

## Climate Change Vulnerability and Adaptation Preparedness in Kenya

Africa has contributed very little to global warming, but it will be affected severely by climate change. While the continent has a role to play in the mitigation of greenhouse gas emissions, Africa's major focus is on issues of adaptation. In order to address the challenges of adaptation to climate change, African countries need substantial financial resources. At the same time, they require information systems, technical capacity, and the right policies and institutions. The governance of climate change adaptation is as important as its finance.

This study gives an overview about Kenya's efforts to address the challenges of adaptation to climate change so far. It provides information on existing policies and maps institutions and main actors in a rapidly emerging policy area influenced by a wide array of actors and interests.

The study constitutes a snapshot into the state of adaptation preparedness in East Africa, as at mid-2010. It shows what Kenya has already achieved in this regard. But it also identifies "loose ends" and problems, many of which are similar and related to issues encountered in governance and development policy debates more generally.

This volume forms part of a series of three studies (on Kenya, Tanzania, and Uganda, respectively) commissioned by the Heinrich Böll Foundation's Regional Office in Nairobi, Kenya. The studies should be of interest to everybody working in the area of climate change in East Africa – to those who seek general information and orientation in the field, as well as to experts already working towards a sound response to climate change in the region.

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Kristen Wanyatma

**Climate Change  
Vulnerability  
and Adaptation  
Preparedness in  
Kenya**

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Camco Advisory Services (K) Ltd. is part of Camco Global, a leading international climate change and energy company providing specialist expertise and experience to help deliver sustainable development solutions. These range from support on climate change and energy policies, to planning and design of sustainable energy systems (for buildings or communities), to the implementation of renewable energy services and sustainable land use projects, and to carbon origination and qualification (in both voluntary and compliance markets). We have a wealth of experience in Africa, working with governments, multilateral institutions such as the World Bank, UNEP, UNDP, the private sector, non-governmental institutions and others where we have successfully delivered a number of climate change/energy projects. These include, among others past/completed projects such as the National Climate Change Response Strategy (NCCRS) (Kenya); the World Bank's Lighting Africa (Kenya phase); the Kagera Community Carbon (Tanzania); as well as ongoing projects like REDD+ in Tanzania and Kenya; Rwanda Sustainable Charcoal; and NCCRS (Zambia), among others.

# Preface

Africa has contributed very little to global warming, but it will be affected severely by climate change. While the continent has a role to play in the mitigation of greenhouse gas emissions, Africa's major focus is on issues of adaptation. In order to address the challenges of adaptation to climate change, African countries need substantial financial resources. At the same time, they require information systems, technical capacity, and the right policies and institutions. The governance of climate change adaptation is as important as its finance.

The provision of financing for adaptation has become a major issue in international climate policy. While the UNFCCC COP 15 in Copenhagen, in December 2009, did not arrive at bidding agreements, the "Copenhagen Accord" promises substantial finance in the years to come. At the same time, African countries have begun to establish and extend systems, institutions and policies designed to deal with climate change adaptation.

This study gives an overview about Kenya's efforts to address the challenges of adaptation to climate change so far. It provides information on existing policies and maps institutions and main actors in a rapidly emerging policy area that is influenced by a numerous actors and interests. The study constitutes a snapshot into the state of adaptation preparedness in East Africa, as at mid-2010. It shows what Kenya has already achieved in this regard. But it also identifies problems, many of which are similar and related to issues encountered in governance and development policy debates more generally.

The studies should be of interest to everybody working in the area of climate change in East Africa – to those who seek general information and orientation in the field, as well as to experts already working towards a sound response to climate change in the region.

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# Executive Summary

This Heinrich Böll Foundation's study was commissioned to look into Kenya's vulnerability to climate change impacts and its preparedness to deal with those impacts. The study was commissioned and completed between March and April, 2010.

## Vulnerability assessment

Vulnerability assessment consisted of analysing both past and projected climate change impacts on different sectors, namely natural (ecological); economic; social and physical infrastructure. The analysis showed that climate change has and will severely impact the country. The country's economic and livelihood systems are highly dependent on natural resources, which are very sensitive to any slight changes in climatic conditions. This makes the country very vulnerable to climate change.

An example of the country's vulnerability to climate change is the spread of climate-sensitive diseases such as malaria to new, higher altitude zones (e.g., Kericho, Nairobi) where the disease is not known to be endemic. Other impacts deduced include increasingly intense and frequent drought episodes, successive seasons of crop failure, dwindling energy resources (drying biomass, sub-optimal electricity production capacity during droughts), increased flood episodes with detrimental impacts on the physical infrastructure (roads, telecommunication, railways, ports) and on social settings (e.g. mortality and displacement by landslides, mudslides and submergence of homes), increased climate-induced migrations (e.g. rural-urban migration), diminishing pasturelands

due to droughts, i.e. desertification, and scramble over diminishing resources (e.g. droughts that push pastoralists to drive their animals to farmlands), among others.

Further, climate change has also been noted to present challenges to the country that are beyond its control, e.g. the issue of carbon footprints/food miles that is likely to impact negatively on the country's horticultural industry. Primarily, fresh produce consumers in Europe where most of the fresh produce of Kenya is exported are increasingly demanding products with lower carbon footprints.

A principal determinant of carbon-footprints is the distance (air-miles) that products have to cover between the production point (Kenya in this case) and the point of sale (Europe in this case). The longer the distance, the larger the footprints, although there are some factors considered too, e.g. the resource intensive nature of the production process. Nevertheless, there are fears that Kenya's fresh produce could suffer immensely from measures in Europe to reduce carbon footprints of fresh produce. Already, some retail chains such as Marks and Spencer have reportedly started importing fresh produce from North Africa because of the close proximity of North Africa to Europe. The tourism industry is also another important sector to the country's economy that could feel the greatest repercussions of the carbon-footprints debate.

The economic impact of these climate change threats to the country is enormous. A recent study by the Stockholm Environment Institute (SEI) on the Economics of climate change in Kenya revealed that the future economic costs of the impacts of climate change on market and non-market sectors might be close to 3% of GDP per year by 2030 and potentially much higher than this (more than 5% of GDP per year) by 2050.

Vulnerability assessment has also covered gender disparities, where it has been argued that in many parts of the world including Kenya, women constitute the population most vulnerable to climate change and climate variability due to certain inequitable conditions and situations (vulnerability factors) that place them at risk. Empirical evidence shows that they suffer a greater impact in a disaster or emergency. Economic losses have a disproportionate effect on economically vulnerable women. Changes in the workload suggest that disasters

increase women's responsibilities in the domestic scene, in many paid and unpaid workplaces in the formal and informal sectors and in the community during the stages of preparation and mitigation (pre disaster), as well as in the reconstruction stage (post-disaster). In the post-disaster stage there may also be high levels of violence against women. Further, men frequently emigrate in search of work during a post-disaster stage, leaving a gross part of the processes of response and reconstruction in women's hands.

## Kenya's preparedness to deal with climate change impacts

Following vulnerability assessment, an analysis of Kenya's preparedness to deal with the observed and potential (projected) climate risks/threats has been performed. The following factors have been considered:

- The current climate change governance (policy, legal and organisational/institutional) framework,
- The level of climate change awareness in Kenya, and
- The political framework that could be helpful in advancing climate change agenda.

The results of the analysis are described below:

## Policies, legislation and institutions

So far the country cannot be said to have made adequate effort to formulate policies and legislations to address climate change. The only policy that has significant climate change provisions is the yet to be approved draft National Environmental Policy. Even then the policy cannot be said to have strong provisions on climate change adaptation and mitigation. Its main and probably the strongest provision is a proposal that Kenya develops a climate change response strategy. This has since been implemented. The other environmental policies are equally weak -- the energy policy, the forest policy and the ASAL policy, all lean towards environmental management, yet climate change is a concern that is beyond environmental management. Although the formulation of the National Climate Change Response Strategy is a positive step towards addressing climate change, there is need for strong policies that address mitigation and adaptation, giving guidelines on integration and mainstreaming of these into our sectors and institutions. In order to effectively and efficiently

combat the impacts of climate change, a strong policy has got to be enacted first before legislation. It does not bode well for the country that there is a Parliamentary Motion to discuss a climate change law before a policy has been developed. The lessons we have learnt with the implementation of EMCA, 1999 without a proper policy should not be repeated.

There are a substantial number of institutions in Kenya currently working on climate change issues. These include Government ministries and institutions such as the Ministry of Environment and Mineral Resources (MEMR), Ministry of Forestry and Wildlife (MoF&W), the National Environmental Management Authority (NEMA), the Climate Change Coordination Unit (CCCU) at the Prime Minister's Office (PMO), and several government parastatals and departments; international Non-Governmental Organisations (NGOs), United Nations (UN) and related bodies; regional NGOs and corporations; national NGOs and Community Based Organisations (CBOs); development partners; the private sector; civil society organisations; and research and academic institutions.

But the efforts of these organisations towards addressing climate change have so far not been coordinated, leading to among others, duplication of efforts. There is therefore an urgent need to establish a mechanism that would coordinate climate change activities in the country. The just completed National Climate Change Response Strategy (NCCRS) has proposed the creation of a dedicated Climate Change Secretariat at the Ministry of Environment and Mineral Resources to oversee and coordinate the country's climate change activities.

It is therefore mandatory to put in place policies and institutions that will address and prepare the country to handle the projected impacts of climate change. Strong institutions are essential not only in the implementation of the just completed NCCRS but also in the formulation and implementation of policies that directly address climate change concerns such as adaptation and mitigation.

## Climate change awareness

Climate change awareness is low countrywide, particularly, among the rural folk, who also happen to be the most vulnerable to the adverse impacts of

climate change because of their high dependency on climate-sensitive natural resources and high poverty rates. This calls for enhanced climate change awareness in a simplified language and manner understandable to different groups (women and youth, disabled, farmers and pastoralists, etc) so that they can be better prepared to deal with the problem. Further, it is important to create awareness programmes that target those with some knowledge of climate change to help them take advantage of the opportunities that climate change brings. This will involve for instance, bringing the attention of the business community to the existence of mechanisms such as the Clean Development Mechanism and the Reduced Emissions from Deforestation and Forest Degradation Plus (REDD+) and further explaining how these mechanisms work. These new areas could be of vital benefits to a developing country such as Kenya.

#### *Political framework*

So far, only a handful of high-profile personalities have been (are) engaged in climate change issues. These include the Prime Minister of Kenya, Hon Raila Odinga (especially since his ascension to his current position; credited with efforts to restore the Mau Forests, diplomatic approach to international issues including climate change, climate change one of his top priorities as evidenced in his speeches locally and on his visits abroad and further in the creation of the Climate Change Coordination Unit (CCCU) in his office); Professor Wangari Maathai (internationally recognised environmentalist, winner of the 2004 Nobel Peace Prize, author of a number of commentaries and books on environment and climate change); Hon. John Michuki, current minister, MEMR (especially since his appointment to the ministry, overseen the development of the aforementioned NCCRS); and Professor Richard Odingo, a professor of Hydrology/Climatology at the University of Nairobi (was a co-vice chair of the IPCC Working Group 2 (WGII) in 1992; co-vice chair of the WGIII in 1994 and co-vice chair of the whole of the IPCC since 1997. He has in fact, been involved with the organization since its inception in 1988).

However, there is need for more high-profile Kenyan personalities to get involved in climate change matters. In particular, well-known personalities in the entertainment, sports and media industries (“celebrities”) could be effective agents for communicating climate change and should be used as such. There is also need to make sure that Kenya’s position on climate change is debated among stakeholders in order to get a broader and shared view of her position.

In conclusion, for the country to be said to be ready to absorb and use effectively additional adaptation funding, there is need for adequate climate change policy and legislation to be put in place. These should be accompanied by a good implementation framework that ensures that funds are directed to vulnerable sectors, and are accounted for in a transparent manner. This is partly because although the country has put in place environmental policies and legislation, the implementation is poor. A climate change policy and law could face similar fate.

There is increasing concern and debate in Kenya around problems of governance and corruption, which ought to be tackled by new institutions. Kenya’s overall perception (by both locals and internationals) is that it is corrupt and therefore funding will not reach intended projects. Some donor agencies are seriously looking to channel their funding through other non-state actors such as the private sector. Despite massive corruption and inefficiency in government, the country has been making development strides driven by a hard working private sector, civil society, NGOs and individuals.

Luckily for Kenya, non-state actors, especially private sector and individual enterprises have not only always been ahead of government but provided leadership to the extent that the government has followed. For instance, renewable energy has always been championed by private sector, it is only in 2004 and 2006 that the government developed policies and legislation respectively. Renewable energy industries were able to link with global systems (both private sector and foreign governments) to avail solar, wind turbines, etc to the people. Government jumped in when it realized that there is money to be made and the world is going green!

Climate change could go the same way. Private sector through land use activities such as REDD, sustainable biomass development for agro-industries, clean energy/

technology, efficient motor industries could link up with appropriate global systems, obtain funding for adaptation and mitigation and government will surely follow. However, having said that, the government gets its mandate to govern all resources from the people, it is only logical that in the light of climate change threat, the pressure for demand of good governance of resources should be doubled and relentlessly pursued.



## Acronyms

ACTS	African Centre for Technology Studies
AFREPREN	African Renewable Energy Policy Research Network
AMCEN	Africa Ministerial Conference on Environment
ANAFE	Africa Network for Agriculture, Agro-Forestry and Natural Resources Education
ASAL	Arid and Semi-Arid Areas
ATPS	African Technology Policy Studies
AU	African Union
CBO	Community-Based Organization
CC	Climate Change
CCA & ER Bill	Climate Change Adaptation and Emission Reduction Bill
CCCU	Climate Change Coordination Unit
CDM	Clean Development Mechanism
CO <sub>2</sub>	Carbon Dioxide
COP	Conference of the Parties
CORDIO	Coastal Oceans Research and Development – Indian Ocean
CriSTAL	Community-based Risk Screening Tool – Adaptation & Livelihoods
CSTI	Centre for Science and Technology Innovations
CV	Climate variability
DNA	Designated National Authority
DoE	Directorate of Environment
DSRS	Department of Resource Survey and Remote Sensing
EABL	East African Breweries Limited
EMCA	Environmental Management and Coordination Act
ENSO	El Niño-Southern Oscillation
ERC	Energy Regulatory Commission
ERS	Economic Recovery Strategy for Wealth creation
EU	European Union
FAN	Forest Action Network
FAO	Food and Agricultural Organization
FINNIDA	Finnish International Development Agency
GBM	Green Belt Movement
GDC	Geothermal Development Company
GDP	Gross Domestic Product
GHG	Green House Gases
GoK	Government of Kenya
GWh	Gigawatt hour
HBf	Heinrich Böll Foundation
ICIPE	International Centre of Insect Physiology and Ecology

ICPAC	IGAD Climate Prediction and Application Centre
IDRC	International Development Research Centre
IEG	International Environmental Governance
IFAD	International Food and Agricultural Development Organization
IGAD	Intergovernmental Authority for Development
IISD	International Institute for Sustainable Development
ILRI	International Livestock Research Institute
IMCE	Inter-Ministerial Committee on Environment
IPCC - WG II	Inter-governmental Panel on Climate Change – Working Group Two
IPCC - WG III	Inter-governmental Panel on Climate Change- Working Group Three
IPCC	Inter-governmental Panel on Climate Change
IPPs	Independent Power Producers
IUCN	International Union for Conservation of Nature
JICA	Japanese International Cooperative Agency
KAM	Kenya Association of Manufacturers
KARI	Kenya Agricultural Research Institute
KCCWG	Kenya Climate Change working group
KEFRI	Kenya Forestry Research Institute
KenGen	Kenya Electricity Generation Company
KFS	Kenya Forest Service
KFWG	Kenya Forest Working Group
KIRDI	Kenya Industrial Research and Development Institute
KMC	Kenya Meat Commission
KMD	Kenya Meteorological Department
KMFRI	Kenya Marine & Fisheries Research Institute
KNCPC	Kenya National Cleaner Production Centre
KTDA	Kenya Tea Development Agency
KTN	Kenya Television Network
KWS	Kenya Wildlife service
LDCs	Least Developed Countries
LULUCF	Land use land use change and forestry
MDGs	Millennium Development Goals
MEMR	Ministry of Environment and Mineral Resources
MENR	Ministry of Environment and Natural Resources
MoE	Ministry of Energy
MoF & W	Ministry of Forestry and Wildlife



MoP	Ministerial of Parties
MPs	Members of Parliament
MT	Metric Tonne
MTEF	Medium Term Expenditure Framework
MW	Megawatt
NAF	National Adaptation Facility
NAPA	National Adaptation Programmes of Action
NASCOP	The National AIDS/STD Control Programme
NCCACC	National Climate Change Activities Coordination Committee
NCCFP	National Climate Change Focal Point
NCCRS	National Climate Change Response Strategy
NCPCs	National Cleaner Production Centres
NCs	National Communications
NCSA	National Capacity Needs Self-Assessment
NDP	National Development Plan
NE	North Eastern Province
NEAP	National Environment Action Plan
NEMA	National Environment and Management Agency
NEP	National Environment Plan
NEPAD	New Partnership for Africa's Development
NES	National Environment Secretariat
NGO	Non-governmental Organization
NOC	National Disaster Operations Centre
NPGD	National Policy on Gender and Development
NRE	New and Renewable Energy
NRM	Natural Resource Management
OP	Office of the President
PACJA	Pan African Climate Justice Alliance
PANERECC	Parliamentary Network on Renewable Energy and Climate Change
PC-ECPW	Parliamentary Committee on Energy Communication and Public Works
PEV	Post-election Violence
PM	Prime Minister
PS	Permanent Secretary
PVs	Photovoltaics
RDE	Research Development & Education

REDD	Reducing Emissions from Deforestation and Forest Degradation
RM	Risk Management
RVF	Rift Valley Fever
SIDA	Swedish International Development Agency
UN	United Nations
UNDP	United Nations Development Programme
UNEP-GEF	United Nations Environment Programme-Global Environment Facility
UNESCO	United Nations Education, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UN-Habitat	United Nations Human Settlements Programme
UNIDO	United Nations International Development Organization
USAID	United States Agency for International Development
WAF – AHI	World Agroforestry Centre – African Highlands Initiative
WB	World Bank
WEDO	Women and Environment Development Organization
WWF	Worldwide Fund for Nature

# One: Introduction

## The study

This study was undertaken as part of the project “Climate Change Vulnerability and Adaptation Preparedness in Eastern Africa” of the Heinrich Böll Foundation (HBF). The project itself is part of the foundation's work on climate change in Africa. The study focused on Kenya's vulnerability to and the state of her adaptation preparedness for climate change impacts.

