HEINRICH BÖLL STIFTUNG
EAST & HORN OF AFRICA

TOWARDS A COHERENT AND COST-EFFECTIVE POLICY RESPONSE TO CLIMATE CHANGE IN KENYA:

COUNTRY REPORT

by

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Towards a Coherent and Cost Effective Policy Response to Climate Change in Kenya: Country Report

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Preface

The country report was commissioned to assess the degree of integration of climate change adaptation approaches in different sectoral policies in Kenya. The study also reviews policy incoherence at a national level with focus on institutional frameworks and an economic analysis of the implication of the lack of coherence in the adaptation approaches. Policy coherence is about ensuring that different policies work in synergy to get development results. It is about eliminating the policy incoherence which can undermine or hamper development progress, and identifying other policies which can contribute positively to development. For example, in the area of climate change, adaptation efforts are often funded whilst country continues to invest in fossil fuel-based energy production, thereby concurrently investing in both the causes and consequences of climate change.

The report reflects on climate change policy environment in Kenya, and the levels of integration of climate change adaptation in sectorial policies of energy, water, agriculture, forestry, and Disaster Risk Reduction. It discusses the policy incoherence at national level with focus on institutional frameworks and their cost implications (real or development cost). The report reflects on the extent to which climate change priorities have informed policies and laws, and how adequately these policies respond to climate change vulnerabilities including gender issues. The report also assesses the economic benefits and losses that arise from a lack of synergy within these sectors and other programmes of action.

It is hoped that the country report will provide policy makers, researchers and practitioners with a deeper understanding of the dynamics that underlie the policy coherence (or incoherence) process. However, I acknowledge that in making policies, there are various opposing interests and the significance of conflicts between development objectives themselves, disagreements between experts on what 'good' climate change policy is, and the difficulties in identifying the true development costs. It is worth mentioning the importance of good research in providing the evidence base for more coherent policy decision-making.

To move from discussions to action, we would need effective national policy coordination and monitoring mechanisms which track progress on a future agenda based around sustainable development goals. Institutions such as high-level coordination bodies can help bring coherence between the three strands of sustainable development – economic, social, and environmental.

I would like to acknowledge the support of Heinrich Böll Stiftung Berlin Head Office's Africa Department, the government contacts in Kenya, local civil society partners, academic experts and key local staff that contributed to the success of this study. Specifically, I would like to thank the team from Camco Advisory Services (K) Limited in undertaking the study.

Regional Director, Heinrich Böll **Foundation, Nairobi, Kenya**

Executive Summary

Kenya has been integrating climate considerations into various legal and governance instruments for some time. Notably, there has been progress made in planning and implementing policies, projects and programs in key economic sectors in order to align Kenya with the international community's approach to reducing greenhouse gas emissions and promote climate resilience. The scope of climate change governance in the country is encompassed in diverse, though interrelated, policy and regulatory frameworks that guide the coordination of various sectors dealing with management of climate sensitive natural resources.

Examples of on-going proactive policies, regulations or legislative initiatives include the: (i) constitutional recognition of sustainable development, public participation in environmental decision making and equal socio-economic rights as contained in the Constitution of Kenya, 2010; (ii) development of a long-term national development blueprint to transform Kenya into an industrialized, middle-income country providing a high quality of life to all its citizens in a clean and secure environment pursuant to Vision 2030; (iii) preparation of the National Climate Change Response Strategy (NCCRS), which is focused on developing comprehensive and robust adaptation and mitigation interventions to address the adverse impacts of climate change in the country; (iv) development of the National Climate Change Action Plan to effectively implement and operationalise the NCCRS; (v) enactment of the Environmental Management and Coordination Act, Act No. 8 of 1999 (EMCA), the key legislative authority on environmental coordination and management in Kenya; (vi) development of a National Environment Policy, in its 5th draft as of July 2012; and (vii) the Climate Change Authority Bill, 2012, among others. Nevertheless, there are notable contradictions within policy design, structure and roles which may cause some part and/or the entirety of policy design in Kenya to become ineffective or difficult to implement.

The Heinrich Böll Stiftung (HBS) has therefore commissioned a study to identify existing incoherence in key sectoral climate change-related policies and regulations and provide recommendations for harmonization where possible.

The adverse impacts of climate change are unmistakable in Kenya. Sectors that are vital to its socio-economic security such as agriculture, livestock, tourism, forestry, and fisheries will be gravely affected. In addition, livelihoods will be severely disrupted, particularly among vulnerable groups. Against this background, Kenya currently faces significant challenges in integrating climate change responses into its national development plans, strategic policies and regulatory frameworks. This calls for the development of clear policy approaches to climate change issues, beginning with a comprehensive review of the existing fragmented and incoherent legal instruments across multiple economic sectors to ensure consistency. While it may be complex to quantify the true economic

and developmental cost of a fragmented and incoherent approach to dealing with climate change, what is clear is that there exists an urgent need to remedy the existing incoherent policy and institutional response to climate change in Kenya. To this end, the Kenyan government's Ministry of Environment and Mineral Resources has instituted a process for the preparation of a draft Legal Policy Assessment Report (LPAR) to review the foundations of Kenya's environment and climate-related policy and regulatory frameworks. Among the aims of the LPAR is to identify and recommend actions for remedying existing sectoral policy conflicts, incoherence and inconsistencies.

Climate change impacts can be measured as an economic cost (Smith et al., 2001). This is particularly well suited to market impacts, for example changes in the physical conditions that are closely linked to market transactions and which directly affect Gross Domestic Product (GDP). Monetary measures of non-market impacts (for example, impacts on human health and ecosystems), are more difficult to quantify. Knowledge gaps and uncertainty in climate models make such a determination especially difficult, a situation compounded by inherent vulnerability to climate change, limited adaptive capacity in human and natural systems, and unpredictable socio-economic trends in developing countries. A 2009 study by the Stockholm Environment Institute (SEI) has revealed significant potential impacts and economic costs of climate change on specific economic sectors in Kenya. The SEI study also projected that 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 (in excess of 5% of GDP per year) by 2050.

The impacts and costs of climate change must, among other options, be addressed through coherent and effective climate change governance. However, available evidence suggests that environmental and climate change relevant policy in developing countries remains mostly incoherent and not integrated with long-term national development plans and policies. Kenya is faced with diverse climate change and environmental challenges and has been struggling to resolve these. In the absence of a national climate change and environmental policy, Kenya has been operating with several sectoral policies and laws relating to the environment, which are not harmonized with both the Environment Management and Coordination Act[1] 1999 (EMCA) and the country's Constitution. These include policies concerning agriculture, water, forests, trade and industry, which have significant implications for the environment and the country's response to climate change. As Kenya's principal legal instrument on the environment, the EMCA is expected to address all aspects of the procedural and substantive process in relation to environmental protection and development, compliance, enforcement and monitoring through its sole administrative body, the National Environment

[1] (Act No. 8 of 1999).

Management Authority. Strategies to effectively achieve the EMCA's mandate have not been fully developed or implemented and different factors have contributed to this situation, including:

- lack of institutional capacity and resources to mobilize and link activities effectively within and between various economic sectors;
- deficient environmental and sectoral laws that do not adequately articulate the links between national development, population needs and environmental concerns, and often conflict with the EMCA and the Constitution; and
- limited budgetary provisions to finance the effective implementation of environmental projects and programs to work in tandem with national development plans.

There is therefore a clear need for enhancement of the requisite capacity, targeted deployment of resources and development of coherent and rationalized environment and climate change policies. However, how to balance these with national socio-economic development goals and targets is also a major challenge. Challenges also exist in ensuring that environment and climate change policy addresses the vulnerability of women and marginalized groups to the effects of climate change in a manner that is congruent with policy directions in other related development spheres. The disproportionate vulnerability of women (compared to men) to climate change is exacerbated by their: (i) dependence on climate sensitive natural resources for their families' livelihoods and sustenance; (ii) responsibility for water and food procurement for their families; and (iii) increased risk of exposure during times of extreme weather events and related disasters, among many other factors. The current environmental policy landscape in Kenya is sorely lacking in terms of responding to gender-mediated impacts of climate change. There is currently no broad policy direction towards integrating and mainstreaming gender considerations in existing sectoral climate response strategies and policies. A review of all the relevant regulatory and structural frameworks is therefore necessary in order to develop a strategically sustainable, gender-responsive, and effective climate change response policy framework and implementation strategy that will ensure efficient cross-sectoral linkages within the various sectors and government agencies.

In this effort there will be a number of key issues to observe to guarantee the development of a fully harmonized, effective and gender-responsive national climate change response governance framework. Some general considerations and recommendations for the government are as follows:

- Agricultural production in Kenya is highly exposed to climate change, as farming activities directly depend on climatic conditions, it also contributes to the release of GHGs to the atmosphere. Effective policies that balance between

increased productivity and reduction of GHGs while taking into account the fact that rural agriculture is dominated by women are needed.

- Kenya has made great advances in the water sector by putting in place policies that decentralize the management of water and involve multiple stakeholders. However, there is need to harmonize vertical institutional mandate with horizontal ones to avoid uncoordinated use and management of resources at the expense of water conservation, distribution and delivery.
- Majority of Kenyans depend on biomass energy (for example, firewood, charcoal and agro-waste) for household needs, such as cooking. However, national government has yet to put in place policies that promote investment in sustainable energy development leading to incoherence within the energy sector.
- Gender-oriented review of all the relevant regulatory and institutional structures comprising Kenya's climate change response is necessary in order to develop socio-economically sustainable, gender responsive, equitable and effective national climate change response policy frameworks.

Acronyms

AIDs	Acquired Immune Deficiency Syndrome
ASALs	Arid and Semi-Arid Lands
ASCU	Agriculture Sector Coordination Unit
ASDS	Agriculture Sector Development Strategy
COP	Conference of Parties
DOE	Directorate of Environment
DNA	Designated National Authority
EAC	East Africa Community
ECCU	Environment and Climate Change Unit, Office of the Prime Minster
EMCA	Environmental Management and Coordination Act, 1999
FAO	Food and Agriculture Organization (of the United Nations)
GDP	Gross Domestic Product
GHG	Greenhouse gases
GOK	Government of Kenya
HIV	Human Immune-deficiency Virus
IDLO	International Development Law Organization
IEA	International Energy Agency
IWUAs	Irrigation Water Users Associations
IPCC	Intergovernmental Panel on Climate Change
KNBS	Kenya National Bureau of Statistics
LPAR	Legal Policy Assessment Report
MDGs	Millennium Development Goals
MEMR	Ministry of Environment and Mineral Resources
MTP	Medium Term Plan
MWI	Ministry of Water and Irrigation
NCCAP	Kenya's National Climate Change Action Plan
NCCRS	Kenya's National Climate Change Response Strategy
NCWSC	Nairobi City Water and Sewage Company
NEMA	National Environment Management Authority
NEP	Draft National Environment Policy
NOCK	National Oil Corporation of Kenya
OECD	Organisation for Economic Cooperation and Development
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
SEI	Stockholm Environment Institute
TOR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute
WRMA	Water Resources Management Authority

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1. Introduction

1.1. Background of the Study

Climate vulnerability is defined as the extent to which a natural or social system is susceptible to sustaining damage from climate change (Heinrich Böll, 2010), including climate variability and extreme weather events. At present and in the long term, Kenya is vulnerable to climate change. A recent study by the Stockholm Environment Institute (SEI) on the Economics of Climate Change in Kenya revealed that future economic costs of the impacts of climate change on market and non-market sectors might be close to 3% of Gross Domestic Product (GDP) per year by 2030 and potentially much higher than this (more than 5% of GDP per year) by 2050 (SEI, 2009). Therefore, it is essential that the impacts and costs of climate change are effectively addressed through climate change governance policy and institutional frameworks.

