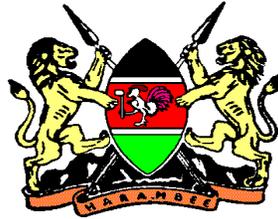


REPUBLIC OF KENYA



**ENVIRONMENT, WATER AND IRRIGATION
SECTOR REPORT**

Final Draft

12th March 2010

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LIST OF ACRONYMS

AWOS	Airport Weather Observation Stations
AWS	Automatic Weather Stations
CBK	Central Bank of Kenya
CBK	Central Bank of Kenya
CCK	Communication Commission of Kenya
DEAP	District Environmental Action Plan
DEC	District Environmental Committees
DPM	Directorate of Personnel Management
DRSRS	Department of Resource Survey and Remote Sensing
E.A	Environmental Audits
E.I.A	Environmental Impact Assessment
EMCA	Environment Management and Coordination Act 1999
ERS	Economic Research Strategy for employment and Wealth Creation
ESD	Education for Sustainable
FY	Financial Year
GDP	Gross Domestic Products
GHG	Green House Gases
GIS	Geo – Information Systems
GoK	Government of Kenya
IGAD	International Governmental Authority In Development
KEFRI	Kenya Forestry Research Institute
KMD	Kenya Meteorological Department
LVEMP	Lake Victoria environmental Management Programme
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MTEF	Medium Term Expenditure Framework
MTP	Medium Term Plan for the Vision 2030
NEAP	National Environmental Action Plan
NEC	National Environmental Council
NEMA	National Environment Management Authority
NEMA	National Environmental Management Authority

NEPAD	New Partnership for African Development
PEAP	Provincial Environmental Action Plan
PEC	Provincial Environment Developmental Committees
PER	Public Expenditure Review
PWD	Public Wealth Display
RANET	Radio Net
SAGAS	Semi Autonomous Government Agency
SEA	Strategic Environmental Assessment
SERC	Standard Enforcement Review Committee
SLMP	Sustainable Land Management Project
SOE	State of Environmental
TNA	Training Needs Assessment
MPER	Ministerial Public Expenditure Review
MF&W	Ministry of Forestry and Wildlife
MTP	Medium Term Plan
FAO	Food and Agricultural Organization
UN	United Nations
MTEF	Medium Term Expenditure Framework
SAGAs	Semi Autonomous Government Agencies
FRA	Forestry Resource Account
WRA	Wildlife Resource Account
KWS	Kenya Wildlife Service
KFS	Kenya Forest Service
FCCs	Forest Conservation Committees
CFAs	Community Forest Associations
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
MEAs	Multilateral Environmental Agreements
FITC	Forest Industrial Training Center
ICT	Information and Communication Technology
HOCs	Heads of Forest Conservancies
EIA	Environmental Impact Assessment
HQ	Headquarter

IT	Information Technology
GIS	Geographic Information System
PFMPs	Participatory Forest Management Plans
COYA	Company of the Year Award
CEO	Chief Executive Officer
JKIA	Jomo Kenyatta International Airport
TPU	Tourist Police Unit
JGs	Job Groups
FY	Fiscal Year
KKV	Kazi Kwa Vijana
GoK	Government of Kenya
VER	Voluntary Early Retirement
DPM	Department of Personnel Management
IPPD	Integrated Payroll and Personal Database
TNA	Training Needs Assessment
KEFRI	Kenya Forest Research Institute

EXECUTIVE SUMMARY

The Environment, Water and Irrigation Sector form the bedrock for a clean, secure and sustainable environment for the citizenry by promoting the quality of the country's environment and natural resources. The country largely depends on the natural resource for most economic growth and poverty reduction. About 42% of GDP is derived from natural resource based sectors such as: agriculture and forestry, tourism, mining, water and energy. These sectors also account for about 37% of wage employment and 49% of total export earnings. In addition, environment provides a foundation for human survival and livelihood through provision of food, air, soil and other life support materials. In this regard, the country's long-term growth is therefore dependent on effective management of its resources and the conservation of the environment.

The sector however faces challenges associated with climate change, population increase and land use patterns. These include; environmental degradation, water scarcity, food insecurity, habitat and biodiversity loss, reduced forest cover and wildlife populations, weak legal institutional framework as stated in the Medium Term Plan (MTP, 2008-2012).

Vision and Mission of the Sector

The Sector's Vision is to *“ensure a clean and secure environment and sustainably managed natural resources.*

The Mission of the sector is *“to promote, conserve, and protect the environment and natural resources sustainably for national development.*

Strategic Objectives

Strategic objectives of the sector include:

1. Develop and review policies, legislation, regulations, standards, strategies and guidelines pertaining to environmental and mineral resources;
2. Enhance sustainable management of environment, water and mineral resources;
3. Provide timely, efficient and accurate meteorological services and early warning system information for disaster risk reduction;
4. Generate, manage and disseminate environment and natural resources data and information;
5. Mainstream environmental and mineral resources concerns into sectoral policies, development planning and programmes;
6. Improve water and sewerage services;
7. Increase utilization of land through irrigation and land reclamation;
8. Institutionalize strengthening and capacity building in the sector;
9. Enhance Forestry and Wildlife Protection and Conservation;
10. Promote Sustainable Utilization of Forestry and Wildlife Products;
11. Strengthen Forestry and Wildlife Research and Monitoring.

Sector Programmes:

The programmes and projects that will be implemented in the MTEF period to address the challenges include: Environment Management and Protection; Natural Resource Data and Information; Mineral Resources Management; Meteorological Services and Climate Change; Water Supply and Sewerage/Sanitation Services; Water Resources Management and Water Storage; Irrigation and Drainage Infrastructure; Forestry Development, Research and Management; Wildlife Conservation and Management.