The aim of the project is to evaluate, by way of case studies, the level and state of preparedness for climate change adaptation in Kenya as a way of justifying the need for new and additional financial support for adaptation by state and non-state climate change actors.

## The study's rationale

Despite its insignificant contribution to global warming, Africa is one of the regions most vulnerable to the adverse impacts of climate change. The continent's high vulnerability stems from many factors that have continually plagued it including poverty, weak institutions, poor infrastructure, lack of information, poor access to financial resources, low management capabilities, armed conflicts, poor governance as well as lack of or inadequate policies to respond to the impacts of climate change. To add to these, many African countries are situated where extremes of climate variation such as drought and unpredictable rainfall patterns, coupled with famine and related humanitarian disasters, are already being experienced. Climate change is expected to add to these extremes, with the poorest communities least equipped to cope.

African countries therefore have a genuine cause for demanding new and additional adaptation funds. Further, the African negotiating bloc has always demanded that such funds be anchored on a financial instrument dedicated to adaptation, e.g. the recently created Adaptation Mechanism under the Copenhagen Accord. While details on how and how much funds will be made available for adaptation finance as well as the arrangements by which these funds will be administered are still emerging, it is clear that in order to make a strong point in negotiating for adaptation finance, African countries will have to prove that they are able to utilise adaptation funding efficiently and transparently, and for the purpose it was intended. Therefore the need for adaptation preparedness (climate change awareness, clear information on what programmes and projects need funding, adequate capacity, i.e., well-trained climate change personnel, strong policies and institutions, etc) is crucial.

African countries are required to report their vulnerabilities to the impacts of climate change and adaptation needs under the United Nations Framework Convention on Climate Change (UNFCCC) through National Communications. Many African countries have made commendable strides with regard to preparing National Communications. Kenya for example, submitted to the UNFCCC its first National Communication in 2002, and is in the process of preparing the second.

In addition to the National Communications (NCs), least developed countries (LDCs) are required to develop National Adaptation Programmes of Action (NAPAs) detailing their vulnerabilities to climate change impacts and the actions they envisage taking to ameliorate these impacts. Kenya is not classified as an LDC and therefore does not have a NAPA, (though in the yet to be published National Climate Change Response Strategy (NCCRS), a National Adaptation Facility (NAF) has been created).

However, there are concerns that adaptation preparedness in many African countries, despite many of them having NAPAs and NCs, is still inadequate. In particular, NAPAs are said to be not easily implementable because they only list priority adaptation needs (in the form of programmes/projects) of a country but do not take into account the policy framework that governs adaptation (i.e. mainstreaming of adaptation into national

plans, etc.). Consequently, adaptation programmes and projects in many African countries are currently implemented as discreet (stand-alone) activities making them less effective.

This Heinrich Böll Foundation (East and Horn of Africa) commissioned study has attempted to shed light on the state and level of preparedness for adaptation to climate change in Kenya.

### Objectives of the study

The overall objective of this study is to analyse and report on Kenya's level of preparedness - in terms of adaptation policies and measures, institutional framework - that are in place to respond to the adverse impacts of climate change. The specific objectives of the study are outlined below:

- to assess the impacts of and vulnerability to climate change in Kenya
- to identify what climate change adaptation policies, plans, and strategies exist in Kenya, their genesis and appropriateness in relation to current knowledge of vulnerabilities at the national level
- to analyse who the main institutional actors involved in climate change adaptation policy are, and whether they have adequate capacity and efficacy to implement adaptation policies
- to assess the level of general public awareness of climate change, in particular, climate change adaptation, and
- to investigate and report on the role/s played by state and non-state actors from Kenya in international climate change negotiations.

### The study methodology

The study methodology consisted of literature review, desk review and analysis of secondary data. Sources of information included the Government of Kenya reports (development plans, policies, MTEF etc.), international reports (UN, World Bank, and International NGOs) and other relevant documents and scientific reports.

### Limitations

A main limitation of this study was the inadequacy of time and resources to help gauge public awareness of climate change. An ideal approach to understanding the public's level of awareness of climate change (or any issue for that matter) would be to carry out an opinion poll or survey. The time and resources allocated for this study could not allow such a survey to be carried out. Consequently, the study team opted to gauge public awareness of climate change based on the media coverage of the subject, which was complemented by the team's own observation during past climate change workshops in which the team has participated, in particular, the process of developing Kenya's National Climate Change Response Strategy (NCCRS).

## Two: Background: Country Profile and Vulnerability Analysis

### 2.1 Country profile

Kenya is located on the eastern part of the African continent. It lies across the equator at latitude of 4° North to 4° South and Longitude 34° East to 41° East. The country is bordered by Sudan and Ethiopia in the north. Somalia lies to the east of the country while Indian Ocean borders the country in the south-eastern part. To the southwest of the country lies Tanzania while to the west lies Lake Victoria and Uganda. The country has a total area of 582,650sq km including 13,400sq km of inland water and a 536km coastline.

#### Geographical characteristics

Kenya's geography is diverse and varied. The coast is a low-lying area and extremely fertile. It has a coral reef supported by a dry coastal plain that is covered by thorny bushes and savannah. The terrain of the country gradually changes from the low-lying coastal plains to the Kenyan highlands. The highest point of the country lies in Mount Kenya, which is 5,199m high.

The Great Rift Valley is located in the central and western part of the country and basically dissects the Kenyan highlands into east and west. The highlands have a cool climate and are known for their fertile soil, forming one of the major agricultural regions of the country. However, about 80% of the land area is Arid and Semi Arid. A large number of swamps are in the Loraine Plain, situated in the north-eastern part of the country.

There are also a number of lakes and rivers; most of the lakes are located in the Rift Valley. On the northern

part of the country is Lake Turkana. On the western part of the country is Lake Victoria. Other major Rift Valley lakes include Lake Naivasha and Lake Nakuru. The rivers Tana and Athi flow in the south-eastern part of the country while Nzoia, Yala and Gori, flow across the country before draining into Lake Victoria. Ewaso Ng'iro River is found in the north-eastern part of the country.

A few remnants of rainforests are found in the east of the country, including the Kakamega Forest and the Mau Forest.

Kenya is divided into seven agro-ecological zones ranging from humid to very arid. Less than 20% of the land is suitable for cultivation, of which only 12% is classified as high potential (adequate rainfall) agricultural land and about 8% is medium potential land. The rest of the land is arid or semi-arid. Furthermore, only 60% of the high potential land is devoted for crop farming and intensive livestock production while the rest is used for food and cash crop production, leaving the rest for grazing and as protected.

#### Climate

Kenya's climate is fairly warm throughout most of the country. Most of the country has a tropical climate. Exceptions to this are the coastal belt and the northern parts, which are generally arid and hot. It is hot and humid at the coast, temperate inland and very dry in the north and northeast parts of the country.

The average annual rainfall at the coast is 1200mm and the average daily temperature ranges from 27°C - 31°C. Nairobi, the capital city, has an altitude of 1,661m and has a temperature range of 14°C - 25°C. Eldoret is found in the Rift Valley at an altitude of 3,085m, with a temperature range of 10°C - 24°C. Lodwar, also in the Rift Valley but near the northern-most extremity is at an altitude of 506m above sea level, with a temperature range of 24°C - 35°C. There are 2 rainy seasons; the long rains occur from April to June and short rains from October to December. The rainfall is sometimes heavy and when it does come it often falls in the afternoons and evenings. The hottest period is from February to March and coldest in July to August.

The majority of the country receives less than adequate rainfall needed to support crop cultivation. Over two-thirds of the country receives less than 500mm of rainfall per year and 79% has less than 700mm annually. Only

11% of the country receives more than 1000mm per year. The mean annual rainfall shows a wide spatial variation, ranging from about 200mm in the driest areas in northwestern and eastern parts of Kenya to the wetter areas with rainfall of 1200-2000 mm in areas bordering Lake Victoria and Central Highlands east of the Rift Valley. As a result, the Central Highlands, parts of Rift Valley, the Lake Victoria region and the coastal area boast the most intensive agriculture and greatest concentration of people. Pastoral farming dominates the remaining drier regions of Kenya.

### *Economy*

Although Kenya's economic performance has exceeded that of most other African nations, the benefits of this growth have been seriously diluted by a variety of factors. Poor governance and corruption, increasing economic inequality, and environmental deterioration partly caused by high surging population, and erratic weather patterns have negatively affected the country's economic performance. The country's key economic sectors include agriculture, tourism, livestock/pastoralism, horticulture, fisheries, and forest products. The agricultural sector contributed 26% to the country's GDP and a further 27% through linkages with other sectors while the tourism and fisheries sectors contributed 10% and 0.5% respectively in 2006. In the period leading to 2003, the estimated value of the production of forest products was Ksh. 2 billion per annum, which was equal to about 10% of the country's agricultural Gross Domestic Product then (Mbugua 2003). Horticulture, the fastest growing in the agricultural sector, generates over US\$ 300 million in foreign exchange earnings. The capital value of the 46% (or 15.2 million heads) of Kenya's livestock kept by pastoralists is approximately US\$ 860 million. Tourism is highly dependent on wildlife and the country's wilderness is also a very important industry ranking among the top three foreign income earners, together with export of tea and horticultural products.

## **2.2 Climate change impacts and vulnerability analysis**

Kenya is vulnerable to climate change. Vulnerability is defined as the extent to which a natural or social system is susceptible to sustaining damage from climate change. Vulnerability is a function of the sensitivity of a system to changes in climate (the degree to which a system will respond to a given change in climate, including beneficial and harmful effects), adaptive capacity (the degree to which adjustments in practices, processes, or structures can moderate or offset the potential for damage or take advantage of opportunities created by a given change in climate), and the degree of exposure of the system to climatic hazards. Under this framework, a highly vulnerable system would be a system that is very sensitive to modest changes in climate, where the sensitivity includes the potential for substantial harmful effects, and for which the ability to adapt is severely constrained.

Following this definition, this chapter examines the impacts of climate change on Kenya's major sectors and systems, and their ability to cope, so as to establish the country's vulnerability to climate change.

A recent study by the Stockholm Environment Institute on the Economics of climate change in Kenya revealed that the future economic costs of the impacts of climate change on market and non-market sectors might be close to 3% of GDP per year by 2030 and potentially much higher than this (more than 5% of GDP per year) by 2050 (Stockholm Environment Institute 2009). The following section is a bottom up analysis of the impacts of climate change on Kenya's natural resources and major sectors of the economy.

## **2.3 Impacts of climate change and vulnerability of natural resources**

### *Forests*

Forests not only serve as water catchment resources and carbon sinks, but also provide food, wood fuel, fodder, pasture and medicinal material for an estimated 80% of about 1 million of households living within a stretch of 3km from forest boundaries (Ministry of Energy 2002). In addition most of the households in informal settlements depend on wood fuel as the main source of energy for cooking and heating. The country's forest cover has declined over the years to as low as less than 2% cover

falling way below the global recommended cover of 10%. This is largely attributed to human activities such as illegal logging, unsustainable charcoal production and clearing of forests to create land for farming and settlement. The distribution of forests in Kenya is determined by rainfall, one of the most affected climatic elements, and this means the survival of Kenya's forest resources is likely to be severely affected by climate change resulting in reduced biodiversity and capacity to deliver important forest goods and services.

The impact of climate change will affect the growth, composition and regeneration capacity of forests due to attacks by invasive species, altered patterns, duration and amount of precipitation, and extended range of pests and pathogens, that will affect some tree species. Invasions have already been witnessed with *Prosopis juliflora* ('mathenge') taking site dominance of important ecosystems in Baringo, Tana River, Garissa and other semi arid areas of the country. In addition, excessive growth of some tree species has been observed including the excessive growth of *Acacia reficiens* (acacia) after the 1997 El-niño in North-Eastern Province (NEP) that suppressed the growth of various species that form grasslands for wildlife and livestock. Changes in temperature will lead to a shift of vegetation to higher elevations while some species could become extinct. Indeed, across the country, some tree species including *Melia volkensii*, *Terminalia spinosa*, *Delonix elata*, and *Hyphenea coriacea* in North Eastern Province, and *Psychotria* species in the Taita Hills, Coast Province, are either extinct or their numbers have tremendously dwindled. In addition, the projected rise in temperatures and long periods of drought will lead to more frequent and more intense fires. Forest fires have in the recent past affected Kenya's major forests including the Mt. Kenya Forest. Indeed, Kenya has, over the past 20 years, lost more than 5,700 ha of forests per year to forest fires, wreaking phenomenal economic damage that is yet to be quantified.

Despite the various measures being put in place to conserve forests, they are still under threat from surging communities in pursuit of land for cultivation, energy, and construction material. This is in part due to the high cost of or total lack of alternatives. This high dependency on forest resources makes the country's majority poor more vulnerable to any slight climatic changes that will affect the forest resource.

### *Rangelands and wildlife resources*

Rangelands form nearly 88% of Kenya's land mass. With estimated 10 million pastoralists and agro-pastoralist living in the rangelands, these lands are known to support approximately 34% of the country's population. Rangelands also form the largest habitat for wildlife – one of the country's key tourist attractions. About 75% of the country's wildlife is found in rangelands. Through tourism, wildlife is one of the country's major foreign exchange earners. However, the capacity for these lands to sustain human and wildlife habitation is gradually declining. This is due to extreme weather events such as intense and prolonged droughts and severe flooding, all associated to climate change. The majority of pastoralists are poor and their practice is climate dependent, therefore their adaptive capacity is low making them highly vulnerable to climate change.

The impacts of climate change on Kenya's rangelands include: Change in pasture productivity e.g. in North Eastern Province, extremely strong winds and flash floods are eroding and washing away grass seeds therefore inhibiting grass growth even in good rains. This affects grasslands resulting into e.g., loss of habitats for wildlife, carbon dioxide fertilization, leading to higher plant productivity, in particular, the proliferation of invasive species, disruption of natural ecosystems by causing species' ranges to shift, altering predator-prey interactions, decoupling animals from food sources or reducing habitat, and droughts that affect grasslands, causing massive deaths of livestock and wildlife, and an increase in human-human and wildlife-human conflicts. These cases have been reported in areas around the lower Tana Delta, Laikipia, and Lagdera. In the Lagdera case (2005) for instance, warthogs attacked and killed goats and sheep in order to drink their intestinal fluids following the drying up of their watering points.

