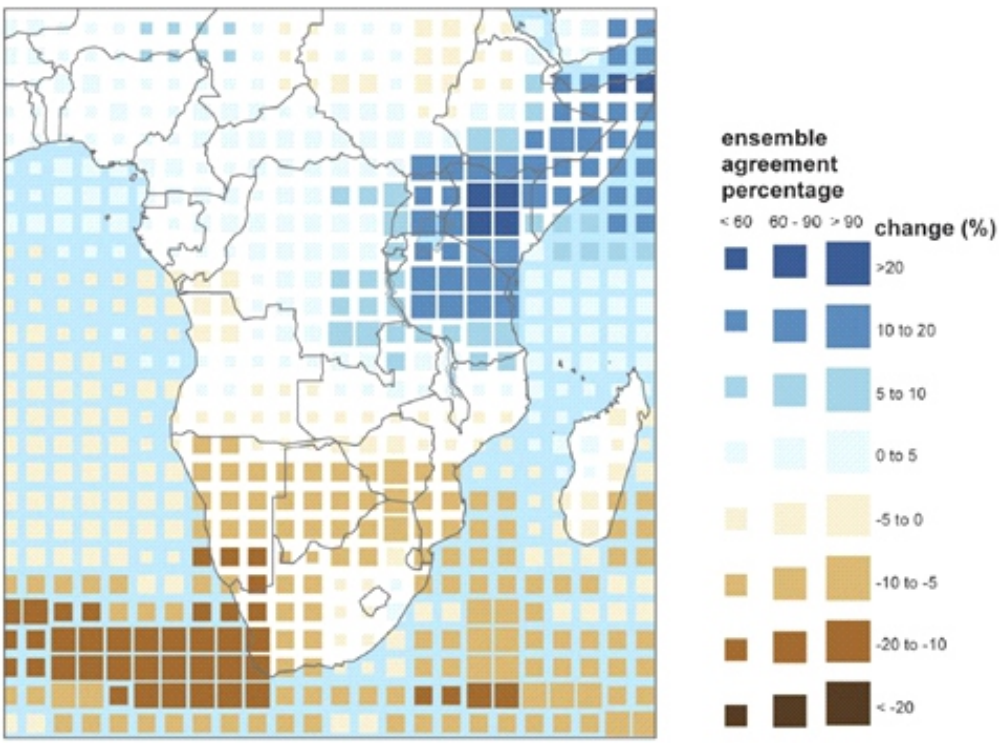


Figure 8: GCM visualization of projected rainfall for Kenya. Percentage change in average annual precipitation by 2100 from 1960-1990 baseline climate, averaged over 21 CMIP3 models. (UK Met Office, 2011)

2.3 Impacts of Climate Change

Extreme weather events have become common in Kenya. Most of the disasters which affect the country are climate-related and therefore exacerbated by climate change. Current projections indicate that these impacts will worsen if the world does not implement measures that result in deep cuts to anthropogenic GHGemissions, which are responsible for climate change. This poses a serious threat to Kenya's socio-economic development since the economy is highly dependent on climate-sensitive sectors such as agriculture, health, energy and tourism.

Agriculture is the backbone of the economy, directly contributing 24 per cent of GDP and accounting for 65 per cent of informal employment in rural areas. Over-dependence on rain-fed agriculture leads to fluctuations in production and incomes which threaten food security. Climate change is expected to exacerbate the sustainability of most agricultural systems and threaten long-term agricultural productivity, food supply, and food security (FAO, 2012).

In the health sector, climate change is expected to exacerbate the occurrence and intensity of disease outbreaks and may increase their spread in some areas. It is expected to increase the magnitude and occurrence of heat stress, asthma, vector-borne diseases and food-borne diseases, as well as exposure to Rift Valley Fever, malnutrition and water-borne diseases (WHO, 2010). Five per cent of deaths in Kenya are already due to malaria (GoK, 2009), but geographic exposure to malaria is predicted to expand into new areas due to rising temperatures and the changing distribution of precipitation (GoK, 2013b). Reducing climate-related health risks, particularly among poor households, requires that the underlying causes of vulnerability, including poverty and poor water and sanitation services, and the capacity of the health-care system to manage climate-influenced diseases are both addressed.

The energy sector is also climate-sensitive. Traditional fuels such as wood, charcoal, dung and agricultural residues are still used by more than 85 per cent of Kenyans (GoK, 2011). Access to these is becoming increasingly restricted due to the loss of forest cover, rising populations, land tenure arrangements and inefficient utilization of land (Mugo&Gathui, 2010). Climate change could accentuate this by altering the growth of forests and agricultural crops. Within the modern energy sector, large hydroelectric power stations generate just over half of the country's electricity supply, which is used by about 23 per cent of Kenyans, primarily in urban areas. Reduced rainfall in recent years has already made hydroelectric power production increasingly unreliable leading the government to promote renewable sources such as geothermal, solar and wind (GoK, 2010).

The tourism industry is a vital part of the economy, contributing about 27 per cent of foreign exchange earnings and 12 per cent of GDP. It is also expected to grow, given the country's aim of becoming one of the top-ten long-haul destinations in the world (GoK, 2007). This ambition is threatened by climate risks that include the loss of tourism attractions such as coral reefs, coastal beaches and Mt. Kenya's glaciers, changes in species diversity and wildlife migration patterns, and damage to transport and other infrastructure.

Many extreme climate events have caused the displacement and migration of communities into and out of the country resulting in conflict over natural resources. Poor infrastructure also exacerbates the risk since most of Kenya's roads are earth roads which are easily destroyed by flooding. All these factors work in concert to increase vulnerability to climate change.