Sector Ministries and Semi-Autonomous Government Agencies

The Sector comprises three ministries namely; Ministry of Environment and Mineral Resources (MEMR), Ministry of Water and Irrigation (MWI) and Ministry of Forestry and Wildlife (MFW). To facilitate fulfill its mandate, the sector has a number of Semi-Autonomous Government Agencies namely: Water Appeals Board (WAB); Water Services Regulatory Board (WASREB), Water Resources Management Authority (WRMA), Water Services Trust Fund (WSTF), Regional Water Services Boards, The National Water Conservation and Pipeline Corporation (NWCPC), Kenya Water Institute (KEWI), National Irrigation Board (NIB), National Environment Management Authority (NEMA), Kenya Wildlife Service (KWS), Kenya Forest Service (KFS), Kenya Forest Research Institute (KEFRI), Wildlife Clubs of Kenya (WCK).

Policy Priority areas

The sector's key policy priority areas in the medium term include:

- Expansion of water coverage and sewerage facilities;
- Scaling up water storage to improve water security in the climate variability;
- Scaling up irrigation to reduce dependence of rain fed agriculture;
- Catchment conservation as a source of water;
- Mitigation and adaptation measures on climate change impacts;
- Enforcement of environmental laws and regulations;
- Nairobi Rivers Rehabilitation and Restoration;
- Modernization of Meteorological Services;
- Mineral exploration and Mining Cadastre System;
- Restoration of forest cover in the five water towers and other forest areas from approximately 2% to 4% by 2012;
- Reduction of human wildlife conflict.
- Upgrading premium parks to increase number of tourists

Sector Performance and Achievements

A review of the Sector performance and achievements for the period 2006/07 to 2008/09 shows that major achievements were made in increasing access to clean drinking water to an additional 1.3 million and 1.07 million in rural areas and urban respectively. This was through: the rehabilitation and expansion of Mzima Pipeline by 50 km to produce 10,000 m³/day of water, rehabilitation and expansion in 26 medium size towns, drilling and equipping 482 boreholes, construction and rehabilitation of 272 small dams and water pans in ASAL areas. Intervention in

water and sanitation resulted in additional 800,000 people being covered. Water and sewerage schemes in Eldoret, Garissa and Nyeri and Phase One of the Kisumu Water and Sanitation programmes were completed. In addition, 108 new rural water and sanitation projects were constructed and 244 rehabilitated in rural areas. In terms of irrigation, 5200 hectares put under irrigation (NIB schemes 2300 hectares and small holder schemes 2900 hectare)s and 105 Irrigation Water Users Associations formed; rehabilitation and expansion of irrigation schemes.

On natural resource management issues, six (6) geo-hazard prone areas were mapped and assessed and 10 sites documented; Land cover/use and reports produced in 12 study areas; Forest cover maps and reports produced in the 2 study areas and wildlife and livestock database established.

EXPENDITURE ANALYSIS

Recurrent

	Approved 2008/09	2009/10
Water and Irrigation	4,171	4,478
Environment and Mineral Resources	1,978	2,065
Forestry and Wildlife	3,501	3,507
Total	9,650	10,050

Development

	2008/09	2009/10
Water and Irrigation	9,041	24,696
Environment and Mineral Resources	1,188	2,268
Forestry and Wildlife	1,508	2,267
Total	11,737	29,231

Challenges

The Environment, Water and Irrigation sector is faced with several challenges and emerging issues which include: impact of climate change; environmental degradation; low level of investment ; uncoordinated policies and institutional frameworks; inadequate databases for management of natural resources which, include, water, forests, wildlife and minerals and inadequate capacity for surveillance and weak law enforcement.

At sub-sectors level, the challenges of declining per capita availability of water; inadequate water harvesting causing regional imbalance in water security; low water and sanitation coverage especially in rural, ASAL areas and the informal settlements; human wildlife conflict and compensation; conflict in management of Trans-boundary resources management and Multilateral Environmental Agreements)MEA's resulting from different policies applied by respective governments.

Recommendations

The following recommendations have been proposed as ways of addressing the emerging issues and challenges so as to improve performance of the Sector:

- Exploit opportunities brought about by the global carbon trade through Clean Development Mechanisms (CDM), voluntary markets and the Reducing Emissions from Deforestation and Degradation (REDD).
- As the government continues to increase the improvement and sustainability budgets, efforts should be made to encourage participation of the public private sector partnership to assist in funding of the construction of water storage facilities, namely large, medium and small dams as well as water pans; rehabilitation of the five water towers (Mau, Mt.Kenya, Mt.Elgon, Cherangany and Aberdares), reclamation of wildlife corridors, migratory routes and upgrading of Premium and less visited parks;
- Develop a water storage investment plan to be financed with participation of the private sector to move water storage from 5.3m³ to 16 m³ by 2012;
- Build the capacity of Water Resources Management Authority (WRMA) to be able to cope with the challenges of water resources management and protection including water quality surveillance, monitoring and enforcement of standards.
- Enhance capacity of relevant institutions to address consequences arising from climate change and emerging issues.
- Develop and enhance databases and strengthen capacity for assessing and monitoring trends in water flows and abstraction, status of forests, wildlife and minerals.
- Fast track the review and completion of policies, legal and institutional frameworks in the sector to facilitate harmonized implementation of sector programmes and projects
- Increase public awareness and participation in achievement of sector mission and vision.

Sector Resource Requirements

The Sector requires Kshs. 67 Billion in the 2010/11 financial year to undertake the highlighted activities. This is an increase of about 59% of the FY 2009/10 printed estimates.