The basis of a climate change governance framework stems from the provisions of the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC and corresponding Kyoto Protocol put the onus for early action on industrialized countries, citing common but differentiated responsibilities for their participation (Ashton et al., 2003). Climate change governance also calls for action that shifts societies towards establishing active mitigation and adaptation policy regimes that confront and prepare for the impacts of climate change (Meadowcroft, 2009). Part of this involves realigning economic focus, interlinking climate change and national development policy, establishing effectual institutional frameworks, adjusting legal rights and political responsibilities and changing accepted norms to address the impacts of climate change. This study assesses the extent to which the Government of Kenya has been able to achieve this, through identifying the barriers and gaps, and recommending measures to address the shortcomings in climate change governance and development policy. Article 3.1 of the UNFCCC provides that "climate change protection must have an equitable basis in accordance with the parties common but differentiated responsibilities and respective capacities". In Article 3.4, "parties have a right to, and should, promote sustainable development". In terms of adaptation, Articles 4.8 and 4.9 of the UNFCCC and Article 3.14 of its Kyoto Protocol require parties to take measures to minimize the adverse effects of climate change on developing and least developed countries. The two instruments make it clear that measures to combat climate change should not limit the ability of developing countries to develop and pay special attention to the needs of the poorest countries and the most vulnerable sectors of society. The instruments make provisions for the transfer of technical and financial resources and other assistance necessary to deal with the impacts of climate change from developed to developing countries.

These articles have been the subject of much debate and interpretation in the various UNFCCC Conferences of Parties (Heinrich Böll Stiftung, 2010a).

This study was commissioned by Heinrich Böll Stiftung to assess the cost of policy incoherence in climate change governance in Kenya and the degree of integration of climate change adaptation approaches in key sector policies. The rationale was to establish the gaps caused by policy incoherence in climate change governance and identify their potential economic costs.

The scope of climate change governance in Kenya is encompassed in the policy and regulatory frameworks interrelated to climate sensitive natural resources that the country depends on for its livelihood, economic development and general sustenance. According to the draft Legal Policy Assessment Report (LPAR) prepared by the International Development Law Organization (IDLO) pursuant to sub-component 2 of the Kenya National Climate Change Action Plan (NCCAP), the foundations of Kenya's policy and regulatory framework to facilitate adequate responses to the impacts of climate change are closely rooted in the new Constitution of Kenya. They also form key aspects of national policies documents, such as, Vision 2030 and corresponding Medium Term Plans; Kenya's National Climate Change Response Strategy (NCCRS); NCCAP; Environmental Management and Coordination Act, 1999 (EMCA)[1]; and the Climate Change Authority Bill, 2012,[2] among others. The aforementioned policies and regulations seek to 'climate proof' the country's institutional and regulatory frameworks, while enhancing its adaptive capacity. The process of climate proofing requires four considerations namely: (i) setting the context through the performance of a situational analysis on the current state with specific reference to a climate context; (ii) identify the impacts of projected climatic patterns; (iii) identify and select adaptation options to rectify any adverse impacts; and (iv) determine the prerequisite resources for those adaptation options. The LPAR recognizes that despite these interventions being in place, there are still some significant gaps and challenges in climate change governance in Kenya.

This study has identified some of the incoherencies in sectoral policies and regulations, and provides recommendations for harmonization. In addition, it recognizes that the incoherencies identified are not an exhaustive analysis of the entire productive economic sectors, but focuses on four key sectoral areas, namely: (a) agriculture; (b) water; (c) energy; and (d) forestry. It further illustrates the key roles of effective policy frameworks that could realign the country's geo-political interests with its climate change priorities in order to address actual national concerns. These include need for: (i) clear integration of national

[1]Act No. 8 of 1999, Laws of Kenya.

[2]This is a private member's bill gazetted on 18th June 2012 that was developed with the support and participation of various governmental and non-governmental stakeholders in the climate change arena. The Bill seeks to establish a national Authority devoted to addressing issues of climate change, mitigation and adaptation.

development objectives to avoid duplication of national activities; (ii) efforts to strength the adaptive capacity of the most vulnerable sectors in the economy; and (iii) minimized fragmentation of institutional frameworks that address the underlying causes and consequences of climate change.

1.2. Understanding Policy Incoherence

The concept of policy coherence for development aims to exploit positive synergies and spill-overs across public policies to foster national development (OECD, 2012). There are two distinct dimensions of coherence, namely: (i) internal coherence which is attributed to the interaction between different objectives of internal strategic national interventions. It suggests that there is a causal link between the objectives of the interventions, strategic actions planned and the outcomes of the planned activities. For example, the implementation of water resource management is fragmented in both the EMCA and the Water Act, which interferes with policy coherence; and (ii) external coherence, which addresses the relationship between strategic national interventions and other public interventions that may affect it. For example the implementation of EMCA or other climate change related frameworks, and its correspondence with the UNFCCC and Kyoto Protocol. The lack of the two corresponding dimensions gives rise to policy incoherence.

Policy incoherence refers to contradictions within policy design, structure and roles. These contradictions (both within and across sectors) cause some part and/or the entirety of policy design to become ineffective or un-implemented. This study adopts Booth's broad definition of policy to include not just strategy, but organizational mandates, service delivery, funding flows and implementation capacity (Booth, 2010). It may also include aspects of poor coordination, but focuses primarily on the broader contradictions within the policy framework that act as barriers to successful implementation. This can be horizontal, with overlapping mandates and confused responsibilities among service providers and other public bodies, or vertical, where policies do not have clear implementation plans and/or funding resources.

The rationale for ensuring policy coherence is to produce the balance necessary for sustainable development, through the implementation of national development objectives that compliment the systematic promotion of mutually reinforcing policy actions and interventions. The outcomes are geared towards achieving national poverty reduction, socio-economic growth and realizing Millennium Development Goals (MDGs). In addition, the OECD suggests that there are additional layer of elements of policy coherence to ensure the country's ability to improve the socio-economic welfare of its citizens. These elements include: (i) internal coherence within development cooperation policies, namely the national sustainable development framework pursuant to Vision 2030 and its Medium

Term Plans (MTPs), as well as existing/planned sectoral specific policies; (ii) intra-country coherence, which focuses on the consistency between aid and non-aid policies of a single donor; (iii) inter-donor coherence, which focuses on the consistency of aid and non-aid policies of many donors; and (iv) donor-partner coherence to achieve shared development objectives: consistency of donor and developing-country policies (OECD, undated). For purposes of this study, the focus shall be on internal coherence within development cooperation policies with an aim of identifying potential for policy synergies, policies that undermine each other and policies that adversely affect the development.

The study is also guided by the Legal Policy Assessment Report (LPAR) that reviewed international, regional and national legal instruments related to climate change with a view to developing a policy and regulatory framework in Kenya that promotes coherence, coordination and cooperative governance of climate change issues at the national and county levels.[3] As the initial output of the NCCAP, the LPAR performed an in-depth critical analysis of Kenya's legal, policy and regulatory frameworks to identify the level of integration or lack thereof, of 'climate proofing' measures to address issues of climate change in the country. The analysis and recommendations would then be aimed at encouraging the government through the appropriate Ministries to develop an enabling policy and regulatory framework through domestic reforms.

Through its analysis, the LPAR identified the policy incoherence in the country to be attributed to: (i) the replication of institutional mandates, therefore undermining the comprehensive management and coordination of climate change activities in the country; (ii) the lack of prioritization of climate change in sectoral legislations and policies; and (iii) the lack of harmonization of laws, regulations and policies, which subsequently has led to contradictory policy measures that may jeopardize the country's progress towards low carbon development pathway.

1.3. Approach and Methodology

The methodology employed involved a review of existing studies on the impacts of climate change and climate vulnerability at national as well as regional level. Extensive literature review and analysis was undertaken on the existing United Nations (UN) and national documents related to climate change, including national communications and progress reports, Intergovernmental Panel on Climate Change (IPCC) documents related to climate change, etc. The focus was to establish the country's vulnerability to climate change and adaptation needs.

Essential information was derived from an analysis of existing national documents relevant to climate change and development policy, such as: the Constitution of

[3]As per the draft LPAR, 2012.

Kenya; the draft National Environmental Policy, other national development policies documents (for example, Vision 2030); NCCRS; and NCCAP among others. The aim was to establish if: (i) the documents recognise the significant impact of climate change by identifying the integrated and cross referencing review of climate change, development and poverty reduction plans in the strategies and policies; (ii) the documents identify the entry points for ensuring the integration of climate change adaptation responses into broader national development planning and implementation blue prints; and (iii) the documents recognise policy incoherence and contradictory policy measures that would jeopardize Kenya's progress towards low carbon development.

The review of case studies of successful climate change governance structures and operations at the national level are highlighted to provide relative comparisons of sectoral approaches to climate change governance versus the overall national climate change agenda. These case studies review and analysis built on existing published as well as on-going research pursued by the lead experts.

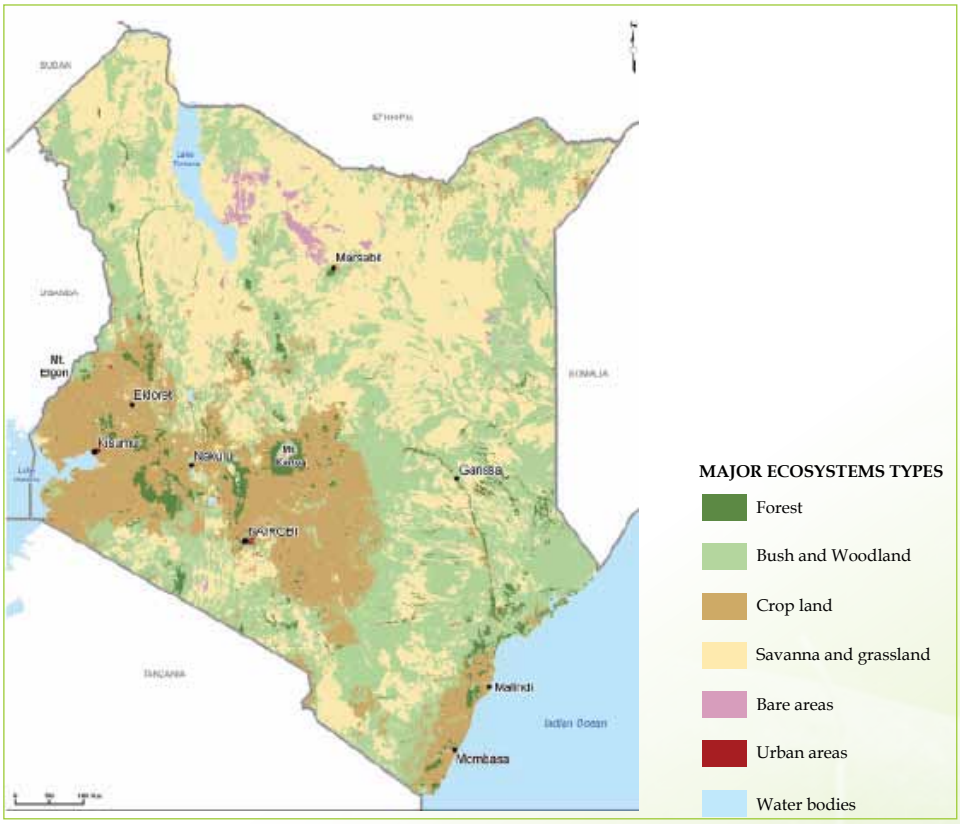
A participatory approach was also adopted through consultations with key national stakeholders including policy makers, sector leaders and experts. This also included preliminary discussions with Heinrich Böll, Climate Change Coordination Unit within the Office of the Prime Minister and Climate Change Secretariat at the Ministry of Environment and Mineral Resources, as well as relevant stakeholders in private sector, academia and non-governmental organizations. The main purpose of these consultations was to determine the capacity needs of the national climate change units with regard to policy development and implementation.

2. Climate Change Impacts and Vulnerability Context

2.1. Demographic and Socio-Economic Status

Kenya is located on latitude 5° 30'' N and 4° 30'' S and longitude 33° 50'' E and 41° 50''E. Its total area is 587,000 km² of which 576,076 km² is land area and the remaining 11,230 km² is covered by water (EAC, 2010). The country borders Ethiopia and Southern Sudan to the north, Somalia to the east, Uganda to the west and Tanzania and the Indian Ocean to the south. According to UNEP (2001), and the World Resources Institute (2003b), Kenya has the following ecosystem types (Figure 1): bush and woodlands, savannah and grasslands (70%); cropland or agro-ecosystems and natural vegetation mosaic (20%); sparse or barren vegetation, snow or ice (6%); wetlands and water bodies (2%); urban ecosystems (0.2%); and densely forested areas (1.7%).

Figure 1: Kenya's diverse ecosystem



Source: Cities (GoK and ILRI, 2000); Water bodies (FAO, 2000); and major ecosystem types (FAO, 2000)

According to the 2009 population census results, Kenya had a population of approximately 38,610,097 people with a male and female population of 19,192,458

and 19,417,639, respectively. Kenya's population distribution is 92% rural population and 7.8 urban population (KNBS, 2012), and has a national average density of 58 people per km^2 with an average growth rate of 2.4% per annum. Kenya's GDP measured by purchasing power is US$ 65.95 billion, and is the largest in the East African region. The major economic sectors by contribution to GDP are services (including, tourism, wholesale and retail) at 62%; agriculture at 22%; and industry at 16% (KNBS, 2010).