### *Coastal / marine ecosystems*

The Kenyan coastline is characterized by a rich diversity of flora and fauna, including fish, coral reefs and mangrove forests. Kenyan coral reefs are well distributed around most of the oceanic islands. They buffer the coastline against the impacts of waves and the full force of storms and cyclones. The rise in atmospheric temperature has resulted in the melting of glaciers and polar ice with



consequence on sea levels and temperatures. The likely consequence of this on Kenya is the submergence of coast line, resulting in the displacement of coastal wetland, erosion of shorelines, increased salinity, and intrusion of saline into coastal aquifers. In general, coastal development is exposed to considerable risk as the sea level is projected to rise by 0.17 - 0.59m over the next century. Salt water intrusion into ground water resources and salt wedge estuaries are phenomena that have been observed already in some places such as Lamu.

Coral reef bleaching which is a phenomenon linked to warming seas is being experienced along the Kenyan coast. A study report by UNEP (2002) revealed that 59% of the world's destroyed coral reefs were located in the Indian Ocean, and these included coral reefs in the Kenyan coast (CORDIO 2008). Further, predicted effects of climate change on mangroves include both more extreme droughts and flooding. In 1997/8 and 2006, massive sedimentation due to erosion of terrigenous sediments following extremely heavy rainfall caused mangrove dieback in many areas along the Kenyan coast. Mwache Creek, a peri-urban mangrove forest in Mombasa was the most affected, losing close to 500 ha of mangrove forest (CORDIO 2008). This trend is likely to jeopardize the livelihoods of local people depending on the mangroves especially for fisheries, wood products and coastal protection, and temperature changes and further sea level rise will only accelerate these trends. This makes the Kenyan coast be one of the most vulnerable to sea level rise in the world, with the most vulnerable aspects being developments on low-lying areas including agriculture, infrastructure and tourism.

#### Water resources

Kenya is classified by the U.N. as a chronically water-scarce country, with poor replenishment rate. The country's natural endowment of freshwater is highly limited, with an annual renewable freshwater supply of about 647m<sup>3</sup> per capita significantly below the 1,000m<sup>3</sup> per capita set as the marker for water scarcity. The current level of development of water resources in Kenya is very low. Only 15 percent of the safe yield of renewable freshwater resources has been developed currently (Mogaka 2006).

The low level of development means that water supply storage per capita has declined dramatically from 11.4m<sup>3</sup> in 1969 to about 4.3m<sup>3</sup> in 1999—simply because of population growth.

However, the country possesses sufficient water resources to meet demand. A recent study has estimated that, based on current water use efficiencies, the predicted aggregate demand will rise to 5,552 Mm<sup>3</sup> per year in 2020. This would still be within the country's safe yield (8,447 Mm<sup>3</sup> per yr), although the cost of supplying each additional increment of water is likely to rise steeply as readily accessible sources are progressively tapped.

The country's water resources are unevenly distributed in both time and space in five drainage basins namely Lake Victoria, Rift Valley, Athi River, Tana River, and Ewaso Ng'iro. The severe weather events like frequent and prolonged droughts and floods, which have been attributed to climate change, will severely affect freshwater availability. Major rivers including the Tana, Athi, Sondu Miriu, Ewaso Ng'iro and Mara have experienced severe reduced volumes during droughts and many seasonal ones have completely dried up. The Eastern, North Eastern and Rift valley have been severely affected. Floods carry fertilizer and pesticide residues into water bodies, resulting in eutrophication which has detrimental impacts on water quality and aquatic life.

The availability of water is often a key factor in determining the patterns of human settlement and the value of land for agricultural and livestock production. Within arid and semi-arid lands (ASALs), the food security of pastoral and farm households improves considerably during the wet years. Improved grazing fundamentals in several pastoral areas has resulted in favorable livestock body conditions, increased calving rates, and improved milk output—together bringing market improvements in pastoralist food security.

#### 2.4 Impacts of climate change on Kenya's economy

Kenya is a natural resource and agriculture based economy. The key economic sectors include: Agriculture, tourism, livestock, horticulture, fisheries and forest products, all of which are highly vulnerable to climate change as discussed below:

#### Agriculture including horticulture

Agriculture in Kenya is important for rural livelihoods, food, and the national economy (earning 60% of foreign exchange and 24% of GDP) as well as providing employment for 80% of the population. Agriculture is generally the first economic sector to be affected by climate extremes through drought whereby a lack of soil moisture has an immediate impact on crop output, and then later by floods. Already the unpredictability of Kenya's year-to-year productivity causes substantial problems for poor subsistence farmers, as rain fed crops are lost during unusually dry or wet seasons. A poorly performing agricultural sector put the country's food security at risk. Kenya has in the recent past reported successive seasons of crop failure, increasing the country's food insecurity. The country's famine cycles have reduced from 20 years (1964-1984), to 12 years (1984-1996), to 2 years (2004-2006) and to yearly 2007/2008/2009, necessitating the Government's distribution of 528,341.77 metric tonnes (MT) of assorted foodstuffs worth Ksh. 20 billion over the last five years to feed a population of between 3.5 million and 4.5 million people annually. The Ministry of Agriculture's 'Economic Review of 2009' indicated that the production of other major crops like tea, sugarcane and wheat had also declined. This could reduce Kenya's foreign exchange earnings in the long term, given that a commodity like tea is the country's principal export product. The ripple effect of this scenario to Kenya's economy is frightening when one considers the pertinent role that foreign exchange plays in international trade and investment.

In the recent past, the horticulture industry has been growing fast and steadily recording an average of 15% to 20% annual growth. It is ranked among the top three foreign exchange earners together with tea and tourism. The industry has greatly contributed to the country's economy, creating employment opportunities for rural people. The industry directly employs about 4.5 million people countrywide with another 3.5 million benefiting indirectly through trade and other activities<sup>1</sup>. Apart from floriculture which is a highly specialized and capital intensive, the horticulture industry is largely smallholders industry. The industry generates over US\$ 300 million in foreign exchange earnings from the sale of fruits, vegetables and flowers (PKF Consulting 2005). This growth was largely attributed to good weather, improved

crop husbandry and conducive horticulture export environment, as well as increased markets for fruits and flowers in Europe. However, climate change is not likely to bode well for the industry.

The impacts of climate change on horticulture are in two fold, the direct impacts and indirect impacts. Directly, the industry is going to be greatly affected due to reduced water availability for irrigation purpose, due to the frequent droughts. For instance horticultural farms in Laikipia and Kiambu Districts are reeling from reduced water supply as a result of reduced water volumes in rivers originating from Mount Kenya and the Aberdares. Horticulture in the coast is expected to suffer, due to sea level rise that will result in the inundation of coastal agricultural land. Income losses from three crops grown along the Kenyan Coast – mangoes, cashew nuts and coconuts – could be as high as US\$ 472.8 million for a 1 m sea level rise.

Indirectly, the returns from horticulture are likely to be further affected by increasing pressure from European markets and consumers seeking to reduce their fresh produce 'food miles', i.e. the amount of GHG emissions associated with the production and consumption of fresh produce.

The horticulture industry is under threat from increasingly carbon conscious western consumers who now prefer fresh produce from their own countries to those imported from abroad. However life cycle assessment of produce from Kenya has shown to be less carbon intensive than those produced in Europe. This information needs to be communicated continually and widely.

#### **Food miles: are fresh produce from Kenya less carbon intensive?**

Food miles refer to the distance food is transported from the time of production until it reaches the consumer. This has been a factor when assessing the environmental impact of food especially global warming. The concept of "food miles" presents an argument to buy goods which have travelled the shortest distance from farm to table, and to discriminate against long-haul transportation, especially air-freighted goods (MacGregor and Vorley 2007). It is argued that long-distance transport of food is associated with additional

<sup>1</sup> Kenya Horticulture Council ([www.fpeak.org](http://www.fpeak.org))

emissions of greenhouse gases due to increased transportation coupled with greater packaging. In light of growing international concern over the speed and scale of climate change, and with pressure on developed countries to act, the concept of “food miles” has captured public attention in many countries in the North. The UK, Sweden and Canada have created labeling that draws people’s attention to food miles and apparently this is changing some consumers’ behaviour.

Such arguments are posing a great threat to the horticulture industry; which in many developing countries where smallholder export horticulture is proving to be a powerful new engine for growth in rural economies. Kenya for instance has been one of the quickest to develop as a supplier of air-freighted fresh vegetables from smallholder fields to consumers in Europe. The industry has created over 4 million direct and indirect employments. Therefore, for the smallholder farmers who have invested so much to meet the standards demanded for export, the danger that their produce could become an environmental pariah is deeply worrying (McKie 2008). In many cases, agricultural produce including horticulture, originate from developing countries struggling with poverty. Therefore introducing food miles will only hurt the economies of developing countries and this goes against the precepts of the developed countries trying to fight poverty in developing countries. It has been an emotive issues as illustrated below:

*‘The concept of food miles is unhelpful and stupid. It doesn’t inform about anything except the distance travelled,’ Dr Adrian Williams, of the National Resources Management Centre at Cranfield University, on an interview with The Observer Newspaper (McKie 2008).*

In addition, researchers have been arguing that there are many other aspects of the agricultural processing and the food supply chain that also contribute to greenhouse gas emissions which are not taken into account by simple “food miles” measurements. For instance the labeling, by some supermarkets in the UK, of beans from Kenya with a sticker that has an image of a plane on it to indicate that carbon dioxide from aviation fuel was emitted in importing such a commodity does not take into account the entire production

cycle. Researchers say that a more complete environmental assessment of food that consumers buy needs to take into account how the food has been produced and what energy is used in its production. A recent DEFRA case study indicated that tomatoes grown in Spain and transported to the United Kingdom may have a lower carbon footprint in terms of energy efficiency than tomatoes grown in heated greenhouses the United Kingdom. This means that if the entire life cycle is taken into account, agricultural produce from Kenya could be less carbon intensive than those produce closer to the consumer in the North.

### Livestock

Pastoralism is the main form of livelihood for communities living in Arid and Semi-arid Lands (ASALs) of the country. This practice has experienced the brunt of climate change manifested in the form of frequent, intense and long lasting droughts. For instance the country experienced three major and more pronounced droughts in the 1990s. The drought of 1991/92 had much destruction; with up to 70% loss in livestock herds, and high rates of malnutrition of up to 50%. As a result about 1.5 million people in the ASALs were dependent on relief food. The 2006 to 2009 droughts are testament to the devastation that climate change could cause to the livestock sector. In 2009, most pastoralist lost more than half of their herds to drought. Efforts to minimize the losses by selling livestock to the Kenya Meat Commission (KMC) were futile, as most of the herds were lost on transit while many more were lost in KMC’s premises’.

In addition, outbreaks of diseases like the Rift Valley Fever (RVF) and a myriad of others (Wildlife Conservation Society 2008), have been linked to climate change. The outbreak of RVF is known to occur during periods of high humidity that follow abnormally long rains especially those associated with El Niño-Southern Oscillation (ENSO) events. This has great toll on livestock production as the industry loses the local and export market. Currently, Kenya has been battling a ban on the export of meat to the European Union (EU) market until 2010 for its failure to control RVF and foot and mouth disease, and this has led to loss of income. In fulfilment of the EU precondition to lifting the ban, the Government, through the Ministry of Livestock Development, has initiated a programme to create disease free zones.

Within pastoralist communities the Arid and Semi

Arid Lands (ASAL) Environment Action Plan is an important milestone for this high-risk area. The Ministry of Livestock is also taking productive measures in monitoring market trends and supporting subsidized sales to encourage continued market activity during droughts. However, in the main, many of these district activities are uncoordinated, short lived and orientated towards disaster management rather than long-term adaptation programmes to enable communities to withstand ongoing changes in the climate, leaving the communities vulnerable to climate change.

### Tourism

Tourism has been growing over the years with the number of visitors increasing from 1.1 million in 2003 to 1.8 million in 2007. In the year 2008, the tourism sector in Kenya recorded one of its worst performances ever in real terms. The dismal performance was mainly occasioned by the post election violence (PEV) and the subsequent travel bans from the source markets. As a consequence, tourism earnings decreased by 19.2% from Ksh 65.2 billion in 2007 to Ksh 52.7 billion in 2008.

Since Kenya’s tourism depends in a large part on the country’s wilderness and wildlife and the fact that these resources are highly susceptible to climate change, PEV must have been a short respite. Wildlife both in national parks and game reserves depend on either natural rivers feeding the national parks or man made wells and dams for its survival. However, many of these rivers have reduced in water volume while others have completely dried-up. Cases of wildlife deaths have increased in the recent past, with the Kenya Wildlife Service (KWS) reporting the death of 14 elephants in 2007, 28 in 2008 and 37 in 2009 due to ‘extraordinary and prolonged dry seasons.’ Lately, the reduction in the volume of the Mara River, due to climatic variations and the destruction of the Mau catchment, has had a toll on the eighth wonder of the world – the spectacular migration of hundreds of wildebeests between the Serengeti National Park in Tanzania and the Maasai Mara Reserve in Kenya across the Mara River. This puts the countries tourism sector at risk as the number of wildlife declines due to reduced drinking water and the increasing inhabitable wilderness. Some areas have experience human-wildlife conflicts, resulting not only from human encroachment into wildlife habitats but also due to wildlife straying

into human settlement in pursuit of water and food. According to the KWS, drought has pushed lions closer to waterholes bordering human settlements while the latter are increasing at very high rates towards parks; thereby stoking up human-wildlife conflicts.

Other tourist attractions such as the snow cap of Mt. Kenya, the coastal rainforest and fragile marine ecosystems such as the coral reef are being affected by the global rise in temperatures that is affecting both air and sea. The other issue, stemming out of the climate change debate, is the carbon dioxide produced by commercial aircrafts. Passenger jets have been singled out as the fastest growing source of GHG emissions. This is therefore a great issue of concern as more and more tourist will start to worry about their ‘carbon footprints’ and any mitigation measures taken in the airline industry could significantly hurt the country’s tourism sector.

### Energy and infrastructure

For Kenya to attain the stated Millennium Development Goals, access to modern energy such as electricity, is vital. A comprehensive study completed in 2002 indicated that biomass is the main type of energy consumed by households in Kenya, accounting for 68% of the total national primary energy supply. The biomass energy supply and demand imbalance is exerting considerable pressure on the remaining forest and vegetation stocks, thereby accelerating the processes of land degradation. In addition, the production of biomass energy poses a threat to competing land use systems such as agriculture, forestry and human settlements among others (Ministry of Energy 2002). Climate change will lead to drying up and decline in productive biomass, thus affecting the supply of biomass fuel and wood.

Petroleum products account for 22%, the bulk of which is used for transport, manufacturing and commercial sectors.

Electricity, by virtue of its versatility in application is crucial for economic growth, and access to electricity is associated with high quality of life. It accounts for 9% of the total energy mix (MoE). Kenya’s electricity supply largely depends on hydro sources, which account for over half of the total effective capacity (1332.2 MW) while geothermal sources account for 12.2%, with the remaining 29.7% predominantly from petroleum oil based thermal



generation (MoE). Kenya's solar energy provision is also increasing quite fast<sup>2</sup>. Currently, solar photovoltaic (PVs) provide 4 MW of off-grid electricity, mainly to small household rural-based consumers. Communities especially in the central region of the country are also engaged in micro-hydro power production where the resource is available.

Such extreme events like drought and floods associated to climate change have reduced the volume of river flow through evaporation and siltation. This has dramatically reduced the country's hydropower potential over the past 20 years. Despite attempts to diversify the country's electricity generation through geothermal and other sources, the sector is still vulnerable as demand is increasing with population and scientists predict that with climate change the demand for electricity is going to be higher, due to the expected demand for heating, air conditioning and refrigeration, yet generation from hydro is declining. For instance, the 1999-2000 droughts caused extended power cuts across the country. Since then, power cuts have been a yearly experience affecting the manufacturing, agro-processing industries and small scale enterprises. A study by AFREPREN (2009) indicates that the estimated loss of GDP due to power sector crises in 2006-2008 was estimated at about 1.45% of Kenya's GDP which translates to US\$ 442 Million.

Between August and September 2009, KPLC was forced to sanction another round of power rationing due to the shutting down of Masinga and Kiambere hydro power plants, occasioned by tremendous drop in the volumes of these dams. The economic implication of this is yet to be quantified but could even be greater than that due to the 1999-2000 droughts given that the economy is still reeling from the effects of the post election violence (PEV).