Climate-related events also affect the overall performance of the economy, for example by reducing foreign exchange earnings, altering the balance of payments, increasing the current account deficit, and contributing to price inflation. In addition, the growth projections in Kenya Vision 2030, coupled with population increase and urbanization, are expected to lead to a rise in levels of GHGemissions (GoK, 2007). In the absence of appropriate mitigation and adaptation mechanisms, climate change is expected to undermine attainment of the Kenya Vision 2030 objectives and the Sustainable Development Goals (SDGs).

In conclusion, hydrometeorological disasters such as droughts and floods a real ready having devastating consequences for the environment, society and wider economy (SEI, 2009). These costs are expected to be exacerbated by climate change. There is, therefore, good sense in finding an approach that addresses both disaster and climate risks in an integrated manner.

CHAPTER 3: POLICY, LEGISLATIVE AND INSTITUTIONAL FRAMEWORKS

Given the enormous challenges created by climate change and disasters, the government has ratified a number of global agreements and put in place its own policies and legislation that provide opportunities to pursue an integrated climate risk management approach. These are discussed in this chapter at four levels: international, regional, national and devolved.

3.1 International Frameworks

Table 2 lists some of the international conventions and agreements relevant to integrated climate risk management.

Table 2: International conventions and agreements

Agreement / convention	Relevance to climate risk management
Sendai Framework for Disaster Risk Reduction, March, 2015	The framework has four priority areas: understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investingin disaster risk reduction for resilience; and enhancing disaster preparedness for effective response and to 'Build Back Better' inrecovery, rehabilitation and reconstruction. The framework advocates the integration of both DRR and resilience-building into policies, plans, programmes and budgets at all levels.
United Nations Framework Convention on Climate Change, 1992	This sets out the framework for action to stabilize atmospheric concentration of GHG at a level that will prevent dangerous anthropogenic interference with the climate system. Developing countries are required to undertake Nationally Appropriate Mitigation Actions in the context of sustainable development, supported and enabled by technology, financing and capacity building. Countries are also expected to prepare and implement National Adaptation Plans
Addis Ababa Action Agenda of the Third International Conference on Financing for Development, July 2015	This acknowledges the role of the UNFCCC and the Conference of the Parties in negotiating the global response to climate change. It recognizes the importance of taking into account the three dimensions of sustainable development, and encourages consideration of climate and disaster resilience in development financing to ensure that development results are sustainable. It commits to enhanced adaptation support for groups and environments most vulnerable to climate change. (UN, 2015a)

Paris Agreement Conference of the Parties (COP21), November-December, 2015	The agreement bridges today's policies and the goal of climate-neutrality by the end of the century. Governments will aim to limit temperature increase to 1.5°C, significantly reduce the risks and impacts of climate change and strengthen societies' ability to deal with these, and enhance international support for adaptation in developing countries. The agreement acknowledges the need for cooperation and enhanced action in areas such as early warning systems, emergency preparedness and risk insurance. It also acknowledges the adoption of the insurance. It also acknowledges the adoption of the Addis Ababa Action Agenda and the Sendai Framework.
Sustainable Development Goals (SDGs), September 2015	There are 25 targets that relate to disaster risk reduction in 10 of the 17 SDGs, including explicit links to the Sendai Framework. This firmly establishes disaster risk reduction as a core development strategy. (UN, 2015b)

3.2 Regional Frameworks

Table 3 presents the regional frameworks relevant to integrated climate risk management. These shape national policies and strategies and provide mechanisms to address challenges which extend beyond national borders.

Table 3: Regional policies, strategies and plans

Document	Relevance to climate risk management
Draft African Strategy on Climate Change, 2014	The strategy was developed by the African Union to help the continent achieve climate-smart socio - economic development. It is organized around four thematic pillars: climate change governance; promotion of research, education, awareness raising and advocacy; mainstreaming and integrating climate change imperatives in planning, budgeting, and development processes; and promotion of national, regional, and international cooperation. This framework is aligned with Its objectives and pillars. (AU, 2014)
East African Community Climate Change Policy, 2011	This provides guidance on the preparation and implementation of collective measures to address climate change in the short and medium-term. It highlights adaptation to climate change as the first priority for the region and seeks to mainstream adaptation into national and regional development plans by sector: water resources, agriculture and food security, energy, and ecosystem services. (EAC, 2011a)
East African Community Climate Change Strategy, 2011/12-2015/16	This implements the EAC Climate Change Policy. It sets out a range of measures and directs the policy's implementation over a shorter time frame. (EAC, 2011b)
East African Community Climate Change Master Plan, 2011-2031	This provides a comprehensive framework for adapting to and mitigating climate change in line with both the EAC Protocol on Environment and Natural Resources Management and international climate change agreements. (EAC, 2011c)
East African Disaster Risk Reduction and Management Act, 2016	The Act represents the culmination of a five-year process and is a key instrument to accelerate implementation of the Sendai Framework in theregion. It has the provision to establish a ministerial-level EAC Disaster Risk Reduction and Management Authority. (EAC, 2016)
IGAD Drought Disaster Resilience and Sustainability Initiative (IDDRSI) Strategy, 2013	This aims to address the effects of drought and related shocks in the IGAD region in a sustainable and holistic manner. It recognises the need for a comprehensive and holistic approach to the challenges of food and nutrition insecurity and to build resilience. Kenya's contribution to IDDRSI is the Common Programme Framework for Ending Drought Emergencies. (IGAD, 2013)

3.3 National and County Frameworks

The Fourth Schedule of the Constitution allocates the function of disaster management to both the national and county governments. The Bill of Rights further emphasises the right of every person to a clean and healthy environment and to be free from hunger. The documents described in Tables 4 and 5 will be instrumental in implementing the international and regional agreements in Tables 2 and 3.