Agricultural production is the mainstay of the country's economy in terms of food security, income generation and employment. The agricultural sector is an important component of the Kenyan economy, contributing over 22% to the GDP according to the KNBS' Economic Survey 2010, and employs about 75% of the Kenyan labour force. The major food crops grown in Kenya include maize, wheat, barley, beans, rice, sorghum, Irish potatoes, millet, green grams, pigeon peas, sweet potatoes, cassava, arrow roots, yams, soya beans, and ground nuts, among others. Maize is the main staple commodity in the country and therefore important for food security. The major industrial or commercial crops are tea, coffee, sugar, pyrethrum, cotton and sisal and represent a significant portion of the country's production, export and import volumes. Tea, for instance, is still one of the leading foreign exchange earners. In 2009, the aggregate value of marketed crops stood at Kshs. 153 billion up from Kshs. 148 billion in 2008 (Ministry of Agriculture, 2010). The proportion of land used for agriculture varies in the riparian countries, depending on the topography, soils, rainfall, population pressure and climate. Kenya occupies 33% of arable land in the basin (Bullock et al., 1995). Subsistence agriculture, pastoralism and agro-pastoralism currently support about 21 million people in the basin, with average incomes equivalent to a range of US$ 90 to 270 per annum (World Bank, 1996).

2.2. Kenya's Climate Change Impacts, Risks and Vulnerability

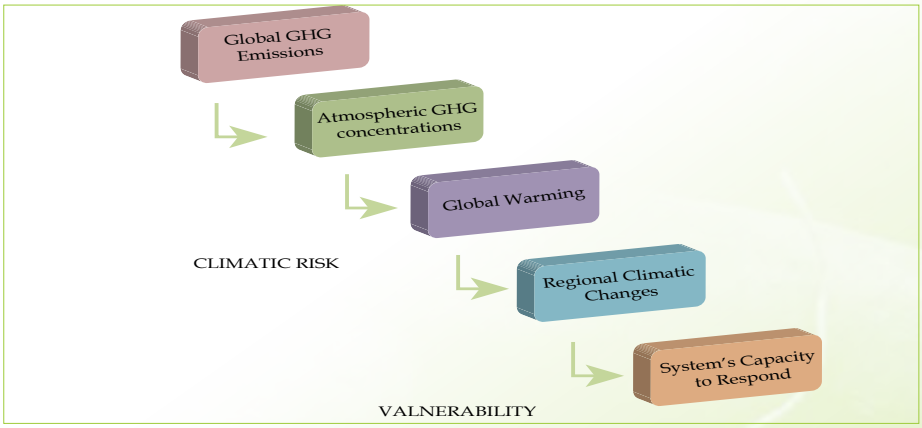
The evidence of the impacts of climate change in Kenya is unmistakable. Extreme and harsh weather is now a norm in Kenya. More specifically, since the early 1960s, both minimum (night time) and maximum (day time) temperatures have been on an increasing (warming) trend. The minimum temperature has risen generally by 0.7 – 2.0 C and the maximum by 0.2 – 1.3 C, depending on the season and the region. In areas near large water bodies, maximum temperatures have risen like in other areas but the minimum temperatures have either not changed or become slightly lower (GOK, 2010c).

The pressures of climate change and climate variability make Kenya highly vulnerable to the impacts of climate change. This vulnerability is further aggravated by the fact that Kenya's economy is reliant on climate sensitive

natural resources such as agriculture, wildlife-based tourism and water for social and economic sustenance. The impacts and costs of current climate variability[1] in Kenya which denotes deviations of climate statistics over a given period of time (such as, a specific month, season or year, from the long-term climate statistics relating to the corresponding calendar period) is already high. Climate change is projected to further expose the country to an increase in the extent and frequency of extreme climatic events with mostly negative impacts on agriculture, water, energy, forestry and other sectors of the economy. Stern (2009) estimates that the central economic costs of climate change could be equivalent to 2.6% of GDP each year by 2030 for Kenya. Although the estimates are indicative, it is evident that climate change has the potential to stagnate or even reverse progress being made towards sustainable development.

This study gave consideration to the relationship between climate risk and vulnerability. While climate risk is focused on the probability of occurrence and depends on external factors, vulnerability is more dependent on internal factors and the country's inability to cope and manage its climate risk. The impacts of climate change thus trigger a series of events with undesirable outcomes (for example, flooding destroying infrastructure/homesteads and droughts causing damage to crops/livestock) and together with the perceived climate risks and vulnerability to climate change, the country is unable to build the necessary adaptive capacity and resilience against climate change. This causal relationship between climate risk and vulnerability (Figure 2) hinders Kenya's ability to cope with adverse impacts develops cascading uncertainties as to magnitude of the impacts and the potential to address the negative impacts of climate change.

Figure 2: Relationship between climate risk and vulnerability to climate change



Source: Adapted with modifications from WRI (2011)

[1] Source: http://climatechange.worldbank.org/content/adaptation-guidance-notes-key-words-and-definitions.

2.3. Building an Adaptive Capacity for Kenya

Adaptation to global warming covers all actions aimed at coping with climate changes that cannot be avoided and at reducing their negative effects (GOK, 2010c). Kenya is already vulnerable to climate change and unable to avoid the negative effects. Additionally, its adaptive capacity is generally considered low. The lack of adaptive capacity means that the economic costs of climate change are already high. Climate change is projected to further expose the country to an increase in the extent and frequency of extreme climatic events with mostly negative impacts. The Constitution is the core legislation for national adaptation and mitigation planning and actions in Kenya. It embodies elaborate provisions with considerable implications for sustainable development, which range from environmental principles and implications of multilateral environmental agreements, to the right to clean and healthy environment enshrined in the Bill of Rights. It also embodies a host of social and economic rights of an environmental character, such as the right to water, food and shelter among others (GOK, 2012c). The Constitution is augmented and implemented through various other climate change and environment policies and legislations

3. Climate Change Governance in Kenya

3.1. Overview of Kenya's National Development Framework and Climate Change

Kenya's Vision 2030 was launched in 2007 as the long-term national development blueprint for the country to create a globally competitive and prosperous nation with a high quality of life by 2030, through transforming Kenya into a newly industrialized, middle-income country providing a high quality of life to all its citizens in a clean and secure environment. It was implemented as a replacement to the Economic Recovery Strategy for Wealth and Employment Creation for the period 2003 to 2007. It is grounded on three key pillars: (a) political; (b) economic; and (c) social (Table 1). The goals and strategies of the blueprint are effectively implemented through prescribed medium term plans.

Table 1: Overview of the Vision 2030 pillars

Pillar	Objective and Achievements
Political	The political pillar objective is focused on developing a unified national approach towards achieving a democratic system of government that encourages transparency and accountability through issue based, people oriented, results centred decision making, as well as public/private sector dialogue. The pillar is anchored on transformation of Kenya's political governance across 5 strategic areas: (i) Rule of law as prescribed in the Constitution 2010; (ii) electoral and political processes; (iii) democracy and public service delivery; (iv) transparency and accountability; and (v) security, peace building and conflict management. Notable progress has been reported by the medium term review in implementing the programmes and projects under the political pillar of the 1st MTP. This period saw the implementation and establishment of the various institutions, such as the Permanent Commission on National Cohesion; Commission on Post-Election Violence; Independent Truth, Justice and Reconciliation Commission; and the Public Complaints Standing Committee. Notably, since the promulgation of the Constitution, frameworks of oversight committees and institutions as well as offices have been established for the effective implementation and operationalization of the Constitution. The issues of gender sensitivity and gender mainstreaming have also been wholly integrated in government processes. Additionally, there is progress with regard to all the legislations required under the Constitution to be enacted within a period of one year and those before the next election.

Pillar	Objective and Achievements
Economic	The economic pillar seeks to improve the prosperity of Kenyans by achieving a 10% of GDP growth rate by 2012. Six priority sectors that make up approximately 57% of the country's GDP and provide a substantial portion of the country's total formal employment were targeted, namely: (i) agriculture; (ii) tourism; (iii) wholesale and retail trade; (iv) manufacturing; (v) IT enabled services; and (vi) financial. Notable progress has been reported by the medium term review under the economic pillar of the 1st MTP, such as: (a) the agriculture sector in the first 2 years of the MTP recorded negative growth rates of 4.1% and 2.6% in 2008 and 2009 due to post election violence and erratic weather. However, the sector has recovered and recorded positive growth of 6.3% in 2010; (b) tourist arrivals peaked at 1.8 million and declined to 1.6 million arrivals in 2010, although the first half of 2011 compared to a similar period in 2010 shows continued improvement in the tourism sector with arrivals data higher by 13.6%; (c) wholesale and retail trade sector grew by an average of 11% in 2006 -2007 compared to an average growth of 5.5% in the first 3 years of the MTP (2008-2010); and (d) financial services sector has fully recovered and has grown steadily to record 8.8% growth in 2010.
Social	The social pillar is focused on investing in capacity building of the individual people of Kenya in order to improve the quality of life for all, by targeting a range of human and social welfare projects and programmes, particularly related to: (i) education and training; (ii) health, environment, housing and urbanization; (iii) gender, children and social development; and (iv) youth and sports. Notable progress has been reported and, according to the medium term review in the first 3 years of the MTP, progress has manifested in the following areas: (a) the achievement of 'Universal Primary Education', which saw primary school net enrolment ratio increase from 73.7 % in 2000 to 91.4% in 2010, with continued provision of adequate resources under free primary school programme; (b) the promotion of gender equity and empowerment of women, in which the girl to boy ratio in primary school is 0.95%, indicating that gender parity in primary schools is likely to be achieved. Additionally, the Constitution provides for a minimum of 30% either gender representation in Parliament, as well as a third in government appointments. The successful implementation of that commitment under the Constitution will help Kenya make great strides in gender parity in government; (c) the reduction of child mortality, where children under five mortality has decreased from 115 in 2003 to 74 in 2009; infant mortality has decreased from 77 in 2003 to 52 in 2009; and measles immunization has risen from 74% in 2003 to 86% in 2009; and (d) the awareness creation for HIV/ AIDS, malaria and other diseases has been enhanced. The national HIV prevalence between the ages 15 and 49 years has declined from 7.4% in 2007 to 6.3% in 2010, and that for youth aged 15 to 24 years has reduced from 3.8% in 2007 to 3.9% in 2009. Additionally, the government has issued more than 3.4 million insecticide treated nets for use by marginalized groups, particularly children and pregnant women.

Notably, there was no inclusion of an environmental pillar in the preparation of Vision 2030. It was merely considered a sub-division of the social pillar. Relegation of environmental matters to the social pillar, and not a stand-alone thematic pillar, limits the ability to ensure environmental/climate change mainstreaming within the development framework as a whole. It is therefore challenging to balance the conflicting interests of maintaining environmental integrity and facilitating economic growth. The inability to achieve an effective balance in the foundations for socio-economic transformation promotes the emergence of policy incoherence and discourse within the national development framework goals. For example, energy is a prerequisite to socio-economic development. However, the use of energy sources in Kenya is both directly and indirectly associated with long term adverse environmental impacts, which contributed to global warming, such as forest degradation (due to cutting forests for biomass products), and emission of greenhouse gases (due to the use of fossil fuels), among others.

3.2. National Actions on Climate Change

a) Policy level

To signify its commitment to address the issue of climate change, Kenya ratified the UNFCCC in August 1994, and the Kyoto Protocol in February 2005. At a national level, the Government of Kenya developed the NCCRS to coordinate and harmonize the nation's climate change initiatives and activities. The NCCRS is a comprehensive strategy developed to tackle the climate change issues posing a threat to Kenya's socio-economic development. To effectively operationalise the NCCRS, the Ministry of Environment and Mineral Resources (MEMR) is currently implementing the 9 sub-components of the NCCAP, namely: (a) long-term national low carbon development pathway; (b) enabling policy and regulatory framework; (c) national adaptation plan; (d) nationally appropriate mitigation actions; (e) national technology action plan; (f) national performance and benefit measurement; (g) knowledge management and capacity development; (h) finance; and (i) coordination. While Kenya has not yet implemented a national climate change policy, climate change initiatives are guided by existing national documents and policies that focus on the broader focus of natural resource management, such as: the Constitution of Kenya 2010; national policy documents, e.g. Vision 2030; NCCRS; NCCAP; and EMCA, among others.