The country's economy and eventual industrialization not only depends on energy production and supply, but also on a good transport and communication infrastructure. The country's transport infrastructure spreads from air, land to sea, with the Kilindini harbour

being a key gateway in and out of the East African region. The rising water levels in the oceans, all as a result of melting ice in the Polar Regions, and rising sea temperature – caused by global warming, will not only affect the operation of the harbour but also destroy the coastal road network. With climate change extreme weather events such as floods expected to increase, both in severity and frequency of occurrence, this is likely to affect the country's road and rail network, and the design of drainage and sewer systems. A case in point is the El Niño floods that disrupted several sections of the Nairobi-Mombasa highway and several other roads and bridges in the country. The damage caused by the eight-month 1997/1998 El-niño rains to the country's transport and telecommunication infrastructure was estimated at US\$ 1 billion (W.M. Ngecu and E.M. Mathu, 1999). Such extreme weather events also destroy telephone and electricity lines, and other utilities. All this will greatly affect the country's economy. As such it is prudent to put measures in place to cater for such eventualities.

## 2.5 Social infrastructure

### *Human health*

A country's healthcare system affects all other aspects of development, starting with the productivity of the population. Global warming trends are likely to alter the patterns of infectious diseases across the world – not least in Kenya. Kenya can almost certainly expect an increase in the incidence, geographical spread and number of people affected by such diseases as malaria, yellow fever and encephalitis. Already, there are signs that malaria for instance, is spreading to highland areas such as Kericho and Nairobi where it is not known to be endemic, and this has been attributed to climate change (Yanda 2006). A study by the Stockholm Environment Institute projects that by 2055, as a result of climate warming (of just over 2°C), the population at risk for malaria in rural areas over 1000 metres above sea level (which comprises 63.5% of the population of Kenya) would increase by 89%. The potential additional malaria cases that might arise could have economic costs in excess of \$ 80 million per year (Stockholm Environmental Institute 2009).

Increased occurrence of floods due to heavy rains is also likely to spark incidences of water borne diseases such as cholera. All of these likely events have potentially

calamitous implications for Kenya's overstretched and under resourced public health sector. This is likely to affect the country's economy as the government will be required to spend more and more in the health sector.

### *Human settlements and land use*

Most of Kenya's population is rural, living in scattered settlements. The location and concentration largely depends on the climatic and soil conditions. Highly productive agricultural areas that comprised the belt that runs from the northwest of Nairobi to the Uganda border have a high population density. Cities and towns such as Nairobi, Mombasa and Eldoret have been recording high population growth largely due to migration from rural areas.

Land is currently the most important resource from which the country generates goods and services for the people. The national economy is primarily agro-based. Ninety percent of the population living in rural areas derives its livelihood directly from land. To these people, land resources are the means to a livelihood determining the levels of prosperity or poverty, fulfilling social obligations, and also conferring social status and political power (Kenya Land Alliance [n.d.]). The countries high population growth has increased pressure on land, resulting in unsustainable land use. As the increased number of people search for economic security; over-cultivation, expansion of cultivated land and overgrazing, have triggered the invasion and degradation of forests, water and mineral resources.

Climate change is going to exacerbate this situation, directly and indirectly affecting human settlement and land use. Extreme climate conditions such as high wind, heavy rainfall, heat and cold can result in a wide range of scenarios such as tropical storms, floods, landslides, droughts and sea-level rise. Climatic catastrophes make populations to be displaced (or decimated by death), which in turn can lead to conflicts and civil unrest. Landslides caused by heavy storms have in the past claimed many lives especially in the Kenya highlands.

Insurance agencies and government would be burdened with having to make reparations to individuals for property damage and loss, unemployment, clean-up, and reduced socioeconomic viability of the communities affected.

Population displacement and migration from climate disaster-prone areas (e.g. drought prone northern Kenya, and sea-level rise in the coastal region) are expected to increase. It is expected that most of those on the move from rural areas will head towards urban agglomerations where assistance, income opportunities and infrastructure may be perceived to be more accessible and readily available. This will create an enormous social, health, infrastructure and management challenge for cities, subjecting them to unplanned population growth. According to the United States Agency for International Development (USAID), recurrent droughts in Kenya have already forced many rural residents to seek refuge in cities and towns where without any assets and little skill for urban income generation, they find life unbearable.

Proper land use and settlement are key component in adaptation to climate change. Therefore land policy adopted by parliament in 2009 is a very important document. Though the policy was not formulated under the frame work of a changing climate, it recognizes and tried to address key concerns that are fundamental to adaptation to climate change in Kenya. This land policy provides an overall framework and defines the key measures required to address the critical issues of land administration, access to land, land use planning, restitution of historical injustices, environmental degradation, conflicts, unplanned proliferation of informal urban settlements, outdated legal framework, institutional framework and information management. It also addresses constitutional issues, such as compulsory acquisition and development control as well as tenure. It recognizes the need for security of tenure for all Kenyans (all socio-economic groups, women, pastoral communities, informal settlement residents and other marginalized groups). Through the policy, the government seeks to put land into productive use on a sustainable basis by facilitating the implementation of key principles on land use, productivity targets and guidelines as well as conservation. It will encourage a multi-sectoral approach to land use, provide social, economic and other incentives and put in place an enabling environment for investment, agriculture, livestock development and the exploitation of natural resources (Ministry of Lands 2009).

<sup>2</sup> Currently, Kenya leads the world in household solar systems acquisition rate, with over 30000 units sold per year (Jacobson 2004).

## 2.6 Gender and climate change

Women are more strongly affected by the effects of climate change and climate variability because they are more prone to the effects of climate change. Climate variability is dependent on issues such as wealth, technological power, access to information, all of which are major problem areas for women. Despite the importance of recognizing gender-related differences, both the United Nations Framework Convention on Climate Change and the Kyoto Protocol fail on referring the issue. Nonetheless, experience has shown that women generally understand better the causes and local consequences of changes in the climatic conditions and have the knowledge and skills for orienting the adaptation process. It is also stated that women have unique capacities as community leaders or managers of natural resources and that they are underutilized in strategies for managing emergencies. Their responsibilities in households, communities and as stewards of natural resources position them well to develop strategies for adapting to changing environmental realities (Carvajal-Escobar et. al. 2008).

### Gender policy

The country has made great strides not only in signing international treaties that address gender concerns but also in the policy side. The country developed and enacted a gender policy (National Policy on Gender and Development), which provides a framework for the government to address genders inequalities. It is also worth noting the progressive inclusion of the women's agenda and their participation in decision making at various levels (being achieved by affirmative action, including the presidential directive on women's representation in all elective positions and public offices). In particular, women's presence in the development of National Development Plans and Strategies (Government of Kenya 2004), both sectoral and multi-sectoral where they categorically outline some gender perspectives in approach and desegregate data by sex<sup>3</sup>. This gave rise to the National Commission on Gender and Development, with the mandate to advise Government on gender concerns as well as coordinate, implement and

<sup>3</sup> For example the National Household Survey, The Population Census Report, the MDG Reports, among other national documents.

facilitate gender mainstreaming in national development. The commission is a strategic and positive achievement that if coordinated properly, is going to address gender concerns in climate issues, given that women play a vital role in natural resource use and management.

### Impact of climate change and variability on vulnerable women

The impacts associated to CC and CV vary from one region to another, and within the same community as product of the magnitude and frequency of hazards and of the existing vulnerability, which can have varying degrees within societies. Generally the poorest populations and marginal groups are impacted the most; nevertheless, there can be a differential effect on men and women as a consequence of their social roles, inequalities in the access to and control of resources, and their low participation in decision-making.

In many parts of the world, and closer home in Kenya, women constitute the population most vulnerable to CC and CV, due to certain inequitable conditions and situations (vulnerability factors) that place them at risk. Empirical evidence shows that they suffer a greater impact in a disaster or emergency; and economic losses have a disproportionate effect on economically vulnerable women (Enarson 2000). Changes in the workload suggest that disasters increase women's responsibilities in the domestic scene, in many paid and unpaid workplaces in the formal and informal sectors and in the community during the stages of preparation and mitigation (pre disaster), as well as in the reconstruction stage (post-disaster). In the post-disaster stage there may also be high levels of violence against women. Men frequently emigrate in search for work, leaving a gross part of the processes of response and reconstruction in the women's hands. Nonetheless, their work in disasters and in the adaptation processes to CC and CV is still highly invisible. (Carvajal-Escobar et. al. 2008).

### Gender in decentralized environmental management

The inclusion of adaptation and risk management (RM) in the processes of planning for development can reduce existing risk factors and avoid social construction of new ones in societies. Bearing in mind that CC introduces new dimensions to the social construction of risk, it is important to approach it with a holistic vision; taking

advantage of and linking the adaptation to CC and CV. The following are some of the key gender issues that require attention in decentralized environmental management;

1. Inadequate policies to address gender in decentralized environmental management.
2. Low budgetary allocations for decentralized environmental management and for implementing social and gender issues.
3. Inadequate participation by women in local level decision making. Steps must be taken to ensure that women are not excluded from decision-making processes concerning natural resources and its entitlements. In decentralized natural resource management several local institutions are in place and a strategy needs to be put in place to determine how both men and women will participate in the various levels including the District Environmental Committees, Task forces/working groups and thematic groups at all levels of decentralized structures.
4. Inadequate capacities in integrating gender equity concerns into decentralized environmental management processes at local level e.g. appraisals, planning, budgeting, Monitoring & Evaluation & developing gender sensitive indicators. Steps must be taken to strengthen capacities in the abovementioned areas so as to strengthen gender mainstreaming at local level.
5. Inequitable access to environmental resources. Women's access to natural resources is extremely limited due to the traditional rules that restrict their right to resources like land, trees, water, etc. Mechanism for guaranteeing equitable access to environmental resources, information and training, enabling women to fill positions at various levels.
6. Cultural factors that inhibit women's participation and equitable sharing of benefits. Kenya, like much of Africa is a patriarchal society where women have a lower status than their male counterparts. This differentiation is the result of the cultural and traditional value system that accords men higher value than women. Cultural factors are significant determinants of decision making and participation patterns in natural resource management and may be blamed for low participation of women in

decision making processes. In addition, relations between women and men create power relations that determine how they access and control benefits derived from natural resource management. As such, if not addressed, some cultural norms will undermine natural resource management and overall development efforts.

In conclusion, as a product of their social roles, women perform a fundamental role in their communities in reducing the risk of disaster and searching for strategies of adaptation. Faced with the manifestations of CV and CC, their knowledge and experience should be taken into account when planning adaptation processes for vulnerable communities. However, it is important to consider that in these processes men also intervene and could play decisive roles. Therefore, it is necessary to promote strategies for adaptation through inclusive and consultative processes that give participation to both men and women exposed to risks, taking into account the needs and expectations of both, and addressing a perspective of gender equity. In this sense, adaptation processes are an opportunity for questioning and changing traditional gender relations in society. Given the limited data currently available on gender and CC and the invisibility that women's work still has in risk reduction and in the processes of adaptation, it is necessary to promote for more and better documentation of experiences (best or lost practices) in this field.

## 2.7 Perspectives on impact and vulnerability

The above analyses show that climate change has and will severely impact the country. The country's economic and livelihood systems are highly dependent on natural resources, which are very sensitive to any slight changed in climatic conditions. This makes the country very vulnerable to climate change. It is therefore mandatory to put in place policies and institutions that will address and prepare the country to handle the projected impacts of climate change. The succeeding chapter outlines and analyses current policies and institutions relevant to climate change and proposes the need for new policies, legislations and institutions.

# Three:

## Climate Change Adaptation Policy Analysis

### 3.1 Kenya's environmental policy context

There have been several efforts to come up with a comprehensive policy framework to guide the management of the environment. The first concern about conservation and management of the environment was voiced in the Sessional Paper No. 10 of 1965 on African Socialism and its Application to Planning in Kenya which recognized the need to conserve natural resources for all future generations and also expressed concern with the quality of the environment.

The National Development Plans which have been prepared from early 1970s to date have devoted specific sections to the protection and management of the environment. In 1982, the National Environment Secretariat (NES) in the then Ministry of Environment and Natural Resources (MENR) (now Ministry of Environment and Mineral Resources) coordinated efforts to draft a National Environment Enhancement and Management Bill. In 1989, NES, through the Inter-ministerial Committee on the Environment (IMCE), initiated efforts to formulate a Sessional Paper on the Environment. However, both efforts did not bear fruit due to vested and sectoral interests.

Since 1992, there have been a number of initiatives related to utilization of natural resources and management of the environment an example being the National Environment Action Plan (NEAP) which was formulated in 1994. A number of sectoral policies have been prepared and some are in the process of being developed. These include policies related to agriculture,

livestock, water, energy, food, land, wildlife, forest, industry, trade, arid and semi arid lands as well as disaster management.

In 1999 both the Sessional Paper on Environment and Development and Environment Management and Coordination Bill were prepared. While the Bill was enacted by Parliament to become Environment Management and Coordination Act of 1999 (EMCA 1999), the Sessional Paper was approved by the Cabinet but was not presented to the Parliament for debate and adoption. Thus there is an environmental law without a policy on environment. Normally national legislation should be a reflection of the government policy framework from which the law is extrapolated. In colonial Kenya, there were a number of strict policy positions which were of environmental significance but these positions were associated with draconian approaches which were not popular with the Kenyan populace.

Kenya's legislation is diffuse in nature with provisions contained in a wide variety of sectoral statutes which have yet to be amended to conform to EMCA. EMCA itself has been superseded by some more recent legislation and there is an urgent need to harmonise the sectoral laws with the provisions of EMCA if Kenya hopes to realize its goals of achieving poverty reduction, environmental sustainability and sustainable development as enunciated in the Millennium Development Goals (MDGs) and Vision 2030. The need for a National Environment Policy arises from the identified gaps in the Draft Sessional Paper on Environment and Development No. 6 of 1999 and the new environmental challenges, which have emerged since 1999. Furthermore, there is a growing acknowledgement of the urgent need to sustainably manage the finite natural resources on which economic development and peoples' livelihoods are anchored.

#### *Rationale and justification for an environment policy*

The need for a comprehensive National Environment Policy arose from the identified gaps in the Draft Sessional Paper and new environmental challenges that have emerged since 1999. There was also a growing awareness of the urgent need to sustainably manage the finite natural resources on which economic development and people's livelihoods depend. In particular, the need to

1. integrate environmental considerations in development planning, budgeting and decision-making processes for attaining the aspirations of Vision 2030 and domestication of multilateral and regional environmental agreements;
  2. address the emerging environmental challenges such as climate change unsustainable consumption and production patterns as well as unsustainable human settlements;
  3. provide a clear policy direction for effective implementation of the Environmental Management and Coordination Act;
  4. harmonize conflicting policies in key sectors such as water, forestry, wildlife, energy and agriculture with a view to enhancing cross- and inter-sectoral linkages;
  5. raise public awareness on environmental issues and enhance partnerships and stakeholder involvement;
  6. curb marked increase in environmental degradation and loss of biodiversity; and
  7. decentralize and devolve environmental protection to the grassroots and enlist the participation of the private sector, non-governmental organizations (NGOs), community based organizations (CBOs) and other non-state actors.
2. Identify and raise awareness of opportunities for adaptation measures through promotion of appropriate technology transfer and capacity building
  3. Develop and implement under the Kyoto Protocol's Clean Development Mechanism (CDM) programmes and projects that encourage significant levels of investment and technology transfer for sustainable development
  4. Develop an integrated, improved early warning and response systems for climate and disaster risks with a clear strategy for dissemination of information to the grassroots.
  5. Build and strengthen research capacity on climate change and related environmental issues.

NEP rightly admits that climate change impacts are increasing and will affect all sectors of the economy. It is however not clear whether the above measures will climate proof the sectors of the economy against climate change. But, the fact that the CCCU in the PM's office is ready to facilitate the implementation of the National Climate Change Strategy shows that a coordinating ministry with powers to summon other ministries maybe in the offing, and may help harmonize climate change activities.