Table 4: National legislation, policies and plans

Document	Relevance to climate risk management
National Drought Management Authority Act, 2016	The NDMA is a statutory body established under the NDMA Act, 2016. The Act gives the NDMA the mandate to coordinate all matters relating to drought management, including the implementation of policies and programmes, and drought response initiatives undertaken by other actors. The NDMA is also tasked with promoting the integration of drought management in development policies, plans and programmes. (GoK, 2016a)
Draft National Policy for Disaster Risk Management, 2013	The vision of the draft policy is a safe and disaster-resilient nation. It aims to reduce disaster risk and loss through an integrated multi-hazard approach that contributes to and protects the achievements of Kenya Vision 2030. The policy embraces the paradigm shift from managing response to managing risk and aims to integrate DRM in planning and budgeting. A number of institutions related to the policy are already in place, including the NDOC, the National DRR Platform, and the National Disaster Management Unit (NDMU). Some line ministries also have units that address disaster and climate risk management. (GoK, 2013b)
National Climate Change Response Strategy (NCCRS), 2010	The strategy represents the government's formal recognition of the climate change challenge. Its primary focus is to ensure that adaption and mitigation measures are integrated in all government planning, budge ting and development objectives. It advocates collaboration and joint action in tackling the impacts of climate change, as well as stronger planning and institutional capacity development, including at community level. (GoK, 2010)
National Climate Change Action Plan (NCCAP), 2013-2017	This operationalises the NCCRS and provides guidelines for mainstreaming climate change across all sectors of the Medium Term Plan (MTP). It has nine sub-components which are now being implemented. (GoK, 2013a)
Climate Change Act, 2016	The purpose of the Act is to develop, manage, implement and regulate mechanisms that enhance climate change resilience and low-carbon development. It will anchor all actions relating to climate change across all sectors. It also creates a climate change governance structure at national and county level. Some institutions are already in place, such as the Climate Change Secretariat. (GoK,2016b)

National Adaptation Plan, 2016 Common Programme Framework (CPF) for Ending Drought Emergencies (EDE), 2015	This guides the implementation of priority adaptation issues.The Common Programme Framework was launched in November 2015 and provides a framework for collaborative action to reduce drought risks, strengthen drought resilience and end drought emergencies. The NDMA is the focal point for EDE and tasked with overseeing implementation of the framework. (GoK, 2015d)
National Policy for the Sustainable Development of Northern Kenya and other Arid Lands, 2012	This was the foundation for both the creation of the NDMA and the Ending Drought Emergencies framework. It also calls for the mainstreaming of climate adaptation into planning, and the strengthening of strategies used by communities to manage risk and adapt to climate variability and change. (GoK, 2012b)

In addition to the approval of the documents listed in Table 4, the government has taken a number of other measures:

- Kenya submitted its Intended Nationally Determined Contribution to the UNFCCC in 2015, highlighting the country's contribution to both adaptation and mitigation.
- A green economy strategy and its implementation plan were developed in 2015.
- A framework policy on climate change, and a climate-smart agriculture policy, are both in development.
- Funds for disaster management are now devolved to all counties, and county disaster risk management committees are being strengthened.
- Risk vulnerability and hazard assessment has been carried out to map potential risks and inform risk reduction measures.
- County governments have demonstrated their potential to improve drought risk reduction and response, particularly in the more remote arid counties where devolution has strengthened the responsiveness of government.

Table 5: County legislation and plans

Document	Relevance to climate risk management
County Drought Contingency Plan	Drought contingency plans have been developed in 23 ASAL counties to address drought-related challenges across various sectors. The plans encompass a variety of interventions based on different drought scenarios, and are intended to facilitate timely and coordinated response.
County Climate Change Fund (CCCF) legislation	CCCF legislation aims to help counties mobilize finance from a variety of sources (public and private, local and international) in order to implement priority climate change interventions (Ada Consortium, 2014a and 2014b).
Natural resource/rangeland management bills (e.g. Isiolo and Wajir)	The legislation aims to achieve sustainable natural resource management that draws from both conventional and customary practices. It is designed to ensure that natural resources are adequately conserved, protected and sustainably used.
County Integrated Development Plan (CIDP)	CIDPs are five year development blue prints that aim to improve livelihoods through citizen engagement and the creation of an enabling environment for mobilizing and sustainably using resources in the counties.
County Environment Action Plans	These plans address environmental issues across various sectors in an integrated manner and discuss their significance in development planning. They propose a strategy for achieving sustainable development in line with the SDGs and the Kenya Vision 2030 Medium Term Plan.

3.4 Sector Policies

Policies developed in other sectors, especially those sensitive to hydrometeorological disasters, incorporate elements that reinforce an integrated climate risk management approach (Table 6).

Table 6: Sector legislation, policies and plans

Document	Relevance to climate risk management
Agriculture Sector Development Strategy (ASDS), 2010-2020	The ASDS is the overall policy document for the agriculture sector. It promotes sustainable food production and agroforestry and aims to achieve a paradigm shift from subsistence agriculture to business, acknowledging that this is hampered by the impacts of climate change. It proposes a national irrigation framework to reduce the vulnerability of the agriculture sector to drought.
Water Act, 2002	This Act, and the EMCA Act, 2015 provide the overall governance, for the water sector. The regulations and strategies following from the Water Act recognize the implications of climate change for health, sanitation and water. The draft National Water Resources Management Strategy (2010-2016) also acknowledges the effects of climate change and the challenges for water resource management.
Environmental Management and Co-ordination (Amendment) Act, 2015.	This is the principle instrument of government for managing the environment and provides for the institutional framework to coordinate environmental management This includes the NCCAP and the National Environment Management Authority (NEMA), which is the Designated National Authority for the Clean Development Mechanism and the National Implementing Entity for the Adaptation Fund.
Draft National Forest Policy, 2015	The draft policy recognizes that the climate is changing and that this is having a direct impact on forest resources and ecosystems and on people and their livelihoods, through flooding, landslides and drought. Forestry is seen to play an important role in both mitigation and adaptation to climate change, and towards achieving green growth.
Energy and Petroleum Policy, 2015	The policy promotes renewable energy generated from solar, wind, biomass, geothermal, hydropower and ocean resources, as well as bio-fuels and hydrogen derived from renewable resources. Renewable energy has the potential to enhance energy security and mitigate climate change , although the policy recognizes the vulnerability of hydropower to variations in hydrology and climate change.
National Social Protection Policy, 2011	The policy reflects the government's commitment to reduce poverty and vulnerability to shocks and stresses. It builds on existing social protection initiatives and seeks a more coordinated approach to social protection.
National Food and Nutrition Security Policy, 2011	The policy aims to achieve good nutrition for optimum health, increase the quantity and quality of food that is available, accessible and affordable, and protect vulnerable populations using innovative and cost-effective safety nets linked to long-term development. One of its focus areas is developing the capacity for early warning and emergency management.
National Nutrition Action Plan, 2012-17	This is aligned to the Medium Term Plan in order to facilitate the mainstreaming of nutrition budgeting into national development planning, and hence the allocation of resources to nutrition programmes.