Sub-sectors	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
Water and Irrigation	29,174	43,250	45,988	48,899
Environment	4,333	10,407	10,760	12,069
Forestry	5,773	13,290	13,594	14,680
Sector Requirements	39,280	66,947	70,342	75,648

CHAPTER ONE: INTRODUCTION

1.0. Background

The sector forms the bedrock for a clean, secure and sustainable environment by promoting the quality of the country's environment and natural resources. The sector further forms critical linkages between environment and the main productive sector. The sector is comprised of Ministry of Environment and Mineral Resources (MEMR), Ministry of Water and Irrigation (MWI) and Ministry of Forestry and Wildlife (MFW). This Sector report reviews the performance and achievements of the programmes and analyses the trends in expenditures in the last three financial years (2006/07 - 2008/09). It also presents the priorities and the financial requirements to implement priority programmes geared towards delivering the Medium Term Plan priorities that will be executed through the flagship projects and ongoing programmes across all the sub sectors.

The country's natural resources play a vital role in economic growth and poverty reduction. Prospects for the country's long-term growth are therefore dependent on effective management of these resources. About 42% of GDP is derived from natural resource based on: agriculture, forestry, tourism, mining, water and energy. They also account for about 37% of wage employment and 49% of total export earnings. In addition, environment provides a foundation for human survival and livelihood through provision of food, air, soil and other life support materials. Their proper management is therefore of priority in the country's development process.

The overall sectoral objective of attaining sustainable development and management will be achieved through targeted activities that aim at economic and ecological development and equity. The Government has projected economic growth of an average rate of 10% by the year 2012. This growth will be dependent on water supply, agriculture, forestry, tourism, manufacturing and the energy sector, which heavily rely on use of natural resources and the environment. The Government is therefore committed to improving the management and protection of water resources to ensure that water is available for equitable allocation in line with the targets of vision 2030.

The sector however faces a number of challenges as already mentioned in the Medium Term Plan (MTP, 2008-2012). These include:- environmental degradation, water scarcity, food insecurity, impacts of climate change, habitat and biodiversity loss, reduced forest cover and wildlife populations amid increasing human populations and changes in land use.

The sector's key policy priority areas to address the challenges in the medium term include:

- Expansion of water coverage and sewerage facilities;
- Scaling up water storage to improve water security;
- Scaling up irrigation to reduce dependence of rain fed agriculture;
- Catchment conservation as a source of water;
- Mitigation and adaptation measures on climate change;
- Enforcement of environmental laws and regulations;
- Nairobi Rivers Rehabilitation and Restoration;

- Modernization of Meteorological Services;
- Mineral exploration and Mining Cadastre System;
- Restoration of forest cover in the five water towers and other forest areas from approximately 2% to 4%;
- Reduction of human wildlife conflict;
- Upgrading premium and less visited parks.

The sector report reviews the performance and achievements of the programmes being implemented and the resource requirements for the MTEF period 2010/11 to 2012/13 which marks the end of the First Medium Term Plan. The report is divided into six chapters. The first chapter gives a broad overview of the sector and the purpose of the sector plans. The second chapter addresses performance and achievement of the sector programs for the period 2006/07, 2008/09; the third chapter outlines the Medium term priorities and financial plan for the MTEF period 2010/11, 2012/13; chapter four deals with cross-sector linkages; chapter five addresses the emerging issues in the sector, and finally chapter six gives recommendations on how to address the challenges identified.

1.2 Overall Sector Vision and Mission

Sector Vision:

To ensure a clean and secure environment and sustainably managed natural resources

Sector Mission

To promote, conserve, protect the environment and natural resources sustainably for National development.

1.3 Sector strategic objectives

The Strategic objectives of the Sector are outlined below.

1. Develop and review policies, legislation, regulations, standards and guidelines pertaining to environmental and natural resources,
2. Enhance sustainable management of environment and natural resources,
3. Provide timely, efficient and accurate meteorological services and early warning system information for disaster risk reduction,
4. Generate, manage and disseminate environment and natural resources data and information,
5. Mainstream environmental and mineral resources concerns into sectoral policies development planning and programmes;
6. Improve water and sewerage services;
7. Increase utilization of land through irrigation and land reclamation;
8. Institutionalize strengthening and capacity building in the sector
9. Enhance Forestry and Wildlife Protection and Conservation;
10. Promote Sustainable Utilization of Forestry and Wildlife Products;

11. Strengthen Forestry and Wildlife Research and Monitoring.

1.4. Subsectors and their Mandates.

The following are the subsectors and their mandates:

1.4.1 Water and Irrigation

The Ministry's mandate is to "ensure water availability and accessibility for all." Specifically, the mandate is derived from Presidential circular No. 1 of 2003 as follows:

- Water Resources Management Policy,
- Water and Sewerage Services Policy,
- Water Quality and Pollution Control,
- Dam Construction Schemes,
- Flood Control and Land Reclamation,
- Waste Water Treatment and Disposal Policy,
- National Water Conservation and Pipeline Corporation,
- Kenya Water Institute,
- National Irrigation Policy,
- National Irrigation Board (NIB),
- Water Services Regulatory Board,
- Water Resources Management Authority,
- Water Appeals Tribunal,
- Water Services Boards,
- Water Services Trust Fund,
- Public Water Schemes and Community Water Projects.

1.4.2 Environment and Mineral Resources

The mandate of the Ministry is to protect, conserve and manage the environment and natural resources for socio-economic development.

1.4.3 Forestry and Wildlife

The mandate is to coordinate the functions of three Semi-Autonomous Government Agencies (SAGAs) involved in the implementation of activities aimed at protecting, conserving and managing sustainable development of forestry and wildlife resources in the country.

1.5. Semi Autonomous Government Agencies (SAGAs)

The sector has several semi-autonomous organizations for the sole purpose of enhancing service delivery within their portfolios. The resource allocation for the concerned SAGAs is channeled through the respective sub-sectors. The SAGAs within the sector are respectively, as follows.