Furthermore, Kenya's dedication to addressing the adverse impacts of climate change and natural resource management is evident in development of new policy and legislative frameworks.

Table 2: New policy frameworks

New Policies/ Legislations	Year of Publication	Description
Draft National Environmental Policy	July 2012	The policy to provide a framework for an integrated approach to planning and sustainable management of environment and natural resources, strengthen legal and institutional structures for effective management and support the implementation of the NCCRS.
Climate Change Authority Bill	June 2012	Legislations to provide a framework for coordination, mitigation and adaptation to the effects of climate change on various sectors of the economy through the establishment of an authority and to provide for the development of response strategies to the effects of climate change. The proposed Bill weaves together the institutional and conceptual issues of reduction of GHG emissions at a national level, as well as provides mechanisms for the financing, coordination and governance of matters of climate change. The proposed Authority will: (a) advise the national and county governments on legislation and other measures on mitigation and adaptation to climate change, including emission reduction targets; (b) coordinate between government and non-state actors on issues of climate change, among other functions, including carrying out public awareness programmes; and (c) manage a climate fund, which is proposed within the Bill to facilitate the development of climate change projects. In designing the various national climate change actions, the government tries to recommend a series of activities that focus on addressing the drivers of vulnerability, builds response capacity, manages climate risk and plans for extreme events.

b) Institutional frameworks

The institutional frameworks to address climate change issues consist of government ministries and institutions such as the Environment and Climate Change Unit (ECCU) at the Office of the Prime Minister; MEMR; Ministry of Forestry and Wildlife; and NEMA, among others. The ECCU is mandated to tackle the issue of climate change in a national context and facilitate the government's high-level policy efforts for sustainable development initiatives at a national and county level. However, it is worthy of note that the existence of the ECCU

is limited to 2013 when the Office of the Prime Minister will stand dissolved to pave way for new structures as prescribed in the Constitution. The national focal point in charge of monitoring and implementing international conventions on environment and climate change in Kenya is the MEMR. The MEMR has a Directorate of Environment (DOE) headed by an Environment Secretary. The DOE has also established the National Climate Change Coordinating Office pursuant to the requirements of the UNFCCC. Notably, each ministry within the government maintains an environment and climate change focal point. At an enforcement level, NEMA acts as the country's Designated National Authority (DNA), as well as regulates the country's national compliance and enforcement mechanisms.

3.3. Sectoral Policy Incoherence and Adaptation Initiatives

a) Agriculture

There are over 130 pieces of legislations and regulations in Kenya, directly and/or indirectly linked to agriculture in addition to the Agriculture Act.[1] Furthermore there are various other draft policies that affect the agricultural industry, such as the National Horticulture Policy; National Irrigation Policy; National Land Use Policy; National Seed policy; as well as National Agriculture Research System and National Urban and Peri-Urban Agriculture and Livestock Policy. Notably, the various policy and institutional frameworks have led to weak coordination in basic approaches to the sector and overlapping jurisdictions. To enhance the coordination of the agricultural sector in Kenya, the government established the Agriculture Sector Coordination Unit (ASCU), which together with its thematic working groups was mandated to review and make recommendations on the development of legal, regulatory and institutional reforms. Regulatory and institutional reforms are focused on climate change issues, as well as environment, sustainable land practices and natural resource management. Several institutions have indirect impacts towards the agricultural sector, such as the WRMA, National Biosafety Authority, and National Land Commission, among others. The ASCU recently proposed three Bills to combine the many laws in the sector: the Agriculture Bill, Crops Bill, and Livestock Bill (Draft LPAR, 2011). In addition, the Constitution requires the development and maintenance of a tree cover of 10%[2] on the national land area. These activities to increase tree cover shall be managed and coordinated by the government through its relevant ministries (e.g. Ministry of Agriculture, Ministry of Forestry and Wildlife, NEMA, among others). Presently, Kenya has a forest cover of about 1.7%,[3] and a wider forest cover will help alleviate

[1] Chapter 318 of the Laws of Kenya.
[2] Article 69 (1)(b) of the Constitution of Kenya, 2010.
[3] Kenya (2009) Report of the Government's Task Force on the Conservation of the Mau Forests Complex, Office of the Prime Minister.

climate change by removing carbon dioxide from the atmosphere. In July 2010, the Agriculture Sector Development Strategy (ASDS) Policy was adopted to replace the Strategy for Revitalization of Agriculture, 2004. Its main objective is to achieve an agricultural growth of 7% per year for the next 5 years, in tandem with the Vision 2030. The realization of such economic growth is hampered by the impacts of climate change. The ASDS Policy proposes the establishment of a national irrigation framework to: (i) reduce the vulnerability of the agricultural sector to drought as it predominately practices rain-fed agriculture; (ii) enable rehabilitation of forests and water catchment areas; and (iii) improve food security, as well as address desertification. In addition, the policy also promotes the development of arid areas, including Northern Kenya, measures which are further elaborated under the National Policy for the Sustainable Development of Arid and Semi-Arid Lands. Reforms in the agricultural sector require drastic actions to take into account the existing and emerging concerns about sustainable agriculture and climate change adaptation in Kenya.

The policy incoherence identified at a national level is that while Kenya is remarkably committed to agro-forestry through the Agriculture Act and the Forest Act, coordination and management of strategic activities is fragmented between the Ministry of Agriculture, Ministry of Forest and Wildlife, county governments, community's and NEMA. This may interfere with the institutional frameworks, such that payment of ecosystem services and uncertainty of institutional frameworks will lead to weak enforcement of policies and legislations. In addition, the reform of indirectly associated legislations, such as the Water Act[4] and Irrigation Act,[5] are essential to development of a favourable regulatory and institutional framework for the development of the agricultural sector. The Water Act 2002 draws a clear interconnection with the agricultural sector as it provides for the creation of catchment areas, which is critical in the protection of the ecosystem and replenishment of water resources. Furthermore, WRMA is required to prepare a National Water Resources Strategy to illustrate how water resources shall be managed, protected, developed, conserved and controlled. Such water resource management is essential to facilitate the implementation of sustainable water usage measures, reserving water resources, identification of the key reserves, and development of resource protection mechanisms of agricultural adaptation practices. Furthermore, the proposed National Land Reclamation Policy 2011 seeks to promote sustainable land use practices by encouraging the sustainable increase in productivity of arid and marginal lands to ease pressure on high rainfall areas, as well as increase stock of productive land resources in order to address challenges of food insecurity and water shortage. The Irrigation Act provides for the management of irrigation practices and processes in the country and for the creation of national irrigation schemes through the National Irrigation

[4]Act No. 8 of 2002, Laws of Kenya.
[5] Chapter 347 of the Laws of Kenya.

Board. The draft Irrigation Policy and Bill 2012 proposes changes such as creation of small scale irrigation schemes that receive governmental technical and financial support, and the creation of an Irrigation Water Users Associations (IWUAs) by residents of catchment areas. The IWUAs shall enable farmers to establish irrigation schemes as well as participate in the conservation and management of water within the catchment areas. Notably, uncertainty as to who shall coordinate water resources and weak enforcement structures of water resource management greatly affects the agriculture industry, which is heavily reliant on rain-fed and irrigation based production methods. Mismanagement and poor coordination of water resource management greatly affects the agriculture industry, which is heavily reliant on rain-fed and irrigation based production methods.

Figure 3: Kiaragana village in Kenya, photograph

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b) Water

The Water Act, 2002 is the principal law governing the water sector in Kenya and the Ministry of Water and Irrigation (MWI) is the key regulatory institution. MWI is mandated to manage the use and control of water resources and coordinate

water supply at a national level. Article 42 of the Constitution 2010 guarantees an individual's basic right to safe and clean water and further reclassifies water resources as a component of public land.[6] In 2007, the MWI developed the National Water Resources Management Strategy (2007-2009), which recognized some of the impacts of climate change on water resources management, including the adverse impacts to catchment degradation due to flash flooding, among others. Thereafter, the MWI developed the draft National Water Resources Management Strategy (2010-2016), which further acknowledges the effects of climate change and challenges to water resource management.

More recently, the Ministerial Strategic Plan (2009–2012) promotes water for all and also acknowledges that climate change is a developmental challenge in Kenya. The MWI's main focus was to enable sustained availability and accessibility to water for all uses (domestic and industrial). The strategic plan sets out priority actions to facilitate adaptation to climate change, such as drilling of boreholes to minimize drought effects, catchment conservation and improved water and sanitation. These measures are in tandem with Vision 2030 which aims to ensure that the rural and urban population can access safe water and sanitation services. The overall objective for the implementation of the various strategies and policies is to enhance the adaptive capacity of the resource management of the water sector.

Policy incoherence arises in the implementation of the Water Act and EMCA. The policy incoherence at a national level is closely related to the management and coordination of water resources. The MWI is the ministerial institution mandated to manage and conserve the use and control of water resources and for the acquisition and regulation of rights to use water, and to provide for the regulation and management of water supply and sewerage services. The regulation is effected by WRMA and IRUWAs, among others. The EMCA is also mandated to coordinate and manage the environment and for matters connected therewith. This includes efforts to improve the quality of water, health and sanitation services to the public through standard setting, risk assessments, auditing, monitoring and enforcement. The reach of EMCA and powers of its primary agency, NEMA, are expansive. Where water management is concerned, both the Water Quality Regulations under EMCA and the Water Act 2002 apply. However, the delineation of roles between NEMA and WRMA as established by the Water Act is unclear.

Box 1: An example of policy incoherence in Kenya's water sector

In the Kenyan water sector, horizontal coordination was reportedly 'very weak', with 11 ministries sharing some responsibility for water resource

[6]Article 62 of the Constitution of Kenya, 2010.

management (Rampa and Pinol, 2011). An ambitious reform programme with the enactment of the Water Act, 2002, established 13 new parastatals, and decentralization further increased the number of autonomous regional bodies in the country. This resulted in a proliferation of 'key' actors (such as the Water Resources Management Authority (WRMA), Catchment Areas Advisory Committees, Water Services Boards, Water Resources User Associations, etc) and a large influx of funds opening up multiple opportunities for rent seeking and a 'scramble for resources' (Rampa and Pinol, 2011). This fragmentation is an example of the potential interaction between common constraints, with policy incoherence reinforcing existing political market imperfections. Vertical incoherence can signal weaknesses in capacity and capability to effectively implement policies. Breakdowns in vertical coherence are evident in Kenya's provision for fundamental human rights commitments as prescribed in the Constitution 2010, without due regard to implementation. For example, the provision of rights to: (i) accessible and adequate housing,[7] when the State does not currently maintain or provide State housing for its citizens; (ii) clean and safe water in adequate quantities,[8] while water as a resource is scarce and the fragmentation of coordination of the water sector leads to ineffective water resource management; and social security,[9] while the State does not make such provision in the national budget to effectively facilitate this action. The implementation of such policies that are not budgeted for and funded become a challenge. In addition, such policies are eventually operationalized by parallel government systems, which may lack capacity and therefore unsuccessful.

Despite bold reformation plans and massive injections of international and domestic resources, public service delivery is still failing. For instance, despite substantial investment in water reforms, water service delivery in most urban cities, including Nairobi, has deteriorated to the extent that consumers pay exorbitant amounts to licensed and unlicensed 'water distributors', in addition to the Nairobi City Water and Sewage Company (NCWSC), to supplement the inefficient provision and distribution of water and sanitation services. The ineffectiveness of the NCWSC is due to lack of much needed revenue, and such policy incoherence is among common governance constraints and inherent in the political system and appears to repeat itself in similar ways across sectors thus impairing performance in service delivery. A lack of performance discipline can occur at multiple levels of the service delivery chain. Looking across the range of key economic sectors, a number of common issues can be identified, and are

[7]Article 43(1)(b) of the Constitution of Kenya, 2010.
[8]Article 43(1)(d) of the Constitution of Kenya, 2010.
[9]Article 43(1)(e) of the Constitution of Kenya, 2010.

closely associated with detrimental impacts on service delivery outcomes. They include cases where there are mismatches between national and local government strategies and policy frameworks, and where users themselves opt out of formal provision and instead rely on unregulated and informal providers. Examples of other governance constraints are:

- The levels of performance oversight and monitoring, which contributes to the insufficient enforcement of regulations and weak accountability (either top-down or bottom-up) and results into users opting out from the provision.
- The challenges of collective action associated with the weak capacity of actors and stakeholders to contribute to decision making processes and coordinate their activities and work together productively.
- The political market imperfections linked to perverse political logics often based on patronage and/or preferential treatment relationships, contributing to short-term, populist policies and biases to short-term outputs.
- The moral hazard and the lack of availability of donor aid or other resources that insulate the State (or non-State actors) from the consequences of their actions or inaction.

c) Energy

Climatic changes such as temperature variation, precipitation frequency and severity of extreme events are likely to affect how much energy is produced, delivered, and consumed in Kenya. Energy production is closely linked to various aspects of socio-economic developments, for instance economic growth, population growth, water consumption (for domestic and industrial), use of goods and services, trade and transportation, as well as land use. Kenya is facing serious environment challenges such as deforestation, land degradation, desertification, water scarcity and pollution from industry. These translate to a decline in effective energy production, which is essential for the country's competitive advantage in the global market.