3.5 Progress In Policy, Legislative and Institutional Frameworks

Tables 4-6 illustrate the progress being made by the government of Kenya at both national and county levels. However, challenges still remain and can be clustered in three broad areas: policies and legislation, institutions, and resources.

3.5.1 Policies and legislation

- Policies and legislation concerning DRR and climate change are being developed with limited reference to each other.
- Policy action has largely been focused at the national level. While Table 5 illustrated the progress being made in some counties, greater effort is needed to strengthen county and sub-county capacity for policy development and implementation.
- Climate risks need to be more fully integrated into policy processes.
- The disaster risk management policy remains in draft form.

3.5.2 Institutions

- Disaster risk reduction and climate change adaptation are operationalized from two different ministries creating institutional and legal challenges to the integration of mandates, resources and responsibilities.
- The institutions already established to deal with climate risks need strengthening in order to fulfil their responsibilities effectively.
- Clear institutional guidance is needed on achieving an integrated climate risk management approach and strengthening inter-governmental cooperation in this area.
- University research tends to be discipline-specific, so that research on disaster risk reduction and research on climate change adaptation are not well integrated.
- Private sector involvement in this area is low.

3.5.3 Resources

- Both disaster risk reduction and climate change adaptation have inadequate budget allocations given competing national priorities.
- There are insufficient human resources in the fields of disaster risk reduction and climate change adaptation.
- Limited funding for research means that there is limited study in the field.
- The use of modern technology is costly and beyond the funds available.
- Climate risks need to be more fully integrated into planning and budgetary processes.

3.6 Opportunities for Climate Risk Management

Despite the challenges, there are numerous opportunities for pursuing an integrated climate risk management approach:

- There is growing awareness at both national and county levels of the added value of integrating disaster and climate risks within policy, planning, budgeting, implementation and monitoring processes, and of bringing together disaster risk reduction and climate change adaptation.
- CIDPs provide a mechanism to integrate delivery of the various policy and legislative instruments described in Tables 4-6.
- The international agreements described in Table 2 provide a framework for action as well as opportunities to learn from existing mechanisms and institutions.
- The agencies already in place in Kenya to deal with these issues provide a critical mass of institutional capacity to drive climate risk management forward. An integrated climate risk management framework will address the problem of scattered mandates and uncoordinated action.
- New resources are becoming available, for example from global financing mechanisms and from devolved budgets in Kenya.
- The integration of disaster risk reduction and climate change adaptation is already happening in practice and has created a body of research and knowledge.
- Kenya's strong ICT and communications capacity facilitates the generation, storage and dissemination of information about disaster and climate risks.
- A number of institutions of higher learning have already incorporated disaster risk reduction and climate change adaptation in their curricula.
- More funding is available for climate change adaptation than for disaster risk reduction. The latter will benefit when the two are brought together.

CHAPTER 4: INTEGRATED CLIMATE RISK MANAGEMENT FRAMEWORK

4.1 Convergence Between Disaster Risk Reduction and Climate Change Adaptation

The fundamental interactions between climate change and disasters strengthen the argument for a functional linkage between them. The rising trend of disaster losses is likely to continue or even worsen as some hazards become more severe and unpredictable (Mitchell and Ibrahim, 2010). Climate change may alter the intensity and frequency of natural hazards, amplify their impact, and influence underlying vulnerability to hazards. This will complicate disaster risk reduction by making it difficult to predict the timing and magnitude of disaster events and thus effectively deal with them. Climate change is also expected to complicate communities' perceptions of preparedness and their readiness to respond, cope with and adapt to stress.

There is little collective understanding of how disaster risk management can be enhanced to cope with the impacts of climate change. The emphasison disaster relief has slowed meaningful global investment in disaster risk management. Climate-smart disaster risk management has been suggested as one way of enhancing disaster resilience in the face of a changing climate (Mitchell et al., 2010). Integrating disaster risk reduction with climate change adaptation is seen as a way to exploit the synergies between the two and ensure that interventions not only address current stresses and shocks but also minimize their impacts in future.

There is significant convergence between the problems that disaster risk reduction and climate change adaptation seek to address. The two approaches share common priorities, programmes, tools and outcomes. Both seek to integrate their concerns into development planning and resource allocation. The measures needed are in many cases similar: they include the protection of environmental resources, land use planning, building codes and their enforcement, risk assessments and early warning systems, public awareness and education programmes, and most importantly sustained political commitment, policies, budgets and administrative systems to drive and support an effective risk reduction agenda (Quang et al., 2011). The continued separation of disaster risk reduction and climate change adaptation risks policy incoherence, inefficient use of resources, duplication of effort and competition between different coordinating mechanisms(Mitchell and Van Aalst, 2008).