The legal framework for environmental concerns within Kenya is the Environmental Management and Coordination Act No. 8 (EMCA) of 1999. However, the EMCA has minimal content relating explicitly to either adaptation to or mitigation of climate change. The EMCA institutionalizes a committee mandated to produce a National Environment Action Plan every 5 years. Yet no plans have emerged since 1994 (and even then climate change was not mentioned). This leaves the legitimacy of the NCCACC in serious question and the issue of climate change vastly underrepresented. Whilst there are provisions within EMCA 1999 for the Minister for Environment to issue regulations around coastal erosion or mangrove conservation – that may be of use in adaptation to climate change – a comprehensive approach and understanding around adaptation which tackles vulnerable pastoral and agricultural communities, for instance, is lacking entirely. Although there are opportunities for mitigation through use of incentives/

### 3.2 Policies relevant to climate change

#### *National environmental policy*

The Draft National Environmental Policy (NEP) 2008 treats climate change and disaster management as an emerging environmental issue and states that the government will adopt two approaches in combating climate change – mitigation and adaptation. The policy recognizes that many of the natural disasters in Kenya are climate related, e.g. floods, drought, occasional landslides, increased disease episodes, etc, and that the economic impact of these disasters cut across the key sectors of the economy, with agricultural production, industrial processing, manufacturing, tourism, infrastructure and public health being the most impacted. The policy anticipates that with climate change, the frequency and intensity of extreme weather events such as floods and droughts will increase.

In order to deal with Climate Change, NEP suggests the following staged measures:

1. Develop and implement a National Climate Change Strategy



disincentives in section 57 of EMCA, and reduction of emissions through proposed Air Quality Regulations in section 78, there is need to amend the EMCA in light of the shortcoming and the fact that a new Environmental Policy is soon to be established.

### *The energy policy*

The energy policy will play a great role in climate change especially in mitigation of climate change, through energy efficiency and promotion of renewable energy.

The Policy is contained in Sessional paper no. 4 of 2004 and focuses on all forms of energy including bioenergy. Article 103, Part V, of the Energy Act 2006 which became operational on 7<sup>th</sup> July 2007 addresses renewable energies, energy efficiency and conservation.

The 2004 Sessional Paper's vision is to 'promote equitable access to quality energy services at least cost while protecting the environment' covers renewable energy extensively with one third of the paper focused solely on renewable energy. It outlines short, mid and long-term energy strategies proposing to increase renewables within the energy mix through constructive policy provisions and research requirements

The Sessional Paper committed the government to make funding available to undertake geothermal resource assessments, as well as pre-feasibility studies for hydropower, wind regimes, solar insolation and municipal waste as energy sources. The establishment of a 'Geothermal Development Company' (GDC) is also proposed with government resources to undertake geothermal exploration and production drilling, as well as managing steam fields and selling steam to KenGen and independent power producers (IPPs). This has led to the establishment of the GDC which is a currently in operation.

Furthermore, the Sessional Paper also outlines commitments to promote research and development in renewable energy technology, and to "formulate and enforce standards and codes of practice on renewable technologies to safeguard consumer interests." Proposals for government guarantees for private companies were also listed such as investing in hydropower through long term targets around the provision of fiscal benefits, including a ten-year tax holiday for geothermal and fossil

fuel power plants of at least 50MW. These are obviously not renewable specific. Whilst the Sessional Paper represented a promising vision for Kenya's energy path this has not been backed up with subsequent actions.

Renewable energy policy aspirations in Kenya were missing from the subsequent Energy Act of 2006 where only 2 out of 113 pages were dedicated to renewables. As such the 2006 Act is not strong on promoting renewables and includes only vague commitments to developing a national strategy for research and creating an "enabling framework". The Act does not include any legally binding targets or strategies to promote renewable energy and leaves decisions very much with the Minister of Energy. Other policy proposals around financing, pre-feasibility studies, codes of practice, and taxbreaks and policies, in order to promote renewables are all missing from the Act. This is inconsistent with original EMCA law that includes provisions for tax rebates for organisations investing in pollution control, recycling and renewable energy.

However the Energy Act does make provision for a new Energy Regulatory Commission (ERC), with the ability to negotiate contracts, and points out some of the weaknesses in over-reliance on current power procurement methods.

The Energy Act 2006 specifically, mandates the Ministry of Energy to perform the following duties directly relevant to biofuels development:

- Formulating a national strategy for coordinating research in renewable energy;
- Providing an enabling framework for the efficient and sustainable production, distribution and marketing of biomass, solar, wind, small hydro, municipal waste, geothermal and charcoal;
- Promoting the use of fast maturing trees for energy including biofuels and the establishment of commercial woodlots including peri-urban plantations;
- Promoting the development of appropriate local capacity for the manufacture, installation, maintenance and operation of basic renewable technologies such as bio-digesters, solar systems and hydro turbines;

### *Forestry policy*

In view of the emerging debate and climate change opportunities in the forest sector especially on REDD,

the forest policy is a very important policy and needs to be revised so as to capture all the opportunities associated with forestry.

Up until 2007, the Forestry Policy in use had been Sessional paper No. 1 of 1968, but in 2007 Ministry of Environment and Natural Resources (now Ministry of Environment and Mineral Resources) published the Draft Sessional paper No. 1 of 2007 on Forest policy.

The objectives of this policy are to:

1. Contribute to poverty reduction, employment creation and improvement of livelihoods through sustainable use, conservation and management of forests and trees;
2. Contribute to sustainable land use through soil, water and biodiversity conservation, and tree planting through the sustainable management of forests and trees;
3. Promote the participation of the private sector, communities and other stakeholders in forest management to conserve water catchment areas, create employment, reduce poverty and ensure the sustainability of the forest sector;
4. Promote farm forestry to produce timber, woodfuel and other forest products;
5. Promote dryland forestry to produce woodfuel and to supply wood and non-wood forest products;
6. Promote forest extension to enable farmers and other forest stakeholders to benefit from forest management approaches and technologies; and
7. Promote forest research, training and education to ensure a vibrant forest sector.

The Forest Act 2005 is expected to guide the implementation of the Forest Policy. The Forest Act 2005 provide for: the involvement of communities living adjacent to forests and other stakeholders in the management and conservation of forests, the eco-system approach to the management of forests, provision of appropriate incentives to promote sustainable use and management of forest resources, transformation of the Forest Department into a semi-autonomous Kenya Forest Service and recognition of local and global forestry issues and challenges to ensure fair contribution of the forestry sector in economic development.

Even though the policy covers a wide scope of issues concerning forest, they are geared towards environmental

conservation and not climate change. There are a myriad of climate change opportunities in forestry both on mitigation and adaptation such as REDD which the policy has not captured.

### *Rangelands policy*

The rangelands policy is necessitated by the fact that nearly 80% of the country is ASAL. Attempts to develop a rangeland policy started in 1979, but it was in 2004 that the country got the Draft National Policy for the Sustainable development of ASALs. The main objective of this policy is to provide a coherent and practical framework for the implementation and realization of a new vision for ASAL development in Kenya. The policy sets out the overarching principles and broad actions required to transform the Kenyan ASALs into national wealth and employment creators. This policy addresses many issues that are relevant to climate change especially on adaptation. The policy highlights the following key issues: the interdependence of ASALs and non-ASAL areas, sustainable investments that will tap into the potential of ASALs, community participation in ASAL development, decentralized planning, diversification of livelihood systems, local institutional and organizational development, improving ASAL land tenure and land use policies, providing services to mobile pastoralist and agro-pastoralists, addressing vulnerability to natural hazards and conflict management. Even though the policy was not developed bearing in mind the impacts of climate change, it highlights key issues that are relevant to adaptation to climate change.

### *Gender policy*

The country has made great strides not only in signing international treaties that address gender concerns but also in the policy side. The country developed and enacted a gender policy (the National policy on Gender and Development NPGD 2000) in 2000, which provides a framework for the government to address genders inequalities. This gave rise to the National Commission on Gender and Development, established in 2004, with the mandate to advise Government on gender concerns as well as coordinate, implement and facilitate gender mainstreaming in national development. This is a strategic and positive achievement that if coordinated properly, is

going to address gender concerns in climate issues, given that women play a vital role in natural resource use and management.

### Development strategies

Mainstreaming climate change into government development strategies including the Economic Recovery Strategy 2003-2007 (ERS), the National Development Plan (NDP) 2002-2008 (2002), and Kenya's Vision 2030 (2007) is important.

Vision 2030 does make reference to climate change adaptation in the context of building capacity as part of the Environment. The vision also does state as a specific goal under environmental management, the aim of attracting at least 5 Clean Development Mechanisms (CDM) projects per year in the next five years. However, the Water Catchment Management Initiative is a relevant environmental flagship project.

The environment section of the NDP states that the government and agencies will "formulate policies that minimize transport related environmental pollution from the different modes of transport". Yet these sentiments are not echoed within the transport section of this same document, Vision 2030 or the ERS. The NDP does highlight adaptation issues in light of the El Nino - La Nina episode and outlines the UNFCCC commitments including "carrying out national programmes for mitigating climate change and adaptation to climate change." There is an appreciation of the impact of climate variability on, for example, water resources, and a need to promote policies for sustainable environmental management. But these adaptation provisions do not stretch to fundamental long-term changes in the climate. Climate change concerns are not considered within other sections of the NDP even though this is an explicit aim of the NDP itself – "full integration of environmental concerns in development planning at all levels of decision making remains a challenge to the country."

The Economic Recovery Strategy (ERS) is silent on the issue of climate change adaptation and mitigation. This could be attributed to the Ministry of National Planning and Development's limited ability to integrate climate information within the planning process as they lack the capacity and the tools to interpret the

requisite information of the subject matter. Climate change considerations have been seen as less crucial to developmental progress and because of limited public understanding, have therefore failed to attract budgetary allocation. However, the recognition of climate change within Vision 2030 hopefully represents a growing and wider appreciation from the central government of the importance of the issue and a shift from climate change being assessed solely as an environmental issue, to one that is championed by national development concerns.

### The national climate change response strategy

Kenya has developed a National Climate Change Response Strategy (2010) which seeks to strengthen nationwide focused actions towards adapting to, and militating against a changing climate by ensuring commitment and engagement of all stakeholders while taking into account the vulnerable nature of our natural resources and society as a whole. The strategy

- enhances understanding of the global climate change regime: the negotiations process, international agreements, policies and processes and most importantly the positions Kenya needs to take in order to maximize beneficial effects
- assesses the evidence and impacts of climate change in Kenya
- recommends robust adaptation and mitigation measures needed to minimize risks associated with climate change while maximizing opportunities
- enhances understanding of climate change and its impacts nationally and in local regions
- recommends vulnerability assessment, impact monitoring and capacity building framework needs to respond to climate change
- recommends research and technological needs to respond to climate change impacts, and avenues for transferring existing technologies
- provides a conducive and enabling policy, legal and institutional framework to combat climate change, and
- gives a concerted action plan, resource mobilization plan, and a robust monitoring and evaluation plan to combat climate change.

An analysis of existing environmental policy and legal framework revealed that Kenya currently has no policies or laws that deal directly and explicitly with climate

change. The only policy that has come close to dealing with climate change "exhaustively" is the draft National Environmental Policy (NEP) of 2008. The Strategy therefore recommends that a comprehensive climate change policy be put in place, by either

- reviewing the clauses on climate change of the draft NEP and enacting it (the draft NEP) and/or
- enacting a new climate change policy.

This should be followed by a review of existing laws (in particular, the Environment Management Coordination Act, EMCA of 1999) to make them climate change responsive and/or enactment of a comprehensive climate change law, whichever the path Kenya will choose to follow. However, the Strategy recommends that a new climate change legislation be enacted, a process, which could run concurrently with the policymaking.

The Strategy established that institutions currently in place to govern climate change affairs are inadequate. It consequently recommended that a dedicated and adequately funded climate change secretariat be established within the Ministry of Environment and Mineral Resources to oversee climate change issues including the implementation of the adaptation and mitigation programmes and the other aspects of the National Climate Change Response Strategy. This institution, including the proposed structures within it, should be anchored on the provisions of the new climate change laws to be enacted.

Women are particularly vulnerable to climate change because they are more prone to the adverse impacts from climate change.

Experience shows that vulnerability is differentiated by gender. Adaptation to climate change or indeed climate variability is dependent on issues such as wealth, technological power, access to information, all of which are major problem areas for women. However, women can be key agents of adaptation and mitigation to climate change. Their responsibilities in households, communities and as stewards of natural resources position them well to develop strategies for adapting to changing environmental realities. The NCCRS recommends expanding the Consolidated Social Development Fund and Women Enterprise Fund to address the following social and gender based response strategies:

- disburse self-help grants for boosting existing

enterprises or establishment of new income generating activities by poor rural and urban women and men, e.g.

- making energy saving stoves (jikos) accessible and affordable to all, especially women
- planting of emerging crops i.e. aloe-vera, neem, and mangrove trees as alternative sources of income

### 3.3 Appropriate policy/legal framework

With regard to climate change, the difference between policy and law and the role of each of these in addressing the problems of climate change need to be clarified. Policy can be defined as a purposeful statement by a government expressing its recognition of a problem and stating its commitment to address a problem through specified actions. One of the key functions of policy is to advise and direct the government and the governed on necessary actions to address identified problems. However, given that policy is not binding, there would be no legal consequence on a government or a people for failing to implement their policy. Therefore, every policy ought to be translated into law for effective implementation but law has other functions that ought to be well understood.

These key points inform the need for an appropriate climate change legal framework in Kenya:

- Law provides legitimacy for actions (programmes and activities) to address the problem(s) that may otherwise be unacceptable.
- Law sets goals that a society desires to accomplish in light of a recognized problem.
- Law is the only acceptable tool in regulating human behaviour and conduct.
- Law has official sanctions which give it teeth against any non-compliance/disobedience.

Currently, there are a number of sectoral laws – including the new Forests Act (2005), Agriculture Act (Cap 318 of Kenyan laws), etc – which address various aspects of climate change, even though climate change is not the focus of the laws. Provisions of such laws ought to be carefully analysed and reviewed to determine which ones may be strengthened to facilitate climate change mitigation and adaptation in related sectors. In addition, there is a comprehensive environmental law – the Environmental Management and Coordination Act

(EMCA) – which has relevant provisions for mitigation against climate change. These include provisions for the establishment of air quality standards together with emissions requirements (Part VIII), environmental impact assessment requirements (Part VI) and environmental restoration orders and environmental conservation orders (Part IX).

However, this Act does not effectively address several climate change issues including

- development of national inventories of anthropogenic emissions of GHG in Kenya by source and removal of GHG by sinks
- national framework for carbon finance
- development of national and regional programmes to mitigate climate change by addressing anthropogenic emissions by source
- promotion of education, training and awareness on climate change; appropriate technology transfer arrangements and their authorization, and
- access to environmentally sound technologies etc.

For this reason, there ought to be a law that provides legitimacy for all climate change activities including necessary actions intended to mitigate against climate change such as provisions authorizing carbon trading. The way to arrive at this law could be through

- strengthening existing EMCA provisions to adequately provide for climate change adaptation and mitigation measures agreed in the UNFCCC and its Kyoto Protocol, and/or
- developing a new legislation on climate change, in which case, the National Environment Authority (NEMA) should take the lead as Section 124 of the EMCA obligates it (NEMA) to initiate legislative proposals for the purpose of giving domestic effects to international agreements to which Kenya is a Party. Development of a new law on climate change would require that the law-making process be gone through. Although the making of a new legislation may be time-consuming and expensive, it may, given the current circumstances in Kenya, be the better option, especially in view of the fact that any action that exposes EMCA to a review might lead to its

scaling down and therefore ought to be avoided. As a cost cutting measure, the process of making a new climate change law may run concurrently with policy making.

### 3.4 Policy perspective?

So far the country cannot be said to have made adequate effort to formulate policies and legislations to address climate change. The only policy that has climate change provisions is the yet to be approved draft National Environmental Policy. Even then the policy cannot be said to have strong provisions on climate change adaptation and mitigation. It merely states that a CC strategy should be developed. The other environmental policies are equally weak - the energy policy, the forest policy and the ASAL policy, all lean towards environmental management, yet climate change is a concern that is beyond environmental management. Although the formulation of the National Climate Change Response Strategy is a positive step towards addressing climate change, there is need for strong policies that address mitigation and adaptation, giving guidelines on integration and mainstreaming of these into our sectors and institutions. In order to effectively and efficiently combat the impact of climate change a strong policy has got to be enacted first before a legislation. It does not bode well for the country that there is a motion in Parliament to discuss a climate change law before a policy has been developed. The lessons we have learnt with the implementation of EMCA, 1999 without a proper policy should not be repeated.