The main sources of energy supply in Kenya are hydro and geothermal electricity, wood fuel, petroleum and to some extent some forms of renewable energy. Commercial energy in Kenya is greatly dominated by petroleum, on-grid and off-grid electricity, charcoal and fuel wood. Biomass, including agricultural waste, constitutes the non-commercial proportion of the energy sector. Petroleum fuel accounts for about 29% of the total final energy consumption, the bulk of which is consumed in the transport, manufacturing and commercial sectors,

while electricity and combustible renewables accounts for about 3% and 68% of the total final energy consumption, respectively (KIPPRA, 2010). Kenya's energy generation is vulnerable to climate change as it is largely reliant on water resources, biomass, and fossil fuels as the key sources of energy. The main source of power in East Africa region is hydroelectricity power. Climate projections suggest that the annual hydroelectric production of the region may be affected by silting up of hydroelectric power dams and falling dam levels due to increased drought and catchment degradation. Other potential energy sources such as solar, geothermal and wind energy are still not significantly developed in the country. The potential of hydropower generation in Kenya has dramatically reduced in the past 20 years due to degradation and destruction of essential water catchment areas in the country. Climate change is likely to aggravate the problem as it comes with such extreme events such as frequent and prolonged droughts, thus reducing the water levels and hydro production potential. Other impacts of climate change on energy include the gradual decline in the productivity of biomass, thereby affecting fuel wood supply, and the volatility of crude oil prices leaves the electricity sector vulnerable to geopolitical and climatic shocks in Kenya.

The Energy Act 2006[10] and the draft National Energy Policy 2012 are the key legal and policy instruments that regulate the energy sector, as well as promote energy efficiency and conservation; environmental protection; security of supply through diversification of sources; and increased accessibility. The Energy Act further addresses renewable and efficient energy, and contains provisions geared towards mitigation of greenhouse gas (GHG) emissions (Energy Act, 2006). Overall adaptation interventions to enhance energy security, mitigate the effects of climate change, generate income, create employment and generate foreign exchange savings (Draft Energy Policy, 2012) focus on the promotion of exploitation of alternative renewable energy sources such as wind, solar, biomass and biogas in order to reduce the high demand for hydroelectricity and protect it against reduced water flows to hydro dams by managing water catchments; protecting forests and biodiversity from depletion, and reducing over-dependence on traditional biomass energy; and climate proofing energy facilities (infrastructure) related to the transmission and distribution of utilities to protect against extreme weather events.

The policy incoherence at a national level as identified in the draft LPAR 2012 relates to energy production, distribution and consumption in the face of renewable energy alternatives and energy efficiency. The draft Energy Policy 2012, promotes energy efficiency and conservation; environmental protection; security of supply through diversification of sources; and increased accessibility. It also has an action plan on how efficiencies will be achieved, how GHG emissions from fossil fuels will be reduced, and how renewable energy will be scaled up by 2024. This is a

[10]Act No. 12 of 2006, Laws of Kenya.

clear effort to go 'green' and ultimately achieve the 'green economy' initiative as coined by the Rio+20 conferences in Brazil in 2012. These policies and regulations are in contradiction with the fact that biomass remains the dominant source of energy. The draft Energy Policy 2012 also maintains high feed-in tariffs which do not facilitate the development of an enabling environment for the provision of alternative energy sources in Kenya, such as, wind, solar and geothermal, among others. Furthermore, while the Rural Electrification Authority may have human resources to implement the very ambitious Rural Electrification Program, it is hampered by its focus on rural electrification through grid extension, which has a high cost in remote areas, as well as the lack of pricing tools to assist the poor in switching to electricity from less sustainable charcoal and firewood. Going forward, further contradictions may arise from the focus shift from renewable energy to fossil fuels, in light of the discovery of oil in Northern Kenya which will have implications on the achievement of a green economy and achieving the national development goals pursuant to Vision 2030.

d) Forestry

Forests cover only about 3% of Kenya's land area, yet they provide crucial direct and indirect goods and services to its people and make a significant contribution to the national economy. For example, the Lake Victoria Basin region Kenya occupies approximately 401km^2 of the regions 1.120.6km^2 total forest area. The forests are not only occupied by people, but also serve as wildlife habitat that acts as a home for various indigenous species of plant and animal species. Despite the key structural and functional roles played by forestry resources in Kenya, there has been extensive forest ecosystem destruction through encroachment, unsustainable exploitation, fires, and search for agricultural land. The main drivers of deforestation and land degradation in Kenya include; the demand for energy, illegal encroachments and settlements, logging and livestock grazing. Equally, changing climate patterns will cause existing forested areas to undergo changes in vegetation types and species composition. The impacts of climate change will therefore aggravate already severe issues of land degradation, which are exhibited by soil erosion, deforestation, poor grass regeneration, declining water levels, gullies formation, and flooding in non-traditional areas. All these phenomena increasingly lead to decline in food production, low farm level employment, diminishing forest products, loss of water catchment areas, silting of rivers, dams and other water bodies, thus reducing water supply and water quality (GOK, 2011b). The Ministry of Forestry and Wildlife is the government institution mandated to coordinate the functions of semi-autonomous government agencies involved in the implementation of activities aimed at protecting, conserving and managing sustainable development of forestry and wildlife resources in the country, namely, the Kenya Wildlife Service, the Kenya Forest Service and the

Kenya Forestry Research Institute. The key policy and legislative instruments regulating this sector include the Forest Act, 2005[11] and corresponding subsidiary legislation, as well as various other legislations that indirectly impact on the forestry sector. In Kenya's national development plans, various interventions have been identified to assist in the management and conservation of national and community forests. For example, the Forestry Development Plan aims at growing of 7.6 billion trees during the next 20 years. This will be done by growing of trees by 35,000 schools; 4,300 women groups; 16,350 youth groups, and the six Regional Development Authorities (GOK, 2010c). These, in addition other national activities, will be undertaken by the government, including : (i) intensifying afforestation and reforestation projects and programmes (for example, REDD, REDD+) to build and rehabilitate existing degraded forests; (ii) promotion of alternative livelihood and income generation systems to take pressure off forest resources; (iii) promotion of alternative energy sources, energy conservation initiatives, and efficient charcoal production and utilization technologies to reduce biomass (wood) fuel consumption; (iv) promotion of agro-forestry for both food and fuel-wood needs at a community level; (v) addressing soil and land degradation by promoting improved soil and land management practices and techniques; and (vi) promoting conservation agriculture through the development of community partnership agreements to remunerate natural resource users for natural forests conservation and restoration with funds from carbon markets.

The policy incoherence at a national level is apparent in the key socio-economic policies that support the country's national development plans. Vision 2030 recognizes the role played by forests in achieving socio-economic development. The Forests Act 2005 recognizes the environmental role of forests including water values, biodiversity values, climate change values through carbon sequestration and other environmental services. The Forest Policy 2007 recognizes the positive role played by natural forests and plantations as carbon sinks. The current policy and legislative framework is committed to tree planting and land rehabilitation for carbon sequestration in order to increase the current forest cover to 10% of the land area. Similarly, the Agriculture (Farm Forestry) Rules also require a farm forest cover of 10%. This is, however, not supported by the rehabilitation and restoration of forest systems aimed at protecting and conserving key water catchment areas, as well as afforestation activities being undertaken in the country. The Forest (Charcoal) Regulations 2009 promote and coordinate charcoal regulation and designate the Kenya Forest Service as the competent authority responsible for the issuance of licenses for the production and transportation of charcoal. This contradicts the clear plans for forest conservation and preservation.

The review and reform of the relevant policy and institutional frameworks is necessary in order to ensure complementarity in the implementation of sectoral

[11]Act No. 7 of 2005, Laws of Kenya

policies, and successful implementation of strategic interventions to achieve national development goals. This shall enhance cross-sectoral relations within the various government agencies and create a basis for climate change mainstreaming at a national and sectoral level.

Figure 4: Landscape view of Eastern Kenya

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e) Environmental Sector

The draft Environmental Policy[12] reports that the main human activities contributing to environmental degradation in Kenya include unsustainable agricultural land use, poor soil and water management practices, deforestation, overgrazing, and pollution. Increasing vulnerability due to rising costs of food, water treatment, and medical treatment is partly attributed to this degradation. To address this degradation, the Environmental Policy calls for the need to not only harmonize sectoral policies concerning agriculture, water, forests, trade and industry, which have significant implications for the environment with the EMCA and the Constitution, but also subject them to strategic environmental assessment in order to promote sustainable development. The policy is cognizant of the fact that achieving sustainable management and coordination of natural resources, including the environment, requires deployment of harmonious strategies at various national and sectoral levels. The enactment and enforcement of this Policy will address historical incoherence embedded in national development plans and policies. The current national development and sectoral policies are lacking, mainly because poverty and socio-economic needs are often seen as more pressing than the need for environmental conservation and regulation.

[12]Draft National Environmental Policy, 2012 - Revised Draft # 5, July 2012..

This is evident from the lack of environmental considerations in the long-term national development blueprint pursuant to Vision 2030. While there is a clear need for coherent and rationalized environmental policies, how to balance these with national socio-economic development goals and targets is a major challenge. Kenya, in particular, is faced with diverse and complex environmental challenges and has been struggling to resolve these, mainly because it has been operating without a national environmental policy.

As the country strives to accelerate its national development, environmental concerns have become more evident. This is further compounded by the difficulties of placing an economic value on climate sensitive natural resources, such as agriculture, water, energy and forests, among others. Meanwhile the continuing deterioration of Kenya's environment has precipitated a number of hazards that have long-term irreversible damage. The enactment of the EMCA, which serves as the main framework of environmental law, was among the steps in the country's commitment towards environmental sustenance. An evaluation of the EMCA reveals that there are inadequacies in the Act: for example, it only addresses issues of environmental management and coordination in a sectional spectrum. As Kenya's principal legal instrument on the environment, the EMCA is expected to address all aspects of the procedural and substantive process in relation to environmental protection and development, together with compliance, enforcement and monitoring of compliance through its administrative body, the National Environment Management Authority (NEMA). Strategies to effectively achieve the EMCA's mandate have not been fully developed or implemented, and different factors have contributed to this situation. These include:

- Lack of institutional capacity and resources to mobilize and link activities effectively within and between various sectors;
- Specific environmental sectoral laws that do not adequately articulate the links between development, population and environmental concerns and more often conflict with the EMCA; and
- Limited budgetary provisions to finance the effective implementation of environmental projects and programs set out in national development plans.

A review of all the relevant regulatory and structural frameworks is therefore necessary in order to develop an implementation strategy that will ensure cross-sectoral relations within the various government institutions. To effectively integrate and implement environmental concerns in cross-sectoral relations, a more resolute solution would be the operationalization of a comprehensive national Environmental Policy.