1.5.1 Water and Irrigation

The sub-sector has 15 SAGAs:

- a) **Water Appeals Board (WAB)** which is mandated to deal with conflict resolution within the sector management under the Water Act 2002.
- b) **Water Services Regulatory Board (WASREB)** was established under the Act to regulate water and sewerage services provision including issuing of licenses, setting service standards and guidelines for tariffs and prices.
- c) **Water Resources Management Authority (WRMA)** was established under the water Act 2002 to be responsible for regulation of water resource issues such as water allocation, source protection and conservation, water quality management and pollution control as well as international waters.
- d) **Water Services Trust Fund (WSTF)** is responsible for the mobilization of financial resources for development and rehabilitation of water and sewerage services infrastructure, especially to poor and under-served areas.
- e) **8 regional Water Services Boards (WSBs)** were established under the Water Act 2002 to manage water and sewerage service provision in their respective areas of jurisdiction. The seven Water Services Boards are: Tana, Athi, Tanathi, Lake Victoria South, Lake Victoria North, Rift Valley, Coast and Northern Water Services Boards. Their role is to ensure efficient and economical provision of water and sewerage services, contracting Water Services Providers (WSPs), developing water and sewerage facilities, regulating water services and tariffs and procuring and leasing water and sewerage facilities.
- f) **The National Water Conservation and Pipeline Corporation (NWCPC)** established under the State Corporations Act in 1988 is an autonomous agency reporting to the Ministry. It is mandated under the Water Act 2002, to Contract construction of dams& pans, bore holes and rehabilitation of flood canals on behalf of the Ministry.
- g) **Kenya Water Institute (KEWI)** was transformed in to a semi-autonomous institution in July 2002 under the Kenya Water Institute Act 2001. KEWI provides training, research and consultancy services in the water and irrigation sector.
- h) **National Irrigation Board (NIB)** established in 1966 through an act of Parliament, Irrigation Act is mandated to develop, promote and improve irrigated agriculture through sustainable exploitation of available irrigation and drainage potential in Kenya. Its key responsibility is development and management of the National Irrigation Schemes in Kenya. In the past, various Acts have mandated different organizations to undertake irrigation and drainage activities resulting in conflicts and duplication of efforts, especially in the public sector. The Irrigation Act (cap 347) needs to be repealed. There are also several other legislations, including those concerning water, environment, land tenure, and Agriculture, which have a bearing on irrigation.

1.5.2 Environment and Mineral Resources

The subsector has one SAGA: The **National Environment Management Authority (NEMA)**

The Authority was established to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of policies relating to the environment. In this regard the Authority will safeguard and enhance the quality of the environment through, coordination, research, facilitation, awareness creation and law enforcement. In addition the Authority will formulate, finalize and gazette the environmental regulations and standards.

1.5.3 Forestry and Wildlife

The Forestry and Wildlife Sub Sector is in-charge of overall guidance and policy coordination of four SAGAs. The SAGAs constitute a major share of the expenditure funds for both Recurrent & Development which has averaged **73%** over the two years.

i. **Kenya Wildlife Service (KWS)**

The Kenya Wildlife Service Manages National Parks and Reserves; Prepares and implements management plans for National Parks and Reserves; displays fauna and flora in their natural state for the promotion of tourism and for the benefit and education of Kenya; Provides wildlife conservation education and extension services to create public awareness and support for wildlife policies; Sustain wildlife to meet conservation and management goals.

ii. **Kenya Forest Service (KFS)**

The Kenya Forest Service has a mandate over all forests in the country. This includes state forests, local authority and Trust land forests as well as private forests. Guide and approve preparation of forest management plans, provide technical, education and extension services to the public for forestry development, ensure sustainable management for socio-economic growth of the nation.

iii. **Kenya Forest Research Institute (KEFRI)**

The mandate of KEFRI is to: conduct research in forestry; Disseminate research findings; Co-operate with other research bodies within and outside Kenya carrying out similar research; and establish partnership with other organizations and institutions of higher learning in training and on matters of forestry.

Wildlife Clubs of Kenya (WCK)

The mandate of WCK is provision of conservation education to Kenya youth.

1.6 Role of Sector Stakeholders

Various stakeholders are linked to the sector in several ways, some of which are indicated below.

1.6.1 Water and Irrigation

The key stakeholders in Water and Irrigation Sub-sector are Ministry of Finance which provides financial resources, Ministry of Planning, National Development and Vision 2030 which develops National Policies, Government Ministries (Environment and Mineral Resources, Forestry and Wildlife, Agriculture, Public Health and Sanitation, Livestock Development, Lands, Regional Development Authorities) in Sectoral Policies, Development Partners (World Bank, GTZ, KFW, ADB, IFAD, SIDA, DANIDA, BADEA, AFD, IDA, EDF/EEC and SWITZERLAND) in funding of projects/programmes, Local Authorities in relation to urban based WSPs , NGOs/CBOs/FBOs in community development and management of community projects, KEPSA in Policy dialogues on behalf of the private sector and Civil Society in advocacy.

1.6.2 Environment and Mineral Resources

1.6.2.1 Institutions of Higher Learning

The sector will strengthen linkages with Universities through, joint capacity building in environment related disciplines especially through short term training, establishment of university-based Science Parks as centre's of technological innovation and development, development of environmental and hydrological monitoring of programme in major water catchments and development of effective and environmentally-friendly solid waste recycling technology usable at community level in major urban areas. The Universities will also be engaged in production of a planning document of national research priorities in environment,

1.6.2.2 Other Government Ministries

Ministry of Water

The Water sub-Sector will continue developing policies that will enhance management of water resources and increase accessibility to safe and adequate water supply. The gains realized following reforms in the sector will be consolidated by finalizing pending issues. The sub sectors will fast track the reforms to make the new decentralized institutions not only operational but also sustainable, and develop action plans for revitalizing the sector to be more efficient.