Chapter 4 below examines existing institutions relevant to climate change and analyses their ability to address climate change. This is because strong institutions are essential not only in the implementation of the NCCRS but also in the formulation and implementation of policies that directly address climate change concerns such as adaptation and mitigation.

## Four: Climate Change Adaptation Institutional and Actors' Analysis

### 4.1 Government ministries

The main mandate of government ministries is the formulation, implementation and enforcement of policies. As far as climate change is concerned, government ministries are involved either directly in climate change projects and/or indirectly through the development and management of natural resources projects. The government ministries directly involved in climate change activities are the Ministry of Environment and Mineral Resources (MEMR) and the Ministry of Forests and Wildlife (MoF&W).

MoF&W is currently involved in policy research on Reduced Emissions from Deforestation and Forest Degradation (REDD). The Kenya Forest Service, which is under the MoF&W has one expert who normally assists government during negotiations on green house emissions from land use and land use change and forestry (LULUCF). There is need to build more capacity.

The other ministries indirectly involved in climate change activities include Ministry of Land, Ministry of Water and Irrigation, the ministry of Northern Kenya and other arid lands, the Ministry of Fisheries, Ministry of Tourism, Ministry of Public Health and Sanitation, the Ministry of Agriculture and the Ministry of Energy. These ministries are involved in projects that are mostly centered on providing policy guidance on community empowerment, primary healthcare, domestic water supply, crop agriculture, and livestock development. Other challenges existing in the ministries include lack of monitoring systems for impacts of projects, lack

of coordination of activities by the different sectors, implementation of policy, lack of capacity for technology transfer, duplication of activities by the different sectors and lack of assessment of the natural resource base and its economic value.

### Ministry of Environment and Mineral Resources (MEMR)

The Ministry of Environment and Natural Resources comprises three technical departments namely; Forests, Resource Survey and Remote Sensing, and Mines and Geology. The State Corporations in the Ministry are National Environmental Management Authority (NEMA) and Kenya Forestry Research Institute (KEFRI). MEMR hosts several institutions that are in charge of climate change, they include:

### Directorate of Environment

Between 2008 and 2009, the Ministry of Environment and Mineral Resources (MEMR) established its Directorate of Environment (DOE) headed by an Environment Secretary. At the moment the DOE has 3 directorates covering

- policy formulation, interpretation and implementation
- programmes, projects and strategic initiatives, and
- multilateral agreements

The Department of Multilateral Conventions is directly in charge of UNFCCC related policy activities. The Department of Programmes oversees implementation of projects including Natural Resource Management (NRM) and Climate Change. These measures have strengthened the Ministry's supervisory role. Despite proposals within the NCSA Report, climate change adaptation as a key principle of environmental management still does not seem to appear in the most recent MEMR's Strategic Plan for 2006-2010, which is completely silent on climate change issues. Whilst the Strategic Plan sees "mainstreaming environmental concerns into overall planning" as a key objective, climate change adaptation is not listed as a priority area and indeed, does not seem to be considered as part of environmental management. However, MEMR has recognized this problem and has since developed a National Climate Change Strategy.



### *National Climate Change Activities Coordinating Committee*

The National Climate Change Activities Coordination Committee (NCCACC) has 25 members drawn from the Ministries of Agriculture, Energy, Environment and Natural Resources, Planning, Finance, Industry, and Research and Technology, together with local authorities, private sector and universities. The NCCACC is instrumental in coordinating the activities of the Government of Kenya on climate change. The climate change focal point in NEMA and the Ministry of Environment and Mineral Resources constitutes the secretariat. The NCCACC has under it four technical working groups following the working structure for the national communications:

- vulnerability
- mitigation and adaptation
- training, education and public awareness (cross cutting issues)
- GHG inventory

### *Kenya Meteorological Department (KMD)*

MEMR is directly in charge of the Kenya Meteorological Department, whose function include the provision of meteorological and climatological services to agriculture, forestry, water resources management, civil aviation and the private sector including industry, commerce and public utilities for the better exploitation and utilization of natural resources for national development

### *National Environment Management Authority (NEMA)*

The National Environment Management Authority (NEMA) is established under the Environmental Management and Coordination Act (EMCA) No. 8 of 1999, as the principal instrument of government in the implementation of all policies relating to the environment. NEMA, under the oversight of the Ministry of Environment and Mineral Resources (MEMR), is a key government institution overseeing climate change issues in Kenya.

NEMA hosts the Designated National Authority (DNA) responsible for approving Climate change

mitigation projects under the Kyoto protocol. Therefore the DNA relies heavily on the National Clean Development Mechanism (CDM) Clearing House and the ad-hoc working groups under the NCCACC in its work. Due to financial and staff constraints, the CDM promotional activities are very limited in scale and scope. The National CDM Clearing House draws its membership from the National Climate Change Activities Coordination Committee. The functions of the Clearing House have been combined with what the Global Environmental Facility (GEF) National Task force that reviews and approves GEF projects. The Clearing House Mechanism checks CDM projects for compliance with national requirements and legislation as well as with the sustainability criteria. According to the 2001 Guidelines on CMD, the Clearing House will be responsible for: Setting the criteria for CDM projects, processing of CDM project proposals, monitoring and evaluation of all CDM projects, verification and recommendation of CDM project proposals for approval/disapproval by the NCCFP, liaison with stakeholders, promotion of CDM projects, coordination of all CDM projects, advising the government through the focal point on all issues pertaining to the CDM and development of a national database for CDM projects

Kenya already has two registered project under CDM. These are Mumias Bagasse cogeneration and Olkaria III phase 2 geothermal expansion project. Other project in the pipeline include the KenGen geothermal energy projects, Eburru Geothermal Project - 21 GWh, Redevelopment of Tana Power Station Project - 130.3 GWh, Optimization of Kiambere Power Project - 60 GWh, Kipevu Combined Cycle Power Project - 223 GWh and Sondu Miriu Power Project - 330 GWh. All these are in the pipeline and it is anticipated that they will generate a total of 1,040 GWh, thus displacing 665,790 tons of CO<sub>2</sub> p.a.<sup>4</sup> Other players interest in CDM projects include Bamburi Cement manufacturers, the Kenya Greenbelt Movement Reforestation Biocarbon Project, and KTDA micro-hydro project. However, Kenya's performance in CDM is still dismal and need to be improved especially in forestry and waste management where there are huge opportunities. The reasons given for Kenya's poor performance include corruption, low level awareness of CDM potential on the part of private sector, particularly investment and financial organizations.

<sup>4</sup> [www.kengen.co.ke](http://www.kengen.co.ke)

The coordination of climate change activities is undertaken by the National Climate Change Focal Point (NCCFP) in NEMA. The role of the NCCFP is to

- coordinate national climate change activities
- liaison with the UNFCCC Secretariat
- act as the secretary to the National Climate Change Activities Coordination Committee and the four technical working groups

The authority core functions:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental concerns into development policies plans, programmes and projects.
- Assess natural resources, their utilization and conservation for proper management of the environment.
- Examine land use patterns to determine their impacts on natural resources and use this information to formulate land use guidelines.
- Advise the government on the implementation of relevant regional and international environmental conventions, treaties and agreements to which Kenya is a party and those that Kenya should be a party.
- Mobilise and monitor the use of financial and human resources for environmental management
- Identify projects and programmes plans and policies that require environmental auditing and monitoring.
- Develop procedures and safeguards for the prevention of accidents, which cause environmental degradation and recommend remedial measures.
- Monitor and assess activities being carried out by lead agencies to ensure that the environment is not degraded; environment management objectives are adhered to and adequate early warning on impending environmental emergencies are given.
- Enhance environmental education and public awareness in collaboration with lead agencies on the need for sound environmental management as well as enlisting public support.
- Publish and disseminate manuals, codes or guidelines and render advice and technical support where possible to entities engaged in natural resources management.
- Prepare annual state of environment reports and the periodic environment action plans.

In 2005 NEMA undertook a Climate Change National Capacity Needs Self-Assessment (NCSA), and adaptation was identified as the chief priority for Kenya in response to climate change based on relevance to other policy and development goals (NEMA, 2005). The Report detailed the need for Kenya to address gaps in its capacity to cope with climate change. Capacity needs within Kenya are listed as systemic, institutional and individual and cover the following concerns:

- Systemic level: The paper depicts the need for a well managed, funded and integrated network of stakeholders, who share information, raise awareness and allow climate issues to filter into mainstream policy making.
- Institutional level: The NCCACC is seen as the 'central agency' to direct climate related activities and spearhead research and policy developments.
- Individual level: Specialized knowledge is required, hence the need for capacity building.

However, there has been very little actual progress on many of the Assessment's recommendations. MEMR has however moved and created a Department of Conventions within the Directorate of Environment whose overall goal is to give directions to among other conventions, Biological Diversity, Combating Desertification and Climate Change.

### *Climate Change Coordination Unit (CCCU)*

A Climate Change Coordination Unit (CCCU) as part of Sustainability Unit has been established at the Prime Ministers office (PMO) with an initial support from the Danish Embassy. In line with the supervisory function of the PMO, the aim of the Unit is to provide high level political support to climate change activities in Kenya through support to the Ministry of Environment and Mineral Resources. In addition to leveraging financial support to the climate change arena, the unit is to assist in harmonizing ongoing and future activities in order to assist in the integration of climate change into other government departments and sectors.

### *Disaster Risk Management and Preparedness*

The Office of the President (PO) hosts most institutions that deal with disaster management in Kenya. The National Disaster Operations Centre (NOC) is charged

with the coordination of the response and relief during emergencies and disasters. If a major disaster situation is declared, an inter-ministerial committee at PS level is formed and the NOC functions as its secretariat. The NOC is also responsible for coordinating the disaster response preparedness, including the training and capacity building within the different institutions that have a role to play during disasters. Agencies responsible for early warning systems inform NOC in case of emerging disasters. The Kenyan Food Security Structure is specifically charged with the coordination of the monitoring of the food security situation and the humanitarian relief distribution. It hosts monthly meetings on the food security situation with key national stakeholders as well as bilateral and multilateral donors involved in food security and relief issues. There is a contingency fund for drought response relief within the Office of the President with resources from WB, EU and GoK.

#### 4.2 Government parastatals

Parastatals are key policy implementing agencies of their line ministry. They are also involved as implementing agencies for projects initiated or funded by the NGOs, UN & related bodies and the development partners. Key parastatals involved in Climate Change are: The National Environmental Management Authority (NEMA), Kenya Meteorological Department (KMD), Kenya Forest Service (KFS), KenGen and the Department of Resource Survey and Remote Sensing (DRSRS).

KenGen is the country's lead producer of electricity and is pursuing CDM projects through the renewable energy. Some of these projects include: Eburru Geothermal Project, Olkaria II Geothermal Expansion Project, Redevelopment of Tana Power Station Project, Optimisation of Kiambere Power Project, Kipevu Combined Cycle Power Project, Sondu Miriu Power Project.

KFS operates within the ministry of Forestry and Wildlife. KFS is exploring possibilities of accessing carbon credits to assist in keeping the existing forests intact, especially those that are not gazetted under the "payment for avoided deforestation" schemes.

DRSRS is a department within the Ministry of Environment and Mineral Resources. It collects and collates data and information on land use changes, including through satellites, and conducts censuses of resources such as wildlife and livestock.

The Ministry of Trade and Industry together with KIRDI and with support from UNIDO formed the Kenya National Cleaner Production Centre (KNPC) which is registered as a Trust within the ministry. It is one of the over 35 National Cleaner Production Centres (NCPs) that were solely established to help industrialists and businesses in developing countries and those ones with transition economies to remain competitive and increase their profitability by reducing their water and energy consumption, pollution emissions and waste volumes whilst improving on their product quality and work place safety. Currently the centre conducts training in areas of energy and environmental management. In addition, the centre is implementing an eco-labelling project that is supposed to help the country increase her international competitiveness on leather footwear and ease the marketing of the product. The centre is going to play an even greater role in future as the European market becomes more conscious of 'carbon foot prints'

#### 4.3 The National Assembly of Kenya

The legislators have a great role in enacting laws that can greatly influence the response to climate change. Kenya's National Assembly has not been left out. The Parliamentary Committee on Energy Communication and Public Works (The PC-ECPW) in the Kenya National Assembly hosts PANERECC the Parliamentary Network on Renewable Energy and Climate Change which was established in December 2006 to promote New and Renewable Energy (NRE) as a tool for combating climate change and ensuring development using sustainable pathways. A lot has been achieved through PANERECC specifically has led to more investments in renewable sources to achieve social and economic equity, and encouraged private sector participation in the generation of renewable energy. A number of online educational publications have been produced. A motion has now been passed in Parliament for the formulation of a Climate Change Adaptation and Emission Reduction Bill (CCAER) 2008<sup>5</sup>. To positively influence the outcome of the Bill, there is need for Research Development &

<sup>5</sup> [www.panerecc.or.ke](http://www.panerecc.or.ke)

Education (RDE) to engage with PANERECC to ensure that a good bill, that takes into account Kenya's aspiration as articulated in the NDP and Vision 2030, and one that prioritizes adaptation is passed.

MPs are also involved in the international arena through the recently created Pan African Parliamentary Network on Climate Change. The country hosted the second Pan-African Parliamentary Network on Climate Change Summit in October 2009. During the summit, MPs agreed on key climate change issues that affect African countries from global down to country level. Some of the issues agreed on include: the importance of the Kyoto protocol as binding agreement and the need for climate change adaptation funds for African countries.

#### 4.4 International NGOs, including UN and related bodies

The following are some of the International NGOs with climate change activities in the country: WWF, International Union for Conservation of Nature (IUCN), Birdlife International, Care International, Action Aid, World Vision, Oxfam, International Institute for Sustainable Development (IISD) and International Development Research Centre (IDRC).

IUCN has a regional climate change and development programme, that includes vulnerability assessments using a tool called CriSTAL (Community-based Risk Screening Tool - Adaptation & Livelihoods) and piloting of adaptation activities at community level.

WWF-EARPO has been implementing a climate change mainstreaming project, with funding from the Norwegian Government for its freshwater programme and in collaboration with ACTS and ATPS.

Care International has a Pan-African climate change initiative that is training stakeholders on the use of a Climate Change Vulnerability and Capacity Tool and developing some adaptation projects at the community level. Another programme that is soon to start is on Adaptation Learning.

World Agro-forest Centre through the East African Programme is implementing various NRM programmes which can be linked to change adaptation. The programmes are:

- The African Highlands Initiative (AHI) which aims to improve livelihood and reverse natural resource degradation in the intensively cultivated highlands

of eastern Africa. There are projects in Vihiga and Embu districts under this programme.

- Africa Network for Agriculture, Agro-forestry and Natural Resources education ANAFE. This is a network of 117 educational institution in Africa whose objective is to strengthen the teaching of multi-disciplinary approaches to land management
- SearNet. It was established in 2003 and its focus is in water harvesting. Some of SearNet's projects are domestic rainwater harvesting in Kusa village, ground water prospecting in Kirinyaga District, hydrologic assessment of small-holder runoff catchments schemes in Machakos District, impact of rain water harvesting in Lare division, market focused water shed development, rainwater harvesting for banana production in Magoya, Siaya District.

The key UN organisations involved in climate change in Kenya are, the United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP).

The UNDP provides advice to government on key development issues and challenges. UNDP is implementing various climate change adaptation projects in collaboration with the Ministry of Environment and Mineral Resources, the Ministry of Water and Irrigation, the Kenya Meteorological Department and the UNDP Dryland Development Centre.

Under climate change mitigation, UNDP through the UNDP-GEF is working with the Ministry of Trade and Industry and the Kenya Association of Manufacturers (KAM) in a project - the GEF-KAM Industrial Energy Efficiency project - aimed at removing barriers to energy conservation and efficiency in small and medium scale enterprises. The main goals of the project are to:

- To remove barriers to energy efficiency and conservation (information, technical, financial, institutional)
- Enhance energy efficiency in SMEs, and enable investments in energy efficiency
- Reduce CO2 emissions
- Industry to produce high quality products at lower cost
- Increase the institutional capability to implement energy efficiency projects

UNDP also has the following programmes that are relevant to climate change: the CDM programme and the MDG carbon facility.

UNEP in collaboration with NEMA and Kenya Marine and Fisheries Research Institute (KEMFRI) is supporting the implementation of a climate change capacity building projects in the country. In addition, UNEP is supporting the preparation and coordination of the National Action Plan and also spearheading the formation of Global Climate Change Adaptation Network.