To strengthen its commitment to addresses issues of environmental governance and policy coherence, the Government of Kenya published the draft Environmental

Policy to guarantee the sustainable management of the environment and natural resources in the country. The objectives of the policy include: (i) providing a framework for an integrated approach to planning and sustainable management of Kenya's environment and its natural resources; (ii) strengthening the legal and institutional framework for effective coordination and management of the environment and natural resources; (iii) ensuring sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems, for national economic growth and improved people's livelihood and well-being; (iv) promoting and supporting the use of innovative environmental management tools (such as incentives, disincentives, total economic valuation, indicators of sustainable development, environmental audits, and payment of environmental services) in environmental management; (v) promoting and enhancing cooperation, collaboration, synergy, partnerships and participation in the protection, conservation, better management of the environment by all the stakeholders; and (vi) ensuring inclusion of cross-cutting issues – such as poverty reduction, gender, disability and HIV/AIDS – in national and sectoral planning processes. The draft National Environmental Policy takes steps to ensure every citizen's environmental right and support the country's development ability, by facilitating national considerations of economic, social and environmental needs. Implementation of the draft policy shall ensure that protection of coastal and marine ecosystems, mountain ecosystems, Arid and Semi-Arid Lands (ASALs), biodiversity and wildlife resources. This shall 'climate proof' natural resource sectoral policies and ensure compliance and enforcement of the law. The policy further supports the government's implementation of the NCCRS to build and strengthen national capacity on climate change and related environmental issues. Such a policy will harmonize all approaches towards environmental management and strengthen cross-sectoral collaboration and coordination.

4. Gender Integration in Climate Change Governance

4.1. Marginalisation of Gender Groups

Gender is defined by FAO as 'the relations between men and women, both perceptual and material. The vulnerability of women to the effects of climate change is largely due to their dependence on natural resources for their livelihoods and sustenance, their responsibility for water and food procurement for their families, and their increased risk exposure during times of weather-based disasters and severe weather crises. Research suggests that the threats of climate change are not distributed equally, and it is essential that gender analysis be applied to all national actions to address the impacts of climate change. The effects of climate change are likely to impact the poor and marginalized individuals within society. The fact that women and the poor are being disproportionally affected magnifies the importance of climate change as a regional issue, requiring urgent attention, cooperation, resources and action. The global debates have focused primarily on mitigation efforts (such as, reduction of carbon emissions and other greenhouse gases), and on the associated actions required by governments and institutions to mitigate climate change. Gender issues are rarely addressed, particularly in global climate change initiatives and policy meetings. Gender and climate change are considered to have a mere causal relationship in the international development agenda. The women in Kenya are particularly vulnerable to climate change because they rely on climate sensitive resources for their sustenance, and inequality in gender roles suggests they do not have means to adapt to the pressures of climatic changes (UNDP, 2008).

The draft Environment Policy recognizes that gender plays an important role in the management of the environment and calls for enhanced access and ownership of natural resources by all gender, people living with disabilities, marginalized and minority groups. It further recommends that the government develops and implements an Environment and Gender Strategy and Action Plan and provide incentives to attract the under-represented gender and other groups into environmental management careers and occupations. This augments Article 27(1) of the Constitution, which provides *inter alia* that every person is equal before the law and has the right to equal protection and equal benefit of the law irrespective of gender (GOK, 2010a). Gender issues should therefore be mainstreamed in climate change policies to establish a clear global strategy of promoting gender equality in national sustainable development plans and the inherent environmental rights enshrined in Kenya's Constitution.

4.2. Social, Cultural and Legal Constraints to Gender Mainstreaming

The challenges for women in Kenya include negative socialization, lack of sufficient education, restrictive property ownerships rules, limited decision making and control of gender stereotyping and discrimination. The Sessional Paper on Gender (Sessional Paper No. 2, 2006) significantly attributes the unequal status between women and men to socio-cultural attitudes held by men and women and negative socialization. This social construction of defined gender roles and responsibilities assigned to men and women within society manifests the obstacles to effective national gender mainstreaming.

In Kenya, women are considered large contributors to the national economy through various socio-economic activities, such as agriculture production (both crops and livestock). Although the agricultural sector is an important component of the Kenyan economy, employing a majority of the Kenyan labour force, most women work in the sector as casuals and are concentrated in subsistence agriculture with limited access to productive resources, while men generally dominate large scale cash crop production. Currently, women in Kenya do the vast majority of agricultural work, and produce as well as market the majority of food. However, they earn only a fraction of the income generated and own a nominal percentage of assets. The fact that the agriculture sector in Kenya, like in most developing countries, faces various challenges also hampers its productivity and makes it vulnerable to extreme weather conditions and climate change. This means that women and marginalized groups are first to be affected.

Table 3: Economically active population, female share of economically active population and agricultural share of economically active women in 1980, 1995 and 2010

	Total (Thousands)			Female share (% of total)			Agricultural share of economically active women (%)		
	1980	1995	2010	1980	1995	2010	1980	1995	2010
World	1,894,978	2,575,394	3,282,308	38.1	39.6	40.5	53.5	48.7	42.0
Countries in developing regions	1,353,280	2,00,716	2,656,880	36.4	38.3	39.2	72.1	62.8	52.7
Africa	172,652	268,197	407,905	38.5	39.5	41.4	78.8	70.9	62.2
Sub-Saharan Africa	147,699	227,175	346,919	41.8	42.4	43.8	79.1	72.7	65.0
Eastern Africa	61,341	97,031	152,689	46.2	47.2	48.3	91.0	86.5	79.2
Kenya	6,718	12,136	18,887	45.7	46.3	46.4	88.1	82.9	73.9

Source: Adopted from FAO (2011)[1]

[1] Source: http://www.fao.org/docrep/013/i2050e/i2050e.pdf

Following the enactment of the Constitution, national policies, strategies and plans have taken gender issues into account in the composition of the organizational structures: gender needs analysis, identification of gender priorities to be integrated in policy formulation, programming, implementation, monitoring and evaluation. Kenya is committed to promotion of gender equality and women's empowerment and at a policy level has also made serious attempts to address the imbalances that arise due to social assigned gender roles and issues. Key policy and institutional achievements at a national level include the: (a) Constitution, 2010; (b) National Policy on Gender and Development, 2000; (c) Sessional Paper No. 2 of 2006 on Gender Equality and Development; (d) establishment of the National Gender and Equality Commission, to coordinate, implement and facilitate gender mainstreaming in national development and to advise the Government on all aspects thereof; (e) establishment of the Department of Gender and Social Development; and (f) establishment of gender units within government organizations, among others. The policy and institutional achievements aim to reduce gender discretion at a national level, ensures gender representation in elective bodies, ensures gender equality is maintained in political parties, protects the right to equal treatment and opportunities in political, economic, cultural and social spheres, and facilitates equal opportunities for appointment, training and advancement for both women and men.

4.3. Policy Development to Address Gender Concerns

The draft Environmental Policy 2012, draft Energy Policy 2012, Ministry of Agriculture's Gender Mainstreaming Strategy 2010, in addition to various other sectoral policies and legislations recognise the importance of gender mainstreaming in the management of the environment. Some sectoral policies and strategies to address policy incoherence and gender inequality are illustrated below (Table 4).

Table 4: Sectoral Challenges and Strategies

Sector	Challenges	Policies and Strategies
Agriculture[2]	• Limited engendering during planning, budgeting implementation and monitoring and evaluation of programmes • Lack of harmonization of gender mainstreaming among the ministry's departments and other stakeholders • Discriminatory socio-economic and cultural practices and beliefs • Limited capacity of staff to reach various gender groups • Poor means to enforce gender mainstreaming in programmes and projects • Weak institutional structure for gender mainstreaming	• Mainstream gender issues in human resource management process • Facilitate provision of a good working environment for all gender groups • Integrate gender needs through active participation in all research, capacity building and extension processes • Provide adequate education, information and communication on gender equity in agriculture • Achieve gender responsive programming by involving women in project/ programme planning and technology transfer. • Integrate gender issues into national agricultural policy and legislation

Water[3]	• Gender inequity of gender roles in ASAL areas means women and children travel long distances to access water resources
	• Gender tends to get limited focus in departments
		• Provision of water harvesting and storage technologies to residents of ASALs will increase opportunities for increased food, incomes and poverty reduction
		• To mainstream gender in all the Ministry's operations by:
		  • developing a gender policy for the water sector
		  • holding gender sensitization workshops, seminars and trainings

[2]Source: http://www.kilimo.go.ke/kilimo_docs/pdf/Ministry_of_Agriculture_Gender_Strategy.pdf

[3]Source: Ministry of Water and Irrigation. Ministerial Strategic Plan 2009-2012.

Sector	Challenges	Policies and Strategies

Energy[4]	• Gender imbalances in various positions in governmental/non-governmental institutions
	• Inadequate implementation of policy on gender mainstreaming with regard to energy development and distribution
	• Inadequate public awareness on the adverse health effects of use of wood-fuel and kerosene on women and children
		• Government shall take measures to implement the 1/3 gender principle in the energy sector institutions as provided in the Constitution
		• To address the challenges faced by women and children in the use of wood-fuel and kerosene, the Government shall:
		  • Mainstream gender issues in policy formulation and in energy planning, production and use
		  • Undertake public education and awareness creation on the cultural structures and practices hindering access by women to alternative sources of energy
		  • Undertake public health education on the efficient use of bio-energy and promote the use of fuel efficient bio-energy appliances
		  • Enhance regional, gender and environmental considerations in energy planning and development

[4]Source: http://www.kplc.co.ke/fileadmin/user_upload/Documents/05-2012/Media/National_Energy_Policy_-_Third_Draft_-_May_11_2012.pdf

Sector	Challenges	Policies and Strategies
Forestry[5]	• Traditional gender roles have inhibited the participation of women in forestry development • Role of women in forest and tree resource utilization and management, has not been fully recognized	• More opportunities for women will be enhanced in forest training and education • The Government will endeavour to involve women in participatory forest management

Source: Adapted from the Ministry of Agriculture's Gender Mainstreaming Strategy 2010; Draft Energy Policy 2012; Ministry of Water and Irrigation. Ministerial Strategic Plan 2009 – 2012; and Forestry Policy 2007.

The socio-economic realities in Kenya, however, suggest that women are disadvantaged even with the enactment of gender sensitive legislative policies. The social engineering of society provides that policy incoherence is closely attributed to marginalized groups' lack of access and ownership of natural resources and their inadequate participation in policy and decision making processes. Despite the gender neutrality of Kenya's legislative frameworks, there is an inability to access equal rights due to societal discretion linked to social roles. Policy incoherence in gender governance may only be addressed by removing the barriers of access to natural resources and ensure enforcement of the principles of the Constitution at a national and county level.

4.4. Integration of Gender in Climate Change

To facilitate effective integration of gender mainstreaming in climate adaptation policies, strategies and measures, women in developing countries should be considered as part of the most vulnerable groups, in conjunction with children and the disabled. The effects of extreme weather patterns filter down to men and women and ultimately impact more profoundly on rural women who depend on their environment for their livelihood (UNDP, 2009). These marginalized groups' dependence on natural resources based livelihood systems, such as agriculture, further increases their vulnerability. The risk of climate variability also impacts on environmental conditions, causing inadequate natural resources, available land and productive capacity of the agricultural sector. Climate change is predicted to reduce crop yields and food production in regions throughout the world, particularly the tropics. Women, as subsistence farmers in the developing countries in these areas, are responsible for 70% to 80% of household food production. Traditional food supply sources, both agricultural and forest products, may become more unpredictable and scarce due to climate change, thus disproportionately affecting women. Women's dependency on agriculture,

[5]Source: http://www.kenyaforestservice.org/images/MMMB/forest%20policy%202007.pdf

forests and bio-fuels increase their exposure to climate change and illustrates the centrality of women in debates on climate change and the roles women play (UNDP, 2009). Women are often expected to contribute to unpaid labour for soil and water conservation efforts while absent from the decision making, planning and governance processes. In view of these and to understand the gender implications of adaptation measures, it is necessary that all members of an adapting community are represented in climate change planning and governance processes. Equal involvement of men and women in adaptation planning is important not only to ensure that the measures developed are actually beneficial for those who are supposed to implement them, but also to ensure that all relevant knowledge is integrated into policy and projects (UNFCCC, 2004).

Particular activities that require consideration when developing gender equal adaptation policies, strategies and measures are illustrated below.

a) Employment, poverty reduction, income generating activities

In developing countries, particularly in Kenya, women are responsible for various care-giving activities, including performing household chores and income generation activities such as maintaining small businesses, agricultural productivity, and distributing produce to local market. With regard to income generating activities, such as agricultural production, it is clear that the burdens of climate change and climate variability, including heavy sporadic rainfalls and extended periods of drought, disrupt agricultural activity and hamper distribution of goods and services to local markets. Additional stress factors include the depletion and destruction of natural resources due to unregulated land use practices; restrictions on access to and control of land (as ancestral land is inherited by men and rarely women); unpredictability of weather patterns, which interferes with normal planting and cultivating cycles; and destruction and over-utilization of land causes soil infertility, which forces women to distribute their time to provide food for their families and leaving them with limited time to participate in decision-making and income generation activities. The decreased quantity and quality of water due to droughts will also have negative impacts on households as water resources are utilized in a variety of activities from agricultural, to household.