The two approaches also share a conceptual understanding of the components of risk and the processes of building resilience. They both regard risk as the product of exposure and vulnerability to the hazards or effects of climate change (Figure 9). The greater the vulnerability, exposure or likelihood of the hazard/climate

change, the higher the risk. Both exposure and vulnerability are compounded by other social and environmental trends, such as urbanization, environmental degradation, and the globalization of markets. Thus, to reduce both disaster and climate change risk, exposure needs to be minimized, vulnerability reduced, and capacities for resilience strengthened in ways that address both types of risk simultaneously, with neither approach compromising the other. This is a dynamic process requiring continual effort across economic, social, cultural, environmental, institutional and political spheres in order to move from vulnerability to resilience. A comprehensive risk management approach to development is therefore key to reducing climate-related losses.

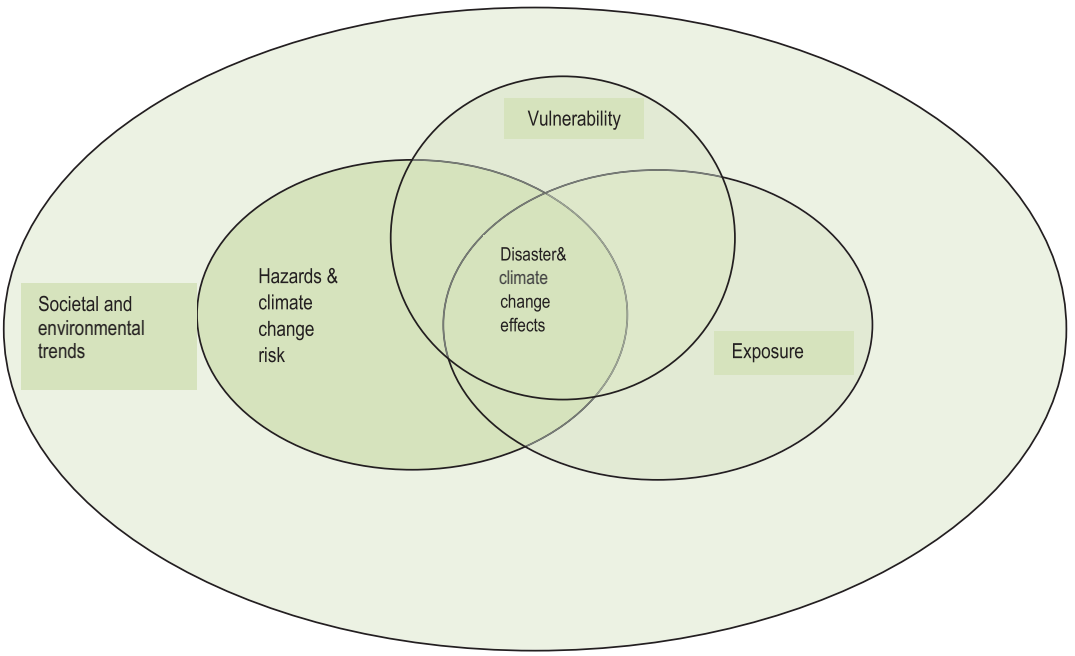


Figure 9: Disaster as a product of exposure and vulnerability to hazards or effects of climate change (adapted from Turnbull et al., 2013)

4.2 Guiding Principles

This framework will contribute to the overall goal of a climate-resilient nation, with climate risk management integrated in relevant policies, institutions and implementation frameworks at county and national level. It is guided by the principles of good practice developed by disaster risk reduction and climate change adaptation practitioners, and the significant degree of convergence in the lessons, recommendations and challenges emerging from these two spheres of activity.

There are now ten widely accepted principles for an integrated approach to disaster risk reduction and climate change adaptation (Turnbull et al, 2013):

1. Increase understanding of the hazard and climate change context.
2. Increase understanding of exposure, vulnerability and capacity.
3. Recognize rights and responsibilities.
4. Strengthen participation of, and action by, the population at risk.
5. Promote systematic engagement and change.
6. Foster synergy between multiple levels.
7. Draw on and build diverse sources of knowledge.
8. Instill flexibility and responsiveness.
9. Address different time scales
10. Do no harm.

These principles provide practitioners with a set of criteria for building disaster and climate resilience that is applicable across the programme cycle, in multiple sectors and in varied contexts. This framework draws on these to use six guiding principles which are shown in Figure 10.