A policy of water resources data and information collection and management will be necessary for planning purposes. This policy will be in conformity with the proposed policy on Natural Resources Information Management being prepared by MEMR. Similarly, it will be necessary to continuously review water quality standards to conform to the country's water situation and needs. Other areas include:

- Water harvesting storage and flood mitigation
- Policy on trans-boundary management
- Policy on ground water protection
- IWRM and water efficiency plan for Kenya
- Policy on water quality management

Ministry of Public Health

In the health sub-sector, the following reforms are proposed

- Dissemination of National Environmental Sanitation and Hygiene policy to regions and districts
- Develop implementation strategies for the National Environmental Sanitation and Hygiene Policy
- The health care waste management plan
- Occupational health and safety policy
- Training environmental health prosecutors

Ministry of Lands

i. Finalization and Implementation of the National Land Policy.

- The overall objective of the National land Policy is to provide a framework of policies and laws designed to address ownership, access, and use of land in a sustainable

manner. After the National Land Policy is adopted by Parliament it will pave way for preparation of a National Land Use Policy.

ii. Preparation of a National Land Use Policy

- Inefficient and unsustainable management of land resource have been caused by lack of a National Land Use Policy. There exists a dis-connect between plan preparation and implementation.
- Although regional and local development plans are prepared a policy that guides land use management is a major impediment.
- A draft National Land Policy is in the Cabinet awaiting approval for tabling to the Parliament. After its adoption this will lead to development of a National Land Use Policy.
- The preparation of National Land Use Policy will require wide consultation from all stakeholders and therefore a lot of funding is required to carry out the process.
- Adoption of National Land Policy by Parliament. This will expedite the implementation of the provisions in the National Land Policy for effective and efficient administration of the land basis for efficient and sustainable utilization and management resource.
- Development of a National Land Use Policy. This will guide development activities in the country.
- Review and harmonization of existing land use-planning laws – This will lead to review of Physical Planning Act (Cap 286) and Local Government Act (Cap 265)
- Harmonizing the economic, spatial and regional planning

Ministry of Local Government

The local Government have environmental mandates that fall within their areas of operation such as solid waste management, urban planning and land use, pollution control, enforcement of relevant environmental laws e.g. EIA.

Kenya Airports Authority

The Kenya Meteorology department is supporting the authority in its airworthiness assessment and the department is paid for this. Such funds are ploughed back into general operations of the department.

Development Partners

The development partners have taken the lead role in partnering with the Government to finance the various programmes and projects. Key partners include DANIDA, UNEP.SIDA, UNDP, JICA, ADB, DFID, USAID, World Bank, etc.

The development partners have given assistance in form of funds, equipment, training and information sharing, consultancies etc.

1.6.3 Forestry and Wildlife

The Forestry and Wildlife sub sector has a number of stakeholders who have different roles as stipulated below;-

- i. **Schools and Universities** – Various universities both local (Moi University etc) and international provide exchange programmes for students on issues of conservation. Most research activities are also carried out in the universities and collaboration is usually of paramount importance. Of particular importance is the wildlife clubs in both secondary and primary schools. The clubs not only concentrate on the conservation of wildlife for posterity but also encompass the conservation of all the natural resources and also on issues of tourism.
- ii. **Wildlife Clubs of Kenya (WCK)** for provision of conservation education to Kenya youth.
- iii. **Development Partners e.g.** EU, USAID, AFD, World Bank, JICA – All these have special projects they are implementing in collaboration with the Government especially on Natural Resources Management.
- iv. **Local authorities** – some of the protected areas fall under Local authorities e.g. Maasai Mara. The maintenance of the reserve falls under the authorities while the management of the wildlife falls under the Ministry through Kenya Wildlife Service.
- v. **NGOs, CBOs, Lobby groups Community Organizations-** they all assist in the conservation of wildlife and forests.
- vi. **Tour operators and hoteliers-** the liaise closely with KWS as they transport the visitors to the parks

CHAPTER TWO

2.0 PERFORMANCE AND ACHIEVEMENT OF THE SECTOR DURING THE PERIOD 2006/07-2008/09

This chapter highlights programmes and projects within the sector and reviews their expenditure performance in the period under review. The programmes of the sector are as follows:

1. Water Supply and Sewerage/Sanitation Services,
2. Water Resources Management and Water Storage,
3. Provision of Irrigation and Drainage Infrastructure
4. Environment Management and Protection; Natural Resource Data and Information,
5. Mineral Resources Management,
6. Meteorological Services and Climate Change,,
7. Forestry Development and Management,
8. Wildlife Conservation and Management.

2.1 Performance of Programmes

2.1.1 Water and Irrigation

The programme activities under the Water and Irrigation sub-sector are geared towards increasing water and sanitation coverage through rehabilitation of water and sewerage infrastructure in urban areas, construction of water and sanitation schemes in rural areas, and drilling of boreholes and construction of water pans/small dams in ASAL areas. Other sub-sector activities include management of water resources through construction of large and medium size dams for water storage, water resources monitoring through rehabilitation and installation of hydro-meteorological stations and water quality assessments. Through development of irrigation and drainage infrastructure, and land reclamation, the subsector is able to contribute to agricultural production and food security by increasing the land under irrigation both in high potential and ASAL areas. This section reviews the performance of each of the programmes for the period under review.

Water Sector Reforms

During the last five years since the water sector reforms guided by the Water Act 2002 were rolled out, major achievements in the provision of water services have been realized, notably the establishment of key institutions which are now operational and whose capacity is being build to enable them undertake their responsibilities.