Strategic interventions that could be put in place by the government to assist women in their roles include: enhancing farming systems that encourage crop diversification including the cultivation and consumption of indigenous and more drought-tolerant food crops that are more resilient to the impacts of climate change; promotion of alternative water sourcing practices, including water harvesting techniques that are suitable for different agro-climatic areas to reduce the pressure on groundwater sources required to for drinking and/or household

needs; enhance investment in water harvesting and storage infrastructures within local community through community development funds for agricultural purposes; working in conjunction with local farming cooperatives and associations within local communities to distribute farm inputs such as fertilizers and agricultural lime, which increase production per unit of land; promotion of appropriate irrigation technologies suitable for sensitive to ecological systems; addressing soil and land degradation by promoting improved soil and land management practices, such as conservation agriculture and agro-forestry; and awareness creation and development of communication tools, training and planning workshops at community and national levels, on the impact of climate change on gender, the options of climate resilient crops, and the benefits of improved soil and land management.

b) Women and human health matters

Climate change affects women's health at two levels: (a) at a physical level, due to the lack of social amenities, which results in high mortality rates of women (for example, during child-birth); and (b) as care-givers within the family, which relates to children and other family members succumbing to illness. Climate variability (including extreme high temperatures or low temperatures) provides a favourable breeding ground. The changes in climatic conditions may: (i) amplify vector-borne diseases, such as malaria, as increases in heavy rainfall events may also result in greater opportunities for mosquitoes to breed and hence increase malaria incidence; (ii) increase mortality due to climate related disasters, such as sporadic floods events and landslides; and (iii) over-stretched water and sanitation infrastructures, therefore affecting the water quality and quantity within communities. The significant impact on water supply and sanitation will also enhance the incidents of water borne diseases. The effects of climate change are also greatly aggravated by lack of urban and rural planning of infrastructure together with the competing resource requirements, high and unpredicatable climate variability, and insufficient physical and social infrastructure. Strategic interventions that could be put in place by government to assist women in their roles include: providing adequate financial and human public health resources within local communities, including training, disease surveillance and emergency response, as well as prevention and control programmes, in addition to strengthening sustainable (environmental, social, and nutritional) public health activities involving women and other marginalized groups in society in decision making processes; supporting the planning processes of urban settlements in conjunction with local authorities, ensuring that communities have proper housing structures, adequate waste disposal facilities; piped water infrastructure; and developing empowerment programmes that enhance climate resilience, such as job trainings and skills provision.

5. Cost Implications of Policy Incoherence

5.1. Economic Costs of Climate Change in Kenya

Economic assessments of the adverse effects of climate change has shown that climate change is now emerging as an economic, planning and investment/ finance issue and not merely an environmental issue. Its impacts can therefore be measured as an economic cost (Smith et al., 2001). Climate variability already has had significant economic costs in Kenya, which is reflected in the corresponding macro-economic costs related to periodic floods and droughts. Future climate change will lead to additional and potentially very large economic costs. These will be greater in Africa because of the continents vulnerability and low adaptive capacity. Aggregate models indicate additional net economic costs (on top of existing climate variability) which could be equivalent to a loss of almost 3% of GDP each year by 2030 in Kenya (SEI, 2009). The IPCC Fourth Assessment Report has concluded that temperature has risen by approximately 0.74°C and the sea level has increased by 17cm over the past 100 years, and further projects that global temperatures will rise by 1.1 to 6.4°C over 1990 levels, while global mean sea levels will rise by 18 to 59cm by around 2100, depending on future scenarios of varying global emission levels. Temperature extremes, heat waves and heavy rainfall events are projected to become more frequent, and the cost implications will therefore be unavoidable.

The increased average temperatures and fluctuations in annual rainfall will be felt across key economic sectors, potentially affecting agricultural production, water availability, energy use, and biodiversity and ecosystem services (including forestry). The impacts are likely to have a disproportionate effect on marginalized groups with restricted access to resources and limited adaptive capacity to climatic change. The SEI study (2009) also addressed the potential impacts and economic costs in these sectors. For instance, droughts in 1998-2000 were estimated to have economic costs of US$ 2.8 billion attributed from loss of crops and livestock, forest fires, damage to fisheries, reduced hydro-power generation, reduced industrial production, and reduced water supply. Similarly, droughts in 2004 and 2005 affected millions of people, and the recent 2009 drought led to major economic costs from restrictions on water and energy. In addition, floods in 1997 and 1998 affected almost 1 million people and were estimated to have total economic costs of US$ 0.8 to 1.2 billion arising from damage to infrastructure (roads buildings and communications), public health effects (including fatalities), and loss of crops. The more recent 2006 flooding affected over 723,000 people. Climate modelling of future climate projections indicate that there will be an intensification of extreme weather events, which will lead to corresponding increases in economic costs related to adaptation and mitigation, as well as a rise in the number of affected

people. The continued annual burden of climate induced events such as flooding and drought will lead to large economic costs (possibly as much as US$ 0.5 billion per year, equivalent to around 2% of GDP) and will negatively impact on Kenya's long-term growth (SEI, 2009).

a) Impacts of Floods

Floods are part of existing natural variability and historic climate variability, associated with El Niño and La Niña years, which has led to major impacts and economic costs during previous events (SEI, 2009). Climate change related disasters constitute over 70% of all disasters in Kenya and floods are emerging as the leading hydro meteorological disaster in the country. The prevalence rates of floods in Kenya stands at 27% and affects 5% of the population affected by disasters. Floods related fatalities constitute a whopping 60% of disaster victims in Kenya (UNEP, 2009). Many of the projections indicate an increased intensity of extreme rainfall events in much of East Africa, including in Kenya. As an example, during the short-rains, there are some projections of increases in intensity from 10 to as much as 50% in the 10 year high rainfall events over the north of East Africa by the end of the century (i.e. 2100). These are associated with higher flood risks (EY, 2009). Flood impacts in Kenya can be broadly categorized into two: flood damages and flood losses. Flood damages include physical destruction (direct and tangible losses) to public and private assets such infrastructure, houses, buildings, crops and vehicles resultant from contact of the assets with flood water. Flood loss is a much broader term encompassing secondary and tertiary losses as well as intangible losses such as human and livestock life, health and associated fatalities from drowning or flood-related diseases. A comprehensive assessment of economic impacts of floods must take into consideration both the direct and tangible impacts (flood damages) as well as indirect and intangible impacts (flood losses). The impacts of floods in Kenya are felt across various sectors of the economy including: agriculture, livestock, transport, housing, public health, industrial processing, and tourism. The impacts have severe socio-economic and political implications (Otiende, 2009).

The economic costs of floods have the potential to reduce the country's GDP substantially. The 1997/98 El Niño flood was associated with one of the largest flood losses in the country in 50 years (Mogaka et al., 2006). The economic and financial losses associated with the El Niño flood is in the range of up to US$ 800 million (Karanja et al., 2001). The World Bank estimated the cost of the flood at Kshs. 70 billion, equivalent to US$ 1 billion. Flood assessment studies recently undertaken along the last 20km reach of the Nzoia River in western Kenya indicate that annual flood damages amount to about US$ 4.8 million in the Budalang'i flood plains. The average annual flood damages in the Kano Plains are about

US$ 850,000 (Eitel and Ochola, 2006). During the flood of 2003, the ASAL district of Garissa incurred flood losses of over Kshs. 500 million following a flash flood according to the Arid Lands Resource Management Project. A majority of the projects focused on rehabilitating roads and water infrastructure and provision of health services at a cost of Kshs. 4.85 billion in 22 districts of the country (Otiende, 2009). The government spends approximately Kshs. 37 million annually for dyke rehabilitation in the western Kenya flood plains. During the short rain season of 2009, a total of Kshs. 40 million has been earmarked for the rehabilitation of dykes in Budalang'i in anticipation of the short rains that might be accompanied with El Nino. Table 5 provides an illustration of estimate costs of floods at a sectoral level.

Table 5: Sectoral economic costs of floods

Sector	Description of Impacts of Floods
Agriculture	Floods result in the inundation of productive agricultural land, leading to destruction of crops. This has an impact on agricultural productivity, leading to food security in the areas directly affected and those that produce food consumed in other parts of the country. Flood waters may also destroy harvested food that has been stored (Otiende B., 2009).
Water	An amount of Kshs. 63 million is spent every year on relief and rehabilitation of about 12,000 displaced people. The MWI was required to undertake repair and restoration activities of damaged dykes, expected to cost Kshs. 37.2 million (MWI, Flood Mitigation Strategy, 2009). Recent floods in 2008/2009 within the last 20km reach of the Nzoia River resulted in an annual damage of approximately Kshs. 46 million.
Energy	The El Niño floods resulted to land degradation and increased soil erosion with consequent silting of hydropower dams. 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. 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 (Heinrich Böll, 2010b).
Forestry	The impacts of floods affect forest productivity and damages flora and fauna species, as well as increased livestock and wildlife mortality rates.

b) Impacts of Droughts

Droughts are a natural hazard and, with climate change, their occurrence is increasing in the Horn of Africa. In 2011, Kenya suffered severe drought, which also affected areas of Ethiopia, Somalia, as well as Djibouti and to a lesser extent Sudan, South Sudan, Tanzania, Uganda, and Eritrea. In Kenya, the drought mainly affects the seven districts that are classified as ASAL (for example: Turkana, Mandera, Marsabit, Garissa, Wajir, Isiolo, and Tana River). The most affected regions of Kenya received approximately 42 percent (64mm) of expected rainfall during the March to May 2011 rainy season compared to their 30 year average. This rainfall shortage and its effects are compounded by the failure of the previous rainy season from October to December 2010 when the same regions received only 59% (46mm) of its expected rainfall compared to the 30 year average. The rainfall shortages are directly attributable to the current La Niña, which typically causes shortages along the equatorial belt and increases in rainfall immediately north and south of the belt. This situation in North-Eastern and part of Eastern Kenya was classified as a social and humanitarian crisis (World Bank, 2011). Figure 3 below indicates a failed crop in Taita County as a result of drought.

Figure 5: Failed crop as a result of drought in Taita County, Kenya

Source: HBS office, Nairobi

The economic costs of drought in the period from 1998 to 2000 are approximated at US$ 2.8 billion, mainly due to livestock loss and crop failure, forest fires, fisheries damage, reduced hydro power generation, reduced industrial production and

water supply (ibid). The 2004 and 2005 droughts had an impact on millions of people. While the 2009 drought greatly impacted Kenya's energy and water sectors. The post-election violence-experienced in 2007 and 2008 worsened the effects of the drought and drove inflation higher. The greatest drought impacts were felt for the better part of 2011, and inflation increased to 15% in July due to high food and oil prices. The drought hit Kenya while it was trying to navigate through economic shocks, which will further cloud the country's economic outlook. The combination of higher food and fuel prices, emerging electricity shortages, combined with the impact of the drought will reduce Kenya's GDP by up to 1%. GDP growth is expected to reach 4 - 4.5%. This will be lower compared to the 5.6% growth rate of 2010 but substantially higher than Kenya's long-term average growth rate. High food and fuel prices are also challenging some of the macroeconomic fundamentals because they have translated into higher inflation, now at 16%, and contributed to a sharp decline in the exchange rate. However, for Kenya, drought also presents itself as an opportunity to find sustainable solutions to crises that are becoming more frequent and more intense. Kenya and East Africa as a whole can easily feed itself. But for the second time in three years, agriculture policies have failed the country. Table 6 provides an illustration of estimate costs of droughts at a sectoral level.

Table 6: Sectoral economic costs of droughts

Sector	Description of Impacts of Droughts
Agriculture	Crop production losses arising from reduced yields of food crops and cash crops amounted to Kshs. 69 billion and Kshs. 52 billion, respectively. Maize, tea and coffee had the highest losses (GOK, 2012a).
Water	The fluctuations of water levels and the scarcity of water resources have affected income generating activities such as fishery. The total value of the effect of the drought on fisheries was estimated at Kshs. 4.2 billion, comprising Kshs. 3.6 billion of losses and Kshs. 0.5 billion in damages (GOK, 2012a).
Energy	Reduced output of hydropower that resulted in reduced revenue for KPLC, estimated to be about Kshs. 2.6 billion. Likewise, the Kenyan electricity producer (KenGen) also reported a downward trend in their revenue in late 2010, totaling Kshs. 1.25 billion. Reduced hydropower production was accompanied by an increased share of thermal power generation at a higher cost of generation. The losses due to higher production costs are estimated to be about Kshs. 29.8 billion contributing to total cumulative losses of approximately Kshs 32.4 billion ((GOK, 2012a).