Kenya is a signatory of the United Nations Framework Convention on Climate Change, which is an international treaty that sets general goals and rules for reducing global warming and to cope with whatever temperature increases are inevitable. The UNFCCC oversees the Kyoto Protocol which, as an addition to the UNFCCC, is an international and legally binding agreement to reduce greenhouse gas emissions worldwide. The UNFCCC Secretariat supports all institutions involved in the climate change process, particularly the Conference of the Parties (COP), the subsidiary bodies and their Bureau.

Other agencies with relevance to climate change include the World Bank, the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Educational, Scientific and Cultural Organization and the United Nations Human Settlement Programme (UN-Habitat)

#### 4.5 Regional NGOs and co-operations

Regional organisations operate in several countries. With regard to climate change in Kenya some of the key regional organizations are the African Centre for Technology Studies (ACTS), the African Technology Policy Studies (ATPS) and the East African Wildlife Society, which hosts the Kenya Forests Working Group (KFWG).

Regional co-operations with relevance to climate change in Kenya are: AU, NEPAD and IGAD.

IGAD has a Climate Prediction and Application Centre (ICPAC) whose mission is to foster, through a whole set of programs, sub-regional and national capacity for

climate information, prediction products and services, early warning, and related applications as a contribution to sustainable development in the IGAD sub-region.

#### 4.6 National NGOs and CBOs

Several national NGOs are involved in the implementation of climate change adaptation and mitigation activities. National NGOs operate at the national level while CBOs operate at the community level. Some of the NGOs and CBOs are: Forest Action Network (FAN), Nature Kenya, Centre for Science and Technology Innovations (CSTI), Coastal Oceans Research and Development – Indian Ocean (CORDIO) and Kenya Forest Working Group.

The Forest Action Network (FAN) is implementing two projects: one to enhance the capacity of journalists to understand climate change and another one to enhance the climate change adaptive capacity of communities. It has also initiated the establishment of a Civil Society Climate Change Working Group that will operate like the Kenya Forests Working Group.

Nature Kenya is trying to access carbon credits for a community in Manduguni at the coast that is involved in tree planting.

#### 4.7 Donors and development partners

The range of donors active in Kenya's climate change activities includes multi and bi-lateral donors, foundations, corporate organisations and individual donations. Donor organisations have been providing financial support to aid efforts on climate change adaptation and mitigation. They include the following: the World Bank, JICA, USAID, Sida, FINNIDA and Danida. They have formed a Donor Climate Change Coordination Group. The group makes it easier to access information, which is posted on the web, on the different activities being supported.

A number of these international development agencies have been active in climate change activities, funding projects and programmes, for example the NCCRS was a project funded by Danida and Sida, while Danida in conjunction with the government recently established a natural resource management programme. In addition USAID has from 2006 been supporting an adaptation programme for pastoralist communities in the north eastern part of the country.

#### 4.8 Private sector

Climate change adaptation and mitigation has attracted many private sector firms. Some are pursuing pure mitigation projects by taking advantage of the CDM and voluntary carbon. These include Mumias Sugar Company, Bamburi (part of Lafarge group of companies), and Orion East Africa Limited.

Others, such as East African Breweries Ltd. (EABL) and Capital FM are also involved in climate change, through corporate social responsibility.

#### 4.9 Civil society organizations

There have been attempts to involve civil societies in climate change matters with Forest Action Network (FAN) establishing the Kenya Climate Change Working Group (KCCWG). The KCCWG is a coalition of Civil Society Organizations engaged in climate change work in Kenya. It was formed based on the growing understanding that all over the world now, climate change has been recognized as a reality resulting to food shortages, floods, and droughts. KCCWG draws its membership from 40 civil society organizations. These organizations have organized themselves into thematic task forces that reflect the major sectors of Kenya's socio-economic development. These are:

- Agriculture, livestock and fisheries;
- Urbanization, housing and infrastructure;
- Water;
- Forestry;
- Energy;
- Tourism, trade and industry;
- Conflict over natural resources

In addition, Kenya is currently host to the secretariat office of the Pan African Climate Justice Alliance (PACJA), which is a coalition of African civil societies working on climate change and sustainable development. The alliance was formed in August 2008 after a series of workshops held around the continent. The alliance undertakes activities that, primarily, seek to advocate, lobby and create awareness on the urgent need to integrate climate change into laws, policies and practices in broader sustainable development and poverty reduction strategies in African countries.

#### 4.10 Others

Other actors mostly academic and research institutions are indirectly involved in climate change capacity building through research and training in natural resource management. Most universities are now offering courses on environmental, energy and natural resource management in addition to traditional courses such as geography, meteorology, Paleoclimatology etc.

Research institutions such ICIPE (International Centre of Insect Physiology and Ecology), KARI (Kenya Agricultural Research Institute) and ILRI (International Livestock Research Institute) are playing a great role to address the challenges of climate change, though research that has been of great assistance to the agricultural and livestock sectors. These institutions have come up with plant and animal varieties that are drought tolerant, an achievement that is vital in addressing climate change adaptation.

#### 4.11 Institutional perspective

The CCCU at the PM's office has been the de facto climate change convening and catalysing institution in the country. The creation of CCCU in 2008 can be said to have spurred the Ministry of Environment to start taking climate change issues seriously. This was demonstrated in 2008 when the Prime Minister dispatched his team to Poznan for COP14 after the Minister for Environment stopped his officers from attending the COP. From then on, the minister started taking climate change issues seriously on a personal level. Both the CCCU at the PM's office and the Ministry have made mark on climate change because of the personal involvement of the holders of these offices. It can be concluded that without this personal involvement very little could have been achieved by respective institutions. None of the above institutions are well equipped in terms of resources (both human and physical), capacity and structure to combat climate change. It is partly for this reason that there is lack of coordination. During the development of the national climate change response strategy process, a proposal was made that a 'Climate Change Commission' should be established to spearhead all issues pertaining to climate change. This was however opposed by the Ministry of Environment, who feared losing control of climate change activities and hence funds. Instead a proposal was

made to create a climate change secretariat headed by a programme officer who would be under the supervision of the permanent secretary. With this secretariat, the Ministry of Environment is supposed to coordinate and supervise climate change adaptation and mitigation activities in all sectors in the country. However it lacks adequate human resources and capacity to carry out this function. The relatively newly created directorate under the Environment Secretary has performed dismally, not as earlier envisioned, there is no evidence that the climate change secretariat will perform better. However it is a beginning and with good leadership it can make a difference.

With the possible enactment of a new constitution in the near future, a convening institution for climate change will have to be placed either in the office of the President or the Ministry of Finance. This is because the Prime Minister's office has been removed from the new Constitution.

## Five: Public Awareness of Climate Change

The importance of climate change awareness is enshrined in Article 6 of the UNFCCC, which calls upon its parties to among other things, develop and implement educational and public awareness programmes on climate change and its effects. In fulfilling this obligation, Kenya undertook a capacity needs assessment in the area of climate change awareness in 2005. The approach used, like in other countries where similar assessments (UNEP 2005) were carried out, was to interview at least four individuals from each of the following groups:

- Business leaders who work in both the energy and non-energy sectors
- Members of parliament (or a member of their staff)
- Executives of environmental and developmental, media associations, women's, religious and civic organizations
- Journalists and media executives
- University professors and administrators, and
- Government officials.

The objectives of the survey were:

- To assess how important the issue of climate change is at the country level
- To determine how much is communicated about climate change
- To assess the current level of accurate information and positive attitudes, and
- To decide who should be targeted in priority in a Climate Awareness Programme.

The results of this survey are shown below:

STAKEHOLDER GROUPS	MAIN FINDINGS
Government officials	Lack of awareness that climate change is an issue, lack of acknowledgement of linkage between climate change and climate variability
Community based organisations	Lack of awareness
Civic leaders	Lack of knowledge and awareness
Journalists	Lack of awareness
Industrialists	Lack of awareness of opportunities that could assist them with information so that they could be more cooperative

Table1: Climate change awareness in Kenya, based on NEMA (2005).

Based on the results presented in Table 1 above, one can conclude that the level of awareness of climate change in Kenya at that time was very low.

### Events that might have raised climate change awareness in Kenya

Climate change awareness in Kenya currently may be different from 2005 when the study was undertaken given that a series of climate change related events have taken place from the time this study was conducted. These events will be narrated here below.

#### *The 12th Conference of the Parties (COP12) to the UNFCCC*

The 12<sup>th</sup> Conference of the Parties (COP12) to the UNFCCC was held in Nairobi, Kenya, between the 6<sup>th</sup> and 17<sup>th</sup>, November 2006. As a major international event, it received substantial local and international media coverage, both print and electronic, as hundreds of people from all corners of the globe gathered in Kenya's capital. This helped raise the level of awareness of many Kenyans on climate change issues.



### *The drought episodes of 2006-2009, their effects, and linkage with other local environmental issues such as conservation of the Mau Forest*

Between 2006 and 2009, Kenya experienced a series of devastating drought episodes. These conditions were felt at the same time when debates on the need to protect vital natural resources such as the Mau Complex were also raging in the country. Media reporting on these issues tended to link/intertwine climate change and environmental degradation as the cause of some of the problems like drought and hunger/starvation that the country was facing.

### *The development process of Kenya's National Climate Change Response Strategy (NCCRS)*

In 2009, Kenya undertook a process to develop its National Climate Change Response Strategy (NCCRS) through a participatory approach involving several processes including two national and seven regional workshops. This project was spearheaded by the Ministry of Environment and Mineral Resources (MEMR). Along the path, key stakeholders such as Members of Parliament (MPs), the private sector, non-governmental organizations (NGOs), government ministries and agencies, the media, the academia, development partners, etc were appraised as well as consulted on climate change issues.

### *The Copenhagen COP 15*

On top of the drought and the NCCRS development process, COP 15 to the UNFCCC was held in Copenhagen in December 2009. COP 15 was the most covered and most talked about of the UNFCCC conferences, and was an unprecedented event in terms of the level of awareness on climate change issues it helped create among top African leaders, heads of states, ministers, etc; never before in the history of the climate change regime had anything like it been seen. The reason behind this is perhaps due to the fact that the COP was meant to discuss and agree on a successor binding document to the Kyoto Protocol, whose first commitment period is ending in 2012.

Media coverage of the COP 15—before, during and after—was enormous. Several mainstream Kenyan media houses such as the Citizen, Nation Media, and the Kenya Television Network (KTN) were present at the COP, relaying proceedings of the events to Kenya on a daily basis. In general, media coverage of climate change in Kenya has been on the increase. For instance, a search for climate change articles from the Nation Media ([www.nation.co.ke](http://www.nation.co.ke)) search engine returns 105 hits (i.e. 105 online articles on climate change) for December 2009 alone. This is a positive move not only for Kenya, but for the entire African continent because it means that climate change and other major environmental concerns will no longer be pushed to the periphery, but will form key components of central governments' planning.

### **Current level of climate change awareness in Kenya**

Despite all this however, climate change awareness in Kenya, like the rest of African countries, is still quite low, perhaps not as low as when the country undertook its climate change awareness capacity needs study. This was evident during the process of developing Kenya's National Climate Change Response Strategy (NCCRS). In particular, many people at the grassroots still cannot differentiate between climate change impacts and problems caused by local environmental degradation.

For example, while it is clear that the changing climate has had a profound effect on the hydrological cycle in Kenya with droughts becoming more common, it is equally clear that the problem is not caused by climate change alone, but rather, human influence at the local level, namely, degradation of Kenya's major Water Towers such as the Mau, Mt. Kenya and the Arberdares, etc is also part of this problem. Similarly, it is becoming common in Kenya to associate the destructive effects of floods with climate change while ignoring poor and dilapidated infrastructure as well as improper land use patterns (farming on flood plains and river banks, failure to follow urban housing codes, etc)—all factors that exacerbate the problem.

These findings corroborate the results of an opinion poll carried out between 2007 and 2008 by the Gallup, which stated that climate change awareness in developing countries was low compared to developed countries, with African countries the least aware. According to the

poll, 56% of Kenyans reported some knowledge about global warming (Pelham 2009), i.e. about the fact that temperatures were rising, but most could not explain the cause of these temperature increases. Barring any major anomalies with these findings, this means that over 44% of Kenyans have no knowledge of climate change. Sadly, a majority of this group are poor rural people who depend on climate sensitive economic sectors such as pastoralism and agriculture for their sustenance.

### **What needs to be done**

This situation calls for heightened climate change awareness targeting at least two specific groups,

- those who have no knowledge at all of climate change; since the majority of Kenyans in this group are rural residents engaged in some form of farming activity, we would brand these awareness campaigns “rural farming community climate change awareness campaigns”; and
- those with some knowledge of climate change, ranging from basic-level knowledge to expert knowledge.

### *Rural farming community climate change awareness campaigns*

To a majority of natural resource dependent Kenyans residing in rural areas, the climate has changed, and continues to change, but sadly, not for the better. Many talk of the days when season after season they would reap bumper harvests. This is not the case anymore: the situation has reversed, with droughts, crop failure, water shortages and perennial hunger and starvation being the norm. However, when it comes to explaining the cause of these problems, many are at a loss. This is where climate change awareness should be targeted. The message should be passed in a language understandable to the local people (i.e. local language) and in a simplified manner, e.g. by linking climate change to perennially low crop yields. This should be accompanied by downscaled climate and weather data, which will enable rural people to better plan their climate-sensitive economic activities, e.g. planning to plant exactly when rains are expected rather than during the “planting seasons” they are accustomed to since thanks to climate change, these planting seasons are changing.

### *Climate change awareness among Kenyans with knowledge of the issue*

Of the 56% of Kenyans who reported knowledge of climate change according to the aforementioned Gallup poll, many are not well versed in various climate change issues such as adaptation and mitigation arguments. This again was evident during the consultative workshops to develop the country's NCCRS.

In particular, many Kenyans are still not aware of the opportunities that climate change presents, e.g. the carbon markets - both the compliance markets' Clean Development Mechanism (CDM) and the voluntary markets in the land-use sector - and how these work. Kenya stands to benefit immensely from these opportunities, hence the need to raise the awareness of its citizens on these issues.

For instance, Reducing Emissions from Deforestation and Forest Degradation (REDD) and its variances such as REDD+ (and now REDD++) present forest-dependent communities with opportunities to benefit monetarily from sustainably using their forests. It would be therefore important to raise the awareness of these communities on how REDD works so that they can be strategically prepared to benefit from it. Similarly, the industrial sector should be appraised on how the CDM works because the sector stands a chance to benefit from the mechanism.

Some ways of raising public awareness include

- establishing a National Climate Change awareness campaign. The National AIDS/STD Control Programme (NASCOP) model for sexually transmitted diseases can be adapted
- using print and electronic media to pass climate change information in various articles and programmes on climate change in the media
- Education-based entertainment: educating the citizens on climate change while entertaining them at the same time through theatrical performances
- mainstreaming climate change awareness in all programmes and projects undertaken by the Government, NGOs, CBOs, media etc
- creating climate change training material and programmes for target groups of stakeholders and specific groups, i.e. women, men children, youth, people with disabilities, religious groups
- promotional activities and sponsorship of events

awareness programmes that target those with some knowledge of climate change to help them take advantage of the opportunities that climate change brings.

- with climate change themes, e.g. a reward scheme for pupils or individuals who plant trees and maintain them
- schools or colleges' competitions where students perform drama, poetry, essays and music with climate change themes and the best get rewarded,
- decentralising Environmental Committees to the village level
- formation of youth, women's and men's groups, CBOs, as forums for outreach, and including existing youth groups and initiatives in ongoing climate change and decision making activities
- documenting climate change impacts and linking them to community livelihoods
- online blogging on sites such as Facebook, Twitter, Google Groups, and Yahoo Groups through which various topics on climate change could be discussed,
- formation of online networks, which are almost similar to online blogging but differ in the sense that there is a possibility for physical contact and face-to-face discussions
- using graphical images to pass climate change information
- eco-tournaments – using sporting events (athletics, football, etc) to raise awareness
- encouraging individual voluntarism in raising awareness, and
- involving the corporate sector, especially the mobile telephone industry e.g. to display 'airtime top-up messages' on climate change.