The main thrust of the water sector reforms was to separate water resources management and development from water services delivery, focusing the Ministry's role on policy formulation, implementation and monitoring. It is important to note that all water resources management has been vested in the state, and the right to use water and responsibility for its management for the benefit of the nation has been vested in the Ministry of Water and Irrigation. The right to use water cannot be acquired or alienated except in accordance with the Water Act 2002.

The overall objectives of the reforms is to decentralize water supply services provision and empower local community through effective participation in decision making especially on water resources allocation and use. The Water Sector Reforms resulted in the creation of various institutions (Institutional Framework) with specific roles and functions in the categories of policy and supervision, regulatory and service delivery.

Water Supply and Sewerage Services

Over the last two years, the Water and Irrigation sub-sector has provided access to clean drinking water to an additional 2.47 million people consisting of 1.3 million people in rural areas and 1.07 million people in urban areas through rehabilitation and expansion of urban and rural water supplies, drilling of boreholes, and construction/desilting of water pans and dams. This was mainly through:- (i) Rehabilitation and expansion Mzima pipeline by 50 km producing 100,000 m³/day of water (ii) Urban water supplies infrastructure put under rehabilitation and expansion in 26 medium size towns (Narok, Machakos, Maralal, Wajir, Wote, Hola, Chuka, Ruiru, Athi River, Siaya, Ol Kalou, Matuu, Maua, Moi's Bridge and Limuru, Moyale, Kapsowar, Maseno, Kapenguria, Lokitaung, Karuri, Lamu, Chogoria, Kitui, Kilgoris and Kehancha), (iii) 482 boreholes drilled and equipped mainly in ASAL areas, (iv) 272 small dams and water pans constructed and rehabilitated in ASAL areas, (v) 108 new rural water and sanitation projects constructed and 244 rehabilitated in rural areas

During the same period, sanitation intervention measures resulted in additional 800,000 people being covered. Water and sewerage schemes in Eldoret, Garissa and Nyeri and Phase One of the Kisumu water and sanitation programmes were completed.

Water Resources Management and Water Storage

The Sub-sector has also been undertaking the protection of existing water sources such as rivers, lakes and water aquifers through catchment management, pollution control, proper water allocation and enforcement and protection of water recharge areas. This had also involved the formation and strengthening of Catchment Area Advisory Committees (CAACs) and Water Resources Users Association WRUAs) for the protection and management of water catchment areas. 230 Hydro-meteorological stations have been rehabilitated and are working and data collection and routine maintenance of the stations is ongoing.

Construction of flood control dykes and multipurpose water conservation structures (reservoirs) along Nzoia and Nyando is underway with feasibility studies and detailed designs works for other multipurpose water conservation structures and permanent dykes ongoing. This also involves construction of 5 large dams namely Kiserian, Umaa, Chemususu, Badasa and Maruba at a total cost of Kshs 9.5 billion to be completed by 2012. These dams will increase the national storage capacity by 21 million m³ (per capita storage capacity of 0.6 m³). Other 9 large dams identified and their designs are being reviewed. They include: - Koru, Kiteta, Mwache, Bonyunyu, Siyoi, Munyu, Itare, Thwake, and Rare.

A Cabinet Memorandum on water storage whose objective is to increase water storage from the current per capita of 5m³ to 16m³ targeting water supply for domestic, livestock, irrigation development and other uses is under preparation.

Provision of Irrigation and Drainage Infrastructure

The Ministry has developed a draft Irrigation Policy to guide the country in the exploitation of its irrigation potential by recognizing various stakeholders' roles especially the small-holder farmers and the private sector. Other activities realized during the last two years include 5,200 hectares put under irrigation (NIB schemes 2,300 hectares and small holder schemes 2,900 hectares); 12,900 farmers trained on efficient water use and management; 105 Irrigation Water Users Associations formed; rehabilitation and expansion of irrigation schemes in West Kano, Bunyala, Mwea, Ahero, Bura, Perkerra and Hola Irrigation Schemes targeting the production of 188,000 bags of maize by December 2009 to cushion the country against food insecurity.

	Programme	Intended Outputs	Achieved Outputs	Remarks
1	Water Supply and Sewerage Services	<p>*26 medium size towns urban water supplies infrastructure expanded</p> <p>*180 new water and sanitation projects constructed in rural areas</p> <p>*100 new boreholes drilled and 56 existing boreholes equipped</p>	<p>*12 medium size towns urban water supplies infrastructure under expansion targeting 4.5 million people</p> <p>*108 new water and sanitation projects constructed in rural areas targeting 1.1 million people</p> <p>*105 new boreholes drilled and 131 existing boreholes equipped targeting 800,000 people</p>	*Expansion of 26 medium size towns urban water supplies infrastructure is MTP target.
2	Water Resources Management and Water Storage	<p>*5 large dams 88 small dams and water pans constructed</p> <p>* Rehabilitated of hydro-meteorological stations</p>	<p>*472 small dams and water pans constructed targets 500,000 people and 1.5 million livestock</p> <p>*5 large dams under construction</p> <p>*230 Hydro-meteorological stations have been rehabilitated and are working</p>	The 5 large dams are MTP targets
3	Development of Irrigation and Drainage Infrastructure	<p>*475 small-holder community irrigation schemes constructed</p> <p>*5,200 hectares put under irrigation</p>	<p>*450 small-holder community irrigation schemes constructed</p> <p>*5,000 hectares put under irrigation</p>	Target not met due inadequate financial resources

2.1.2 Environment and Mineral Resources

Environment Management and Protection; Natural Resource Data and Information

During the period under review the Ministry has put in extra effort and resources in key environmental programmes e.g. Nairobi River Programme which involved rehabilitation and restoration of Nairobi Rivers Basin. In addition NEMA is finalizing various standards in air, and water quality. The assessment of the 5 water towers has also been a priority in line with the vision 2030. The Ministry established a directorate of environment to coordinate policy formulation streamlining multilateral agreements as well as formulate and oversee environmental strategies in environment. The ministry also formulated a national climate change strategy.