Sector	Description of Impacts of Droughts
Forestry	Direct impacts of the drought and indirect impacts from wildfires included environmental losses as a result of damages to plant and animal species, as well as habitats have reduced forest productivity, which corresponding with lower water levels has increased livestock and wildlife mortality rates.

In consideration of the project increase in economic costs and the escalation of extreme weather patterns caused by climate change and climate variability, sound national policy, shared knowledge, robust sectoral strategies are required to enhance the capacity for adaptive management of the country.

5.2. Development Costs of Policy Incoherence

The objective of the study was to identify the economic costs of climate change and the potential economic costs of policy incoherence. On analysis, the dimensions of policy incoherence were identified to have some development costs. The developments costs are attributed to the uncertainty of policy implementation, unbudgeted and unfunded policies, and lack of capacity and resources required for mobilizing various strategic cross-sectoral interventions effectively.

Table 7: Sectoral development costs

Sector	Development Costs
Agriculture	The desire for commercial and infrastructural expansion has occurred at a detrimental cost to agricultural production and environmental protection.
Water	Fragmented policy and institutional frameworks, as well as inadequate climate modelling tools and methods related to the monitoring of water quality and water levels supports ineffective water resource management. The failure to generate the necessary climate information makes it difficult to establish the actual economic costs of water mismanagement and poor coordination.
Energy	Poor or lack of efficient energy tariffs has limited the investment in sustainable energy development opportunities, which increases the pressure on natural energy resources that are already limited (for example, use of charcoal, wood-fuel, etc).

Sector	Development Costs
Forestry	Mismanagement and lack of enforcement of forestry policies and regulations means that there is an increase in forest degradation, which affects water source management within catchment areas.

5.3. Opportunity Costs of Policy Coherence

Recent climate studies have shown that a 'business as usual' approach will result in devastating commercial and environmental effects due to the impacts of climate change. The challenge of confronting public and private sector is the formulation of an adequate response to climate change. The global climate change debates are also focusing on intensifying its economic activities to address the growing concerns of global warming, climate change, energy security and scarcity of natural resources. Kenya's vulnerability to the impacts of climate change is evident from the increasing temperatures, rising sea-levels, unpredictable drought events and extreme rainfall. Climate vulnerability in conjunction with limited human, economic and infrastructural resource capacity make Kenya susceptible to climate variability and climate change. Nevertheless, there is substantial opportunity costs in ensuring policy coherence, enhancing national productivity and economic growth, stimulating technological innovation, increasing employment opportunities, strengthening the national capital base, supporting public and private investment, promoting economic cohesion, and encouraging the transition to a climate resilient and sustainable economy.

Table 8: Sectoral Opportunity Costs

Sector	Opportunity Costs
Agriculture	Investment in climate friendly technologies and improved water irrigation systems will enhance agricultural activity and increase economic growth.
Water	Enhancement of the provision of payment for ecosystem services to provide value addition in resource management activities.
Energy	Involvement in Clean Development Mechanism opportunities and carbon trading pursuant to the UNFCCC and the Kyoto Protocol.
Forestry	Participation in REDD and REDD+ mechanism to provide value addition in resource management activities.

6. Conclusion and Recommendations

As illustrated above, the adverse impacts of climate change have corresponding cost implications on the country and this is further aggravated by the emergence of policy incoherence. Sectors that are vital to its socio-economic growth will be gravely affected, such as agriculture, water, energy and forestry. This calls for a focused approach to policy coherence to address climate change issues together with the country's overall national development framework. The review of fragmented legal instruments across multiple sectors to ensure consistency is essential. Kenya faces significant challenges in integrating climate change responses in its national, sectoral and cross-sectoral policies and regulatory frameworks. Nevertheless, the enactment of the Constitution, development of the draft Environmental Policy, gazetting of the Climate Change Authority Bill and finalization of the NCCAP and preparation of the LPAR demonstrates that Kenya is making strong efforts to address these matters through policy and regulatory reforms targeted at the coordination of climate change projects and programmes. These various climate change initiatives at a national and sectoral level ensure a unified and comprehensive approach in developing policy coherence in decision and policy making. The actual cost of policy incoherence is yet to be determined. However, it is evident that effective policy coherence through its internal and external dimensions supports the country's national development framework and facilitates Kenya's socio-economic growth. Notably, it is important to acknowledge that full coherence will be difficult to achieve, and conflicting interest between policy and institutional framework mandates will emerge due to conflicting objectives of the said mandates. Promoting policy coherence is therefore a challenge for opposing government institutions, interest groups and other non-state actors with their own agendas to pursue, and goals to achieve. In addition, convincing government institutions to consider the effect of reforms beyond their strategic directives is much tougher still. The decision makers need to be well informed on the design, planning and implementation of national policies and strategies, and need to see the overall economic costs and benefits of their initiatives before committing public funds for adaptation or mitigation actions. Nevertheless, trade-offs and compromises in the policy development will limit the degree of inconsistency, which is unavoidable.

Policy development and the integration of climate change mainstreaming at a national and sectoral level is an emerging issue in Kenya. The mechanisms of ensuring effective climate proofing of national development plans and legislative reforms will require a review and analysis of the current state of each legislation, policy and strategy beyond the preparation of the LPAR. This may be a problematic issue as the exercise will be a long-term endeavour that can only be coordinated and implemented by the government as part of a policy and legislative and reform process. Increasing the scope of policy and legal review from a ministerial

exercise to a national government through the Kenya Law Reform Commission will ensure that there is clear correlation between addressing the impacts of climate change and the eradication of poverty pursuant to the country's national development framework. Delayed action against climate change will increase Kenya's vulnerability to ecological disasters due to climate change and climate variability. Therefore future policies and institutional frameworks need to be climate proofed to guarantee national economic growth and realization of MDGs. The Kenyan government has a significant role in providing a coherent policy and institutional framework to guide effective adaptation and mitigation projects and programmes. To support climate change mainstreaming in policy development, five cross cutting considerations should be borne in mind, namely:

- Awareness creation: Awareness creation and development of communication tools, training and planning workshops at community, county and national levels will enhance the adaptive capacity of the country. This will be essential in building the capacity of communities to help them adapt to and mitigate the adverse impacts of climate change. In view of the numerous climate risks and potential opportunities presented by climate change and climate variability, it is essential to enhance and strengthen the capability of the country to build resilience. The state and non-state actors should work in a collaborative effort to assist national climate change coordination units on how to mainstream climate change considerations into development decision-making, for example the achievement of the MDGs.

- Research and development: The development of high quality climate information and tools for risk management helps drive efficient markets systems and support progressive national economic growth. Additionally, improved national climate predictions will be critical, particularly for analyzing rainfall and drought trends. This will enhance the country's planning and capacity development initiatives to reduce risk, and prepare and recover from disasters. It will also heighten the country's capacity to ensure effective natural resources management through investment in research to seek sustainable, efficient, and profitable methods of managing, coordinating and protecting Kenya's diverse ecosystems and biodiversity. There should also be research on validation and integration of indigenous knowledge and technologies in natural resource management.

- Enhancing public-private dialogue and performance standards: This should encourage both private and public investment in economic stimulating activities such as large-scale agricultural production with enhanced technological access, infrastructural development, such as buildings, transportation systems and roads, as well as capacity building in the acquisition, development and transfer of climate friendly and resilient technologies. The facilitation of public and private sector relationships through the proposed draft Public

Private Partnerships Bill 2012 will allow the Kenyan government to obtain substantial investment to contribute to long-term polices for climate-sensitive public goods, including social amenities, natural resources protection, coastal protection, and emergency preparedness.

- Access to climate finance: A financial safety net may be required for the poorest in society, who are likely to be the most vulnerable to the impacts and least able to afford protection (including climate insurance, climate friendly technologies, etc). For example, this can be achieved through the development of innovative products and services by private sector institutions (for example, banks, insurance companies, etc), such as weather-based insurance scheme for livestock and crops and financing for renewable energy projects, among others. In addition, the government may support private sector institutions through taxation and tariff incentives by providing climate-sensitive products and services.

- Promotion of diversification: Sustainable development brings the diversification, flexibility and human capital which are crucial components of adaptation. Indeed, much adaptation will simply be an extension of good development practice, for example promoting overall national development, better disaster management and emergency response. Adaptation action should be integrated into development policy and planning at every level. Capacity building in the acquisition, development and transfer of climate friendly and resilient technologies by the government and fostering effective relationships with private sector will facilitate sustainable development through the promotion of diversification.

Ensuring policy coherence at a national level enhances institutional capacity for coordinating climate change mechanisms. Policy coherence will provide an enabling environment for political will and future national policy implementation, capacity development, overcoming institutional challenges and assessing the results of policy coherence efforts. In this effort, there will be a number of key issues to observe to guarantee the development of a fully harmonized, effective and gender-responsive national climate change governance framework. Some general considerations and recommendations for the government are as follows:

a. Agricultural production in Kenya is highly exposed to climate change, as farming activities directly depend on climatic conditions. It also contributes to the release of GHGs to the atmosphere. Effective policies that balance between increased productivity and reduction of GHGs, while taking into account the fact that rural agriculture is dominated by women, are needed. Some potential adaptation and mitigation strategic interventions to address gaps in agricultural production include:

i. promotion of conservation agriculture to ensure efficient use of water resources through drip irrigation, water recycling and reuse, mulching, and appropriate land-use techniques etc;

ii. promotion of the creation of a weather-based insurance scheme for crop production;

iii. facilitation of the enhancement of farming systems that encourage crop diversification, including the cultivation and consumption of indigenous and more drought-tolerant food crops such as cassava, millet, sorghum and sweet potatoes;

iv. promotion of appropriate irrigation technologies suitable for different agro-climatic regions and sensitive to ecological systems; and

v. Supporting agro-forestry activities.

b. Kenya has made great advance in the water sector by putting in place policies that decentralize the management of water and involve multiple stakeholders. However, there is need to harmonize vertical institutional mandate with horizontal ones to avoid uncoordinated use and management of resources at the expense of water conservation, distribution and delivery. Some potential adaptation and mitigation strategic interventions to address gaps in water resource management include:

i. promotion of enhanced integrated water management as a primary tool for water management (for example, conservation agriculture);

ii. supporting the MWI in coordinating exploration, mapping, and developing and harvesting groundwater and rain-water resources;

iii. promotion of ground water exploration through artificial recharging of groundwater for threatened aquifers, inter-aquifer water recharge, inter-basin water transfer; and

iv. Protection and conservation of water catchment areas through afforestation and reforestation (including on farm woodlots, etc).

c. Majority of Kenyans depend on biomass energy (for example firewood, charcoal and agro-waste) for household needs, such as cooking. However, national government has yet to put in place policies that promote investment in sustainable energy development, leading to incoherence within the energy sector. Some potential adaptation and mitigation strategic interventions to address gaps in energy use and forestry conservation include:

i. promotion of exploitation of alternative renewable energy sources such as wind, solar, biomass (including, biomass waste) and biogas, which are abundant in the region in order to reduce demand from hydro-electricity and protect it against potential shocks from reduced precipitation, and subsequent reduced water flow to hydro dams by managing water catchments;

ii. promotion of increased forest covers through tree planting, agro-forestry, participatory forest management, rehabilitation of degraded areas, and diversification of tree species (indigenous species) to enhance resilience to drought and other adverse weather conditions, etc; and

iii. Promotion of REDD projects.

d. Gender-oriented review of all the relevant regulatory and institutional structures comprising Kenya's climate change response is necessary in order to develop a socio-economically sustainable, gender responsive, equitable and effective national climate change response policy framework. This will involve:

i. Mainstreaming gender in all government agencies (for example, counties, ministries, parastatals, etc) by developing an appropriate gender policy, planning and guidelines on involving women, the youth, and the marginalized in the sectoral development activities; and

ii. Monitoring and evaluation frameworks developed to ensure that gender guidelines are well embedded in the day to day operations, by holding gender sensitization workshops, seminars and trainings, where necessary.

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