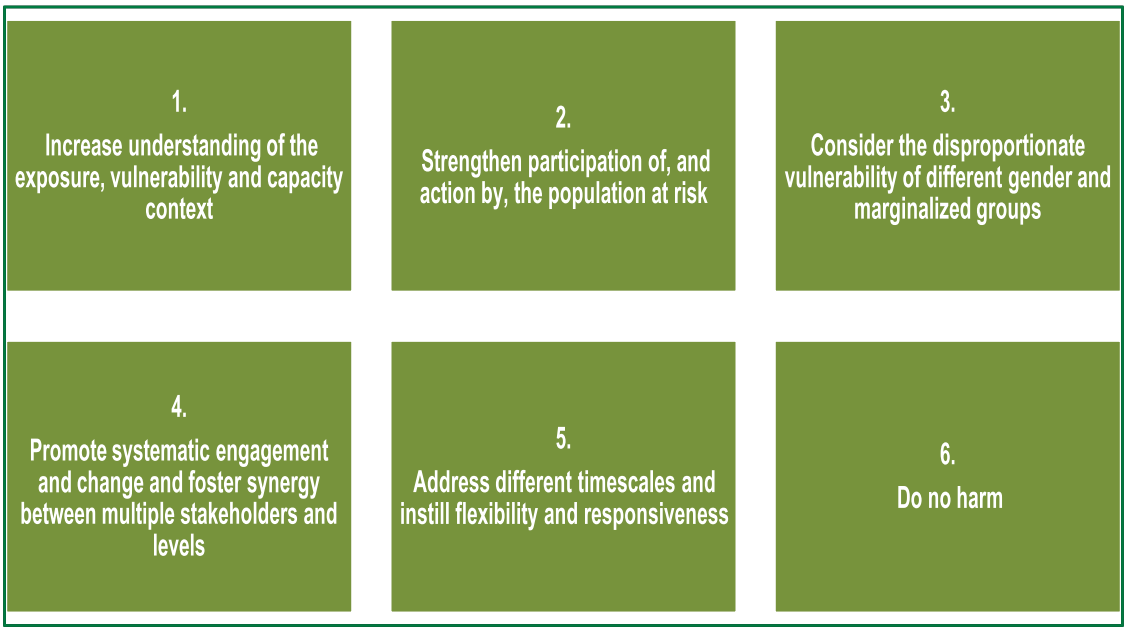


Figure 10: Guiding principles for integrated climate risk management framework

1. ***Increase understanding of the exposure, vulnerability and capacity context:*** Actions to build disaster and climate resilience should be informed by an understanding of past trends, present experiences and future projections of hazard occurrence, climate variability and the effects of climate change. Participatory risk analysis will enhance stakeholder understanding of the causes of exposure, vulnerability and capacity, through both the nature of the participatory process and the subsequent sharing of results.

2. ***Strengthen participation of, and action by, the population at risk:*** All people at risk have the right to participate in decisions that affect their lives. Their first-hand knowledge of the issues affecting them is critical to ensuring that analysis and subsequent actions are based on empirical evidence. The sustainability of resilience-building strategies also depends on their ownership and agency. All decision-making processes and actions will directly involve the population at risk, ensuring that women, men and children, as well as high-risk groups, are included.

3. ***Consider the disproportionate vulnerability of different gender and marginalized groups:*** Gender is an important determinant of adaptive capacity. Women, the youth and children often make up a large number of the poor in communities that depend on the natural resource base for their livelihoods. As a result they are disproportionately vulnerable to and affected by climate change. Moreover, because of their roles, unequal access to resources and limited mobility, women and girls are often disproportionately affected by disasters. This framework proposes gender-sensitive strategies for responding to the environmental and humanitarian crises caused by climate change.

4. ***Promote systemic engagement and change and foster synergy between multiple stakeholders and levels:*** Multi-sectoral and multi-stakeholder engagement is needed to ensure that building disaster and climate resilience is central to development planning. The commitment of all actors to this goal should be reflected in their respective policies, plans and budgets. The importance of an enabling political environment is critical to actions taken at the household, community and local levels. Similarly, the impact of a policy or law depends on its implementation by different levels of government and its relevance to the population at risk. Decisions and actions taken at each level should therefore be mutually informative and facilitate a coherent and coordinated approach.

5. ***Address different time scales and instill flexibility and responsiveness:*** Analysis of disaster and climate change risk should be responsive to emerging knowledge. This is because the effects and impacts of climate change remain uncertain, particularly on a local scale, and because many processes that affect exposure and vulnerability, such as urbanization and environmental degradation, are dynamic. Similarly, strategies and programmes to build disaster and climate resilience should be sufficiently flexible to accommodate new inputs. The framework proposes continuous situation analysis and interventions that address both current risks and likely future scenarios.

6. ***Do no harm:*** Strategy and programme development should identify any potential negative impacts, such as those that contribute to conflict or damage the environment. In cases where potential harm is identified, measures to substantially reduce or remove it should be integrated into programming. In order to avoid creating a false sense of security, or promoting maladaptation, programmes should always be based on an assessment of multiple hazards and effects. A do no harm assessment will be integrated in all strategies, programmes and actions at all levels of operation.

4.3 Focus Areas

The framework has ten focus areas that together apply its six guiding principles. The objectives of these are as follows:

1. ***Institutional framework:*** To harmonize programmes and projects and create a coordination mechanism.

2. ***Policy framework:*** To create an enabling policy and legal framework for integrated climate risk management.

3. ***Capacity building:*** To build capacity at national and county level for integrated climate risk management.

4. ***Exposure, vulnerability and capacity:*** To analyze the level of exposure, vulnerability to disasters, and capacity at the local scale.

5. ***Gender mainstreaming:*** To involve communities at risk, and consider gender and marginalized groups.

6. ***Resource mobilization:*** To mobilize resources for climate risk management.

7. ***Mainstreaming climate risk management:*** To mainstream climate risk management into sector programmes, plans and activities.

8. ***Pilot projects:*** To design and implement pilot projects at county and national level.

9. ***Research, outreach and learning:*** To enhance research and dissemination of information about climate risk management.

Each of these is elaborated in Table 7, which lists the inputs required, the activities, outputs and expected outcomes, as well as the indicators for monitoring change.

Table7: Focus areas and activities for integrated climate risk management

Focus area	Objective	Input	Activity	Output	Output indicators	Outcome	Outcome indicators
1. Institutional framework	To harmonize programmes and projects and create a coordination mechanism.	• Meetings and workshops • Legal support (consultants) • Stakeholder mapping consultant	• Carry out stakeholder analysis • Establish coordination unit • Establish stakeholder forum	• Integrated climate risk management stakeholders mapped • Functional coordination unit • Active CRM stakeholder forum	• CRM forum meetings • Inter-agency/ inter-ministe-rial coordina-tion committee	• Coordinated CRM institutional framework	• Implementation and monitoring framework developed and applied • Range of agencies actively participating in the framework
2. Policy framework	To create an enabling policy and legal framework for integrated climate risk management.	• Meetings and workshops • Policy and legal consultants • Scoping of policies (consultant) • Champions for integrated climate risk management	• Review existing policies for both DRR and CCA • Enact legislation for DRR and CCA • Harmonize sector policies	• Policy analysis of CRM • CRM legislation • Harmonized policies for CRM	• CRM incorporated in existing draft DRM Policy and Bill	• CRM policy framework	• Number of national, county and sector policies implementing CRM • CRM in MTP
3. Capacity building	To build capacity at national and county level for integrated climate risk management.	• Meetings and workshops • Institutiona l capacity assessment (consultant) • Trainers • Materials • Facilities	• Develop approaches and tools for integrated CRM • Develop and implement training programmes • Build institutional capacity and capabilities	• CRM tool kit • CRM training materials • CRM specialized institutions	• Number of personnel trained in CRM • Number of institutions equipped/fa cilitated to address CRM	• Critical mass of CRM specialized institutions	• CRM approach used at community and county levels