Mineral Resources Management

The key priority in this programme has been focused on increasing investment in mining, geo-hazard mapping, establishment of a database and developing geological maps for the whole country. In the review period, the Mines and Geological department embarked on mapping of the remaining 20% of the country and it is hoped that the project will take off in earnest during the next financial year. This will provide baseline information necessary for enhancing investment in the mineral sector for jobs creation and poverty alleviation thus contributing to Vision 2030.

Meteorological Services and Climate Change

The formulation of the climate change strategy started in 2008/09 FY and is expected to be completed in the 2009/10 FY. Community radios were established in poor vulnerable communities to extreme weather and climate disaster, as well as public weather display systems in strategic areas. There has been increased dissemination of meteorological climate change information.

Programme	Intended output	Output achieved	Remarks
Environment Management and Protection; Natural Resource Data and Information.	<p>Wildlife/ livestock numbers, trends and spatial distribution maps in 15 districts.</p> <p>Land use / Land cover statistics/maps in 12 districts/study areas.</p> <p>Forest cover mapping and assessment in 4 study areas(Mau,Mt .Kenya, Arabuko Sokoke and Mangea Hills Forest</p> <p>Education for Sustainable Development (ESD) Policy</p> <p>Environment guidelines State of Environment (SOE)</p>	<p>Wildlife and livestock database established</p> <p>Land cover/use and reports produced in 12 study areas</p> <p>-Forest cover maps and reports produced in the 2 study areas</p> <p>Educations for Sustainable Development (ESD) Strategy and Policy initiated</p> <p>-8 Provincial Directors of Environment and 71 DEOs trained on ESD,</p> <p>-11 lead agencies, 65, primary and secondary schools and 21 tertiary institutions sensitized on ESD Implementation Strategy.</p>	<p>More district can be covered if funds are adequate</p> <p>This a Vision 2030 flagship programme</p> <p>These address the flagship project on catchment protection and conservation.</p>
	<p>Rehabilitated and restored Nairobi river basin</p>	<p>-A communication Strategy for Nairobi River Basin Programme prepared and is being implemented</p> <p>-5 public Barazas addressed by NEMA officers in collaboration with the Public</p>	<p>This contributes to the solid waste management system initiative, which is a flagship programme.</p>

Programme	Intended output	Output achieved	Remarks
		<p>Administration done at Katina, Zimmerman, Mukuru Fuata Nyayo, Kariobangi and Kibera</p> <p>-illegal dumping of Solid waste and wastes water removed/controlled along Nairobi river from National Museum to Kamukunji area.</p>	
Mineral Resources Management	<p>4 additional mining entities engaged in mineral development 700 km² area mapped and 3 mineral deposits assessed.</p> <p>5 Geo-hazard prone areas mapped</p>	<p>One (1) additional mining entity engaged in the Kitui area of Eastern Province Geological mapping preparation in progress.</p> <p>Mineral exploration to assess clay and limestone in progress in the Machakos-Konza-Kibwezi area in progress (15%)</p> <p>Six (6) geo-hazard prone areas mapped and assessed 10 sites documented</p>	<p>This contributes to jobs creation and poverty reduction.</p> <p>This provides information to facilitate investments in the mineral sector.</p> <p>This contributes to disaster mitigation</p>

Programme	Intended output	Output achieved	Remarks
Meteorological Services and Climate Change.	<ul style="list-style-type: none"> • Meteorological information collected and disseminated • Improved upper air observations • Disaster management and early warning system established • Climate change strategy 	<ul style="list-style-type: none"> • 2 FM stations established at Kwale and Budalangi • 4 seasonal forecasts disseminated • 12 monthly forecasts made, Tender awarded for the installation of PWD at Mudhurwa bus terminus, • 1 electronic Public Weather Display (PWD) board • Tender awarded for the installation of 2 upper-air stations for Lodwar and Garissa • 1 seismic equipment installed for the National Seismological Network, • 10 No. Hydromet stations installed at various site • Strategy developed in 2009 	<p>Kwale station: studio established awaiting allocation of frequency from the CCK</p> <p>Weather/climate forecasts issued for daily, medium and long range (seasonal),</p> <p>Tender awarded by project not completed due to budget cuts,</p>

2.1.3 Forestry and Wildlife

Forestry Development and Management

Species Conservation

The performance of particular endangered wildlife populations showed good indications of recovery in the wild. Black Rhino numbers increased from 577 in 2008 to 603 in 2009, and we started a recovery strategy for the declining Black Rhino population in Aberdare National Park. Implementation of an Intensive Protection Zone in Tsavo West National Park was both historical and a landmark achievement in Black Rhino conservation. Seventy two animals were ear-notched to enhance monitoring of Black Rhino populations, based on individual identification.

Wildlife Management and Conservation Research

Monitoring of wildlife health through continuous disease surveillance and control to ensure stable and healthy wildlife populations remained an important activity. Orphaned and rescued animals from the wild were maintained under high standards of husbandry and welfare. Our veterinary teams undertook surveillance of specific wildlife diseases with serious implications to the economy, notably avian influenza (bird flu), rinderpest, and cases of mange disease infestation in cheetahs in the Maasai Mara National Reserve. These surveillance programmes are already producing valuable information for formulating bio-security measures. The establishment in 2009 of a wildlife mortality database is making surveillance programmes more effective.