### Perspective on climate change awareness

Climate change awareness is low countrywide, particularly, among the rural folk, who also happen to be the most vulnerable to the adverse impacts of climate change because of their high dependency on climate-sensitive natural resources and high poverty rates. This calls for enhanced climate change awareness in a simplified language and manner understandable to different groups (women and youth, disabled, farmers and pastoralists, etc) so that they can be better prepared to deal with the problem. Further, it is important to create

## Six: Regional and International Actions

This chapter deals with Kenya's participation in regional and international climate change negotiations and activities. It will discuss actions taken by individuals (in their own capacity) and those taken as representatives of Kenya in climate change and related activities. The section covers the role played by only well known personalities. The section will also discuss climate change events that Kenya has hosted, especially those of regional nature.

### Key personalities involved in climate policy

Some of the key Kenyan personalities with a keen interest in climate change include the following:-

#### *Hon. Raila Odinga, the Prime Minister*

Prime Minister Raila Odinga is among a few top Kenyan politicians with a keen interest in climate change. Among the activities he has steered is the process of restoring the Mau forests through the establishment of the Mau Restoration Secretariat and the subsequent creation of the Mau Rehabilitation Trust Fund. The Prime Minister further mobilized the international community (UN bodies, the World Bank, Multilateral Donor agencies) and Kenya's private sector to help raise funds for the Mau Trust Fund through a forum dubbed the "Strategic Partners Consultative Forum for the Rehabilitation of the Mau Forest Ecosystem" at the UN Gigiri offices. He has used such fora to advance Kenya's climate change concerns.

Mr. Odinga's interest in climate change is most noticeable in his speeches in foreign visits, in which climate change dominates. In October 2009, he delivered a speech to a French audience where he talked about the need for the international community to "seal the deal" on climate change at Copenhagen. He also reiterated Kenya's position on climate change, actions and measures the country was putting in place to tackle global warming, as well as the challenges, including financial and technical, that the country was facing in its efforts to curb the problem.

Mr. Odinga was among a high-level governments' representation to the European Development Days seminar held in Stockholm, Sweden in October, 2009. He used this occasion to call for the establishment of a Climate Adjustment Fund to help developing countries cope with the adverse impacts of global climate change.

The Prime Minister has used his influence to help mobilize the international community efforts towards helping Kenya tackle climate change. Recently, in a climate change-laden speech delivered at the Japan National Press Club in Tokyo during his visit to the Far East (Japan and Thailand), he successfully negotiated a Ksh. 2.625 billion (35 million USD) grant towards implementing climate change response activities in Kenya including the development of geothermal energy sources to help Kenya develop cleanly.

#### *Mr. Alex Alusa of Environment and Climate Change Coordination Unit*

The establishment of a Climate Change Coordination Unit (CCCU) in the Prime Minister's Office further underscores the importance the Prime Minister attaches to climate change. Through this climate change office where the PM's advisor on Climate Change, Mr. Alex Alusa sits, the PM was instrumental in driving the process of developing the National Climate Change Response Strategy (NCCRS). In particular, through active engagement of Mr. Alex Alusa and other officers in the CCCU, the PM helped mobilize line ministries to submit their input for inclusion into the NCCRS and ensured their active participation during the process.



### *Prof. Wangari Maathai*

Prof. Wangari Maathai's environmental advocacy work is recognized globally. Her work in the environment dates back to the 1980s when she and others continually battled the Moi regime for its plunderous attitude towards the country's natural (forest) resources. She is also the founder of the Green Belt Movement (GBM), an organization that works with rural communities to restore and protect native forests. Because of her active engagement in environmental campaigns, Professor Maathai was awarded the 2004 Nobel Peace Prize. Using her high profile, she has become an active campaigner against global warming.

She was also among high-profile personalities co-opted by the Prime Minister's Office in October 2009 to help negotiate funding for the Mau Rehabilitation Trust Fund at the "Strategic Partners Consultative Forum for the Rehabilitation of the Mau Forest Ecosystem" forum.

Prof. Maathai serves or has served on the boards of several organizations including the UN Secretary General's Advisory Board on Disarmament, the Jane Goodall Institute, Women and Environment Development Organization (WEDO), World Learning for International Development, Green Cross International, Environment Liaison Center International, the WorldWIDE Network of Women in Environmental Work, and the Global Footprint Network. She is also the Good-will Ambassador for the Congo Basin Forest Ecosystem.

The professor has also worked with other renowned international personalities in the global climate change regime to advance the cause of reversing global warming. Among these is Dr. Rajendra Pachauri, chairman of the Intergovernmental Panel on Climate Change (IPCC). Prof. Maathai is a contributing author to "Other Worlds are Possible", part of the Up in Smoke? Series, and a book that impresses upon the world to adopt a new economic direction - one that would integrate economic, environmental and social needs.

### *Hon. John Michuki*

Since his appointment as the Minister for the Ministry of Environment and Mineral Resources, Hon. John

Michuki has been instrumental in pushing the ministry's agenda on climate change.

Mr. Michuki was particularly instrumental in driving forward the process of developing Kenya's National Climate Change Response Strategy (NCCRS). In the period leading to COP 15 in Copenhagen, Denmark, the minister was a vocal figure in Africa, calling on the continent to reach a common negotiating position to take to the conference.

He is currently the co-chair of International Environmental Governance (IEG), an open-ended intergovernmental group of ministers or their representatives whose role is to help initiate measures that can improve coherence in international policy making, improve the effectiveness of multilateral environmental agreements and enhance the role of the UNEP as a global environmental leader. In 2009, Mr. Michuki received an award from the UNEP for his efforts to clean-up the Nairobi River basin.

Other notable Kenyans who have played a big role in advancing actions against global climate change particularly because of their career in the field or related disciplines include the following:

### *Prof. Richard Odingo*

Prof. Richard Odingo, a lecturer of Hydrology/ Climatology at the University of Nairobi, was a co-vice chair of the IPCC Working Group 2 (WGII) in 1992; co-vice chair of the WGIII in 1994 and co-vice chair of the whole of the IPCC since 1997. He has in fact, been involved with the organization since its inception in 1988.

As a member of the IPCC WGII, Prof. Odingo's work in climate change focuses mostly on adaptation to climate change. The IPCC WGII assesses the scientific, technical, environmental, economic and social aspects of vulnerability (sensitivity and adaptability) to climate change of, and the negative and positive consequences for, ecological systems, socio-economic sectors and human health, with an emphasis on regional sectoral and cross-sectoral issues. Being a member of the IPCC, Prof. Odingo was a co-winner of the 2007 Nobel Peace Prize, which the organization shared with Albert Gore, former vice-president of the United States of America (USA) and a renowned campaigner against global climate change.

Prof. Odingo has used his role at the IPCC and his international reputation to further the course of

action against climate change by providing insightful commentaries on the topic, especially on the issue of adaptation. Many of these appear in international news articles. For instance, in 2006 in an article in the UK's Independent newspaper, he called on the world to adopt a ninth Millennium Development Goal (MDG), specifically addressing climate change, as a matter of extreme urgency (Odingo 2006).

### *Prof. John Ng'ang'a*

Professor Ng'ang'a is a lecturer of Meteorology at the University of Nairobi. He has been a member of the National Climate Change Activities Coordinating Committee (NCCACC) since its establishment in 1992. While serving in the NCCACC, Prof. Ng'ang'a has been instrumental in driving forward nearly all the climate change activities and processes that the country has undertaken at national level. These include the process leading to the preparation of Kenya's First National Communication to the UNFCCC where he participated in developing the National Inventory of Green House Gases sources and sinks. Prof. Ng'ang'a is currently involved in the same process which will lead to the development of Kenya's Second National Communication.

Other climate change processes in which Prof. Ng'ang'a has been involved include the preparation of Kenya's Climate Change Technology Needs Assessment (2005), Climate Change Awareness Needs Assessment (2005) as well as the recently concluded NCCRS.

At the 15<sup>th</sup> Conference of the Parties (COP) to the UNFCCC held in Copenhagen, Denmark, Prof. Maathai was made a United Nations Messenger of Peace with a special focus on the environment and climate change. Messengers of Peace are individuals widely recognized for their talents in the arts, academia, sports, entertainment and other fields who work to help raise worldwide awareness of UN ideals and activities. Through their public appearances, contacts with the international media and humanitarian work, they expand public understanding of how the UN helps to improve the lives of people everywhere. She was among the delegates who addressed the High Level Segment of COP (not a side event), calling for the world leaders to take a bold step and reach a fair and equitable deal on climate change, while calling for specific actions on Reducing Emissions from

Deforestation and Forest Degradation plus (REDD+). Prof. Maathai is indeed a world leader in environmental matters.

### **Kenya's engagement in international climate change**

As a Party to the UNFCCC and its Kyoto Protocol, Kenya is obligated to take part in international climate change events including participation in the yearly Conference of the Parties (COPs) to the Convention. This section discusses some of the key regional and international climate change events in which Kenya has played a major role.

#### *The 12<sup>th</sup> COP to the UNFCCC*

As has been stated previously, Kenya successfully hosted the 12<sup>th</sup> Conference of the Parties (COP) to the UNFCCC, which ran between 6<sup>th</sup> and 17<sup>th</sup> November, 2006. This COP's main outcome was the Nairobi Framework, an initiative meant to help developing countries, especially those in Sub-Saharan Africa, participate effectively in the Clean Development Mechanism (CDM).

#### *The 3<sup>rd</sup> Special Session of the African Ministerial Conference on the Environment (AMCEN)*

The main theme of this Special Session of the African Ministerial Conference on the Environment (AMCEN) was climate change. The meeting, held on 29<sup>th</sup> May 2009, was called to among others, develop a single African voice in Copenhagen (at the 15<sup>th</sup> COP) and advance the continent's interests in negotiations for the climate change regime beyond 2012, the expiry date of the Kyoto Protocol.

In keeping with the tradition of such important occasions, several other events were organized alongside the 3<sup>rd</sup> Special Session of AMCEN. These included

- a meeting of African High Level Experts Panel on Climate Change (25<sup>th</sup> to 26<sup>th</sup> May 2009)
- a special technical briefing of the African Ministers of Environment and experts on some topical issues germane to Africa's preparation towards the 15<sup>th</sup> Conference of the Parties to the UNFCCC and the fifth Conference of the Parties serving as a Meeting of the Parties (COP15/MOP5) to the Kyoto Protocol in Copenhagen in December 2009 (28<sup>th</sup> May 2009)

- a mini-exhibition on climate-related matters affecting Africa (25<sup>th</sup> -29<sup>th</sup> May 2009)
- several side events like workshops and seminars organized by civil society (youth, NGOs and scientists, in particular) and international organizations in the eve of and during the official AMCEN meeting, with the aim of feeding into the outcomes of the special session.

### Kenya's position in international climate change arena

Kenya is about to publicly launch a National Climate Change Response Strategy which should enhance Kenya's participation in post COP15 international meetings and negotiations. The Strategy also informed Kenya's participation in the concluded COP15 in Copenhagen. According to Kenya's position paper on Copenhagen, technology transfer takes centre stage. Kenya supports strategies to 'buy-down' the costs of technologies to enable its wider diffusion through mechanisms such as a 'Multi-Lateral Technology Fund proposed by India. The country is interested in mechanisms to strengthen global collaborative research efforts facilitation of non-Annex 1 Parties in the co-development of technologies. Such a mechanism would need to focus specifically on human capital and financing issues as Kenya regards the financing of technology transfer a very crucial issue. The need for measures that parties can use to assess progress on targets on the number and quality of technologies transferred is emphasized by the Kenyan position paper. While the country encourages market mechanisms for mitigation technologies where there are financial incentives to offset investments it has doubts as to whether such mechanisms are likely to support the transfer of adaptation technologies.

The country position paper avers that financing of adaptation technologies have received too little focus. And while leveraging private sector financing is good, it may delay the transfer of both adaptation and mitigation technologies since the focus shifts to finding a profitable arrangement instead of speeding up implementation of agreed measures and commitments. The country is supportive of measures that encourage accessing cleaner and friendly technologies and development

of adaptation technologies by developing countries through concrete actions and programmes and keeping the implementation of these commitments under regular review in accordance with this decision.

COP15 was a challenge to Kenya, just as it was to other countries. The country has yet to associate or endorse the accord, though it will do so, as there is no other alternative, given that a meeting of African leaders at the African Union meeting has endorsed the Accord, and so has a number of influential African countries.

### Perspective on climate personalities

The number of high profile personalities in Kenya involved in climate change work are still minimal, hence the need to ramp that number. In particular, well-known personalities in the entertainment, sports and media industries ("celebrities") can be effective agents of communicating climate change and should be used as such. There is also need to make sure that Kenya's position on climate change is debated among stakeholders in order to get a broader and shared view of her position.

## Seven: Conclusions and Recommendations

The above analyses show that climate change has and will severely impact the country. The country's economic and livelihood systems are highly dependent on natural resources, which are very sensitive to any slight changes in climatic conditions. This makes the country very vulnerable to climate change.

The government has been slow in responding to this high vulnerability as demonstrated by the slow pace it is taking to formulate policies and legislation to address climate change. This study has shown that existing policies, legislation and institutions are not only weak but inadequate to deal with climate change. There is need for an exclusively climate change policy and legislation that creates or sets out the mandates of a leading institution, which will spearhead climate change adaptation and mitigation in the country. A few policies are already in place such the National Energy Policy (Sessional Paper No. 4 of 2004), Policy on Environment and Development (Sessional Paper No.6 of 1999) and the Food Policy (Sessional Paper No. 3 of 1993), among others. Legislations include the Environment Management coordinating Act, EMCA of 1999, the Energy Act 2006, the Forests Act 2005 and the Water Act 2002. These policies and legislations are not exclusively dedicated to addressing climate change, but have a few aspects and clauses that do. However there is now a realization that these policies and legislations ought to be reviewed in order to create a comprehensive national climate change policy and law. This is one of the recommendations of the National Climate Change Response Strategy. The

strategy has also recommended that a dedicated climate change secretariat be established at the Ministry of Environment and Mineral Resources to oversee climate change activities in the country.

Climate change awareness is low countrywide, particularly, among the rural folk, who also happen to be the most vulnerable to the adverse impacts of climate change because of their high dependency on climate-sensitive natural resources and high poverty rates. This calls for enhanced climate change awareness in a simplified language and manner understandable to different groups (women and youth, disabled, farmers and pastoralists, etc) so that they can be better prepared to deal with the problem. Further, it is important to create awareness programmes that target those with some knowledge of climate change to help them take advantage of the opportunities that climate change brings.

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In conclusion, for the country to be said to be ready to absorb and use effectively additional adaptation funding, there is need for adequate climate change policy and legislation to be put in place. These should be accompanied by a good implementation framework that ensures that funds are directed to vulnerable sectors, and are accounted for in a transparent manner. This is partly because although the country has put in place environmental policies and legislation, the implementation is poor. A climate change policy and law could face similar fate.

There is increasing concern and debate in Kenya around problems of governance and corruption, which ought to be tackled by new institutions. Kenya's overall perception (by both locals and internationals) is that it is corrupt and therefore funding will not reach intended projects. Some donor agencies are seriously looking to channel their funding through other non-state actors such as the private sector. Despite massive corruption

and inefficiency in government, the country has been making development strides driven by a hard working private sector, civil society, NGOs and individuals.

Luckily for Kenya, non-state actors, especially private sector and individual enterprises have not only always been ahead of government but provided leadership to the extent that the government has followed. For instance, renewable energy has always been championed by private sector, it is only in 2004 and 2006 that the government developed policies and legislation respectively. Renewable energy industries were able to link with global systems (both private sector and foreign governments) to avail solar, wind turbines, etc to the people. Government jumped in when it realized that there is money to be made and the world is going green!

Climate change could go the same way. Private sector through land use activities such as REDD, sustainable biomass development for agro-industries, clean energy/technology, efficient motor industries could link up with appropriate global systems, obtain funding for adaptation and mitigation and government will surely follow. However, having said that, the government gets its mandate to govern all resources from the people, it is only logical that in the light of climate change threat, the pressure for demand of good governance of resources should be doubled and relentlessly pursued.

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## About the Heinrich Böll Foundation

The Heinrich Böll Stiftung / Foundation (HBF) is the Green Political Foundation, affiliated to the "Greens / Alliance '90" political party represented in Germany's federal parliament. Headquartered in Berlin and with offices in more than 25 different countries, HBF conducts and supports civic educational activities and projects world-wide. HBF understands itself as a green think-tank and international policy network, working with governmental and non-governmental actors and focusing on gender equity, sustainable development, and democracy and human rights. HBF's Regional Office for East & Horn of Africa operates in Nairobi, Kenya, since 2001.

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