Focus area	Objective	Input	Activity	Output	Output indicators	Outcome	Outcome indicators
4. Exposure, vulnerability and capacity	To analyze the level of exposure, vulnerability to disasters, and capacity at the scale local.	• Meetings and workshops • Resource persons • IT resources and experts • Media and other channels of information -sharing	• Identify vulnerable sectors and communities • Allocate budget for vulnerability assessment • Conduct capacity needs assessment • Create information sharing platform at county and national levels	• Vulnerability map • Budget allocation for assessment • Capacity status report • Information-sharing platform	• Number of vulnerability maps • Number of capacity status reports • Amount of funds allocated for situation analysis • Number of institutions accessing the information-sharing platform	• Evidence-based decisions • Risk and vulnerability context	• Climate-sensitive CRM strategies used at various levels
5. Gender mainstreaming	To involve communities at risk, and consider gender and marginalized groups .	• Meetings and workshops • Consultant to identify disproportionate gender vulnerability	• Create awareness and build the capacity of communities and marginalized groups to gather evidence to inform decisions on CRM	• Informed community • Information on hazards gathered by community to guide action	• Number of communities sensitized and trained	• Communities capable of influencing decisions in their favour • Community ownership of CRM projects and activities	• Community-based CRM projects • Gender-sensitive CRM strategies and actions
6. Resource mobilization	To mobilize resources for climate risk management.	• Meetings and workshops • Consultant to map existing and funding sources	• Consolidate existing resources for better CRM • Mobilize new and additional funding for CRM	• Resource mobilization strategy	• Amount of funds allocated for CRM	• Sufficient resources for CRM	• Operational budgets for CRM (20 years) with planning

Focus area	Objective	Input	Activity	Output	Output indicators	Outcome	Outcome indicators
7. Mainstrea-ming climate risk management	To mainstream climate risk managemen tinto sector programmes, plans and activities.	• Meetings and workshops • Consultant to identify gaps and opportunities for CRM • M&E unit	• Reviewprog rammes, plans and activities • Develop a results framework • Monitor programmes, plans and activities	• CRM included in plans, programmes and activities • Results framework • Effective programming of CRM at county and national level	• Number of MDAs with CRM incorporated in their policies, programmes and work plans	• CRM mainstreamed into plans and programmes	• Sectors implementing policies, plans, programmes and workplans that mainstream CRM
8. Pilot projects	To design and implement pilot projects at county and national level.	• Meetings and workshops • Proposal development workshop • Consultant • M&E framework • Materials • Documenta-tion • Pilot projects	• Design and implement pilot projects at county and national levels • Monitor and document lessons and best practices and feed these back to institutions and policy frameworks	• CRM standard operating procedures (SOPs) • CRM best practices documented • Pilot projects implemented	• Standard operating procedures document • Reports on best practices and lessons learnt • Number of MDAs using the SOPs	• CRM lessons learned and feedback	• Uptake of best practices and programmes at national and county levels

Focus area	Objective	Input	Activity	Output	Output indicators	Outcome	Outcome indicators
9. Research, outreach and learning	To enhance research and dissemination of information about climate risk management.	• Meetings and workshops • Development of CRM curriculum at different levels (academic) • Resource persons • IT resources and experts • Media and other channels of dissemination	• Identify research needs and gaps on CRM issues • Allocate budget for research activities • Create an information-sharing platform at both county and national level • Disseminate research outputs	• CRM training and research strategy • CRM research funding established • CRM communication strategy	• Number of CRM-related research projects • Number of academic institutions that have mainstreamed CRM into their curricula • CRM information-sharing platform • Amount of funds allocated for CRM research • CRM communication strategy	• Evidence-based planning and implementation of CRM	• Knowledge management system and resources to support CRM • Projects and training programmes developed

CHAPTER 5: INSTITUTIONAL ARRANGEMENTS FOR CLIMATE RISK MANAGEMENT

This framework is concerned with complex phenomena that can only be addressed through collaborative and coordinated efforts by local and international actors. Disaster and climate change risks have locally specific features which must be understood in order to identify the appropriate measures to manage them. And in a context of increasing global inter-dependence, concerted international cooperation can stimulate and help develop the necessary knowledge, capacity and motivation for climate risk management at all levels of operation. This therefore calls for collaboration between government institutions, the private sector, development partners and other stakeholders, including communities, and strong structures for coordination and communication.

Disaster risk reduction and climate change adaptation have until now been handled separately by different ministries, departments and agencies. This creates overlapping mandates and constrains timely action. Table 8 illustrates the wide range of institutions involved in the interventions listed in Table 7, and indicates where leadership will lie.

The NDMA and the Climate Change Directorate will take the lead in implementing this framework, working closely with a range of partners including the NDOC, the State Department for Planning, the county governments, civil society organizations and the private sector. Civil society organisations play important roles in awareness creation and community mobilization, while the private sector is critical for resource mobilization, dissemination of technology and investment in areas of development that enhance climate resilience.