Biodiversity Related Multilateral Environmental Agreements

The coordination of biodiversity-related Multilateral Environmental Agreements (MEAs) under the jurisdiction of Kenya Wildlife Service continued, and planned activities undertaken as scheduled. 21 meetings for like-minded African Elephant Range States were coordinated which resulted in the formation of an African Elephant Coalition to develop common strategies for conservation and management of the African Elephant in the range states, and promote joint implementation of decisions and resolutions of the CITES convention related to the African Elephant. KWS represented the country in a number of international meetings and Conferences of Parties for CITES, Ramsar Convention, African-Eurasian Waterbird Agreement (AEWA), Bonn Convention, and World Heritage Convention among others. Other routine programmes such as evaluation of both biodiversity research applications and licensing permits related to wildlife use were undertaken.

Bio-prospecting

Different initiatives and programmes for enhanced efforts on biotechnology were undertaken. These included the completion and launch of a Strategy for Conservation and Management of Aloe Species in Kenya, and review of Memoranda of Understanding related to biotechnology. Further activities included research work on identification, discovery and characterization of useful compounds, DNA extracts, genes and microbes from our diverse wildlife.

Infrastructure Development

Infrastructure was improved to enable better access of visitors to the Parks. This included the maintenance of 620km of roads at Ksh 450 million as well as the upgrading of Naishi Airstrip into tarmac surface. Various steps were taken to open up various circuits, including the awarding of Meru sites to investors, advertising for construction and management of eco-tourism facilities in Parks through Public Private Partnerships (PPP). This was done in Mwea, Saiwa Swamp, Nairobi, Hell's Gate, Kakamega, Mount Elgon, Aberdare, Tsavo East and Tsavo West. Other sites being considered include those in Ruma National Park, Kisumu Impala Sanctuary and Ndere Island, all in Nyanza Province.

Restoration of Ecosystems

The Ministry had greater involvement in forest conservation, restoration and planning programmes, especially in the management of the country's key water towers. An active programme of ecological monitoring and evaluation mainly based at the eight KWS research

stations continued. Monitoring protocols for ecosystems and species were reviewed to enhance them, and increase involvement of stakeholders. Seasonal wildlife population monitoring activities were undertaken in ranches, dispersal areas and sanctuaries. Specific research and monitoring programmes focusing on different wildlife taxa were undertaken in Ngaya Forest in Meru, Mt. Kenya, the marine parks and the coastal forests ecosystems. These were undertaken in collaboration with other government departments and NGOs.

Promoting Domestic Tourism

Greater efforts were put into promoting domestic tourism, including a campaign during the school holidays where entry was free for children under the age of 18 years. Other media campaigns were also carried out, including the Kenya Television Networks 'Out and About' programme in partnership with Kenya Tourist Board, 'Talii Jienjoy' on K24, 'Bliss' on KBC and CNBC Africa. Nairobi National Park, Tsavo West National Park and Hells Gate National Park launched shuttle bus services while Tsavo East National Park held successful road shows in Mombasa in liaison with Tsavo East Stakeholders Association. Nairobi National Park sites were repositioned and launched to tour operators and event service providers; this has since boosted their revenues. Nairobi Safari Walk provided a new product for walks and hosted the women mentoring women walk that had over 300 participants.

Law Enforcement and Regulation

Poaching of wild animals for rhino horn used for dagger handles and TCM has remained the most intractable problem. Demand for rhinoceros horns and elephant ivory continues to make the rhinoceros and elephant among the most vulnerable wild species. Poaching of elephants increased by 100 per cent over the previous year, with 90 per cent of poaching occurring outside the KWS managed wildlife protected areas. This trend places a great risk on existing conservation initiatives, and threatens to reverse the gains made after the catastrophic massive rhino and elephant illegal killings of the 70s and 80s. The increased poaching of the key species may be due to the high demand generated by the decision of the 58th CITES Standing Committee to sanction the one-off sale of government-owned ivory to China and Japan by nations in southern Africa. This has almost certainly triggered demand for ivory and rhino horn in the black market. This demand is evident through the seizures made.

Habitats and Water Catchment Areas

Security patrols have been intensified to combat the continued destruction of wildlife habitats and water catchment areas. Some of the habitat protection challenges include illegal logging, charcoal burning, illegal exploitation of the East African Sandalwood, livestock incursion into protected areas and forest product harvesters. The intensified security efforts yielded the recovery of 28,770 assorted forest products, and 132,892 kg of sandalwood. Because of the dry spell, livestock influx into Parks and Reserves persisted in Tsavo, Meru/Kora and Sibiloi. A total of 397,137 head of cattle was driven out of the protected areas.

Security of Tourists

Tourist Security Officers intensified patrols to ensure that the National Parks remained a secure destination. No cases of tourist attack were reported within the KWS managed wildlife-protected

areas. The Security Officers also worked with the Tourist Police Unit (TPU) and County Council officers in securing tourists' circuits and sites.

Building Synergies

The Ministry collaborated with other stakeholders to enhance the conservation and protection of the country's natural resources. In wildlife law enforcement collaboration with the Kenya Police, Customs, Kenya Airports Authority, Judiciary and Kenya Forest Service officers in addressing wildlife crime. This led to effective law enforcement at exit and entry points. Cross border wildlife security collaborative initiatives with Tanzania and Uganda wildlife authorities assisted in combating wildlife crime. These initiatives are aimed at enhancing wildlife security and ensuring free movement and migration of wildlife across the borders. This is crucial for survival of cross border ecosystems such as the Maasai Mara-Serengeti and Tsavo-Mkomazi. The Lusaka Agreement Task Force played a key role in coordinating the cross border collaboration.

Saving the Mau Forest Complex

Kenya Wildlife Services (KWS) as a conservation champion played a leading role in securing the Mau Forest Complex ecosystem which is the largest closed canopy forest ecosystem in Kenya and is the single most important water catchment area in the Rift Valley and western Kenya. KWS is part of a joint government initiated operation aimed at restoring the ecosystem, which started in July 2008 and is responsible for the Maasai Mau sector where a significant impact