Table 8 : Proposed institutional arrangements for implementation of ICRM

Focus area / objectives	Ministries	Departments / Agencies
1. ***Institutional framework:*** To harmonize programmes and projects and create a coordination mechanism.	Ministry responsible for Devolution and Planning; Environment; Interior.	▪ NDMA ▪ Climate Change Directorate ▪ NDOC ▪ NDMU ▪ Directorate of Special Programmes ▪ NEMA (enforcement of EMCA 2015 , resource mobilization)
2. ***Policy framework:*** To create enabling policy and legal frameworks for integrated climate risk management.	Ministry responsible for Devolution and Planning; Environment; Interior.	▪ NDMA ▪ Climate Change Directorate ▪ NDOC ▪ NDMU ▪ Directorate of Special Programmes ▪ NEMA (enforcement of EMCA 2015 , resource mobilization)
3. ***Capacity building:*** To build capacity at national and county level for integrated climate risk management.	Ministry responsible for Devolution and Planning; Environment; Interior; Agriculture, Livestock and Fisheries; Water; Energy; Higher Education. County Governments.	▪ NDMA ▪ Climate Change Directorate ▪ NDOC ▪ NDMU ▪ Directorate of Special Programme s ▪ NEMA ▪ Universities ▪ KMD
4. ***Exposure, vulnerability and capacity:*** To analyze the level of exposure, vulnerability and capacity at the local scale.	Ministry responsible for Devolution and Planning; Environment; Interior; Agriculture, Livestock and Fisheries; Water; Energy; Higher Education. County Governments.	▪ Climate Change Directorate ▪ NDMA ▪ KMD ▪ Universities
5. ***Gender mainstreaming:*** To involve communities at risk and consider gender and marginalized groups.	Ministry responsible for Gender and Youth Affairs; Devolution and Planning. County Governments.	▪ National Gender and Equality Commission ▪ NDMA ▪ Climate Change Directorate ▪ Universities

6. ***Resource mobilization:*** To mobilize resources for climate risk management.	Ministry responsible for Devolution and Planning; Environment; Interior; Finance. County Governments.	▪ National Treasury ,in collaboration with the private sector and development partners ▪ NDMA ▪ NEMA ▪ Climate Change Directorate
7.***Mainstreaming climate risk management:*** To mainstream climate risk management into sector programmes, plans and activities.	Ministry responsible for Devolution and Planning; Environment; Interior; Agriculture, Livestock and Fisheries; Water; Energy; Higher Education. County Governments .	▪ State Department of Planning ▪ Climate Change Directorate ▪ NDMA ▪ NEMA ▪ KMD
8.***Pilot projects:*** To design and implement pilot projects at county and national levels.	Ministry responsible for Devolution and Planning; Environment; Interior; Agriculture, Livestock and Fisheries; Water; Energy; Higher E ducation. County Governments.	▪ NDMA ▪ Climate Change Directorate ▪ NEMA ▪ KMD ▪ NDOC ▪ NDMU ▪ Universities
9.***Research, outreach and learning:*** To enhance research and dissemination of information about climate risk management.	Ministry responsible for Higher Education; Devolution and Planning; Environment; Interior; Agricul ture, Livestock and Fisheries; Water; Energy. County Governments.	▪ Universities ▪ NDMA ▪ Climate Change Directorate ▪ NEMA ▪ KMD ▪ NDOC ▪ NDMU

CHAPTER 6: RESOURCES MOBILIZATION AND MONITORING AND EVALUATION

6.1 Resource Mobilization

Resources will be mobilized from national and county budgets, green funds and adaptation funds. This will require synergy between government institutions in order to avoid replication. Additional resources will be needed, and one of the best means to do this is to promote dialogue between policy-makers and practitioners to understand the framework in order to influence budgetary allocations. The involvement of the private sector will also be important. However, while additional funds will clearly be needed to implement the framework in full, some progress can be made by using existing resources more efficiently.

6.2 Monitoring And Evaluation

In order to track the progress of implementation, monitoring and evaluation will be conducted on the basis of the indicators in Table 7. This process will be coordinated by the NDMA, the National Climate Change Council, the Climate Change Resource Centre, and universities. Monitoring and evaluation will be done on a regular basis to track progress made in integrating climate risk management in policies, programmes, strategies and actions at national and county levels. Findings, lessons learnt and best practices will be shared through workshops and published reports.

ANNEXES

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ANNEX 3: GLOSSARY

Adaptive capacity (in relation to climate change impacts)The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC, 2007).

Climate change	A change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. (IPCC, 2014).
Climate change management	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. (IPCC, 2014).
Climate risk adaptation	The culture, processes and structures directed towards realising potential opportunities whilst managing the adverse effects of climate. The two major forms of climate risk management are the mitigation of climate change through the abatement of greenhouse gas (GHG) emissions and GHG sequestration, and adaptation to the consequences of a changing climate. (IPCC, 2007).
Climate variability	Variations in the mean state and other statistics (such as standard deviations or the occurrence of extremes) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability maybe due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability). (IPCC, 2007).
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. (UNISDR, 2009).
Disaster risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period. (UNISDR, 2009)
Disaster risk management reduction	The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster. (UNISDR, 2009).

Disaster risk	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. (UNISDR, 2009).
Exposure	The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected. (IPCC, 2014).
Hazard	A potentially damaging physical event, phenomenon or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. (UNISDR, 2009).
Hydrometeoro-logical	A process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause loss or damage. Hydrometeorological hazards include floods and drought and can also be a factor in other hazards such as landslides and fires. (UNISDR, 2009).
Resilience	The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation. (IPCC, 2014).
Sensitivity	The degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g. a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g. damages caused by an increase in the frequency of coastal flooding due to sea-level rise). (IPCC, 2007).
Vulnerability	The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. (IPCC, 2014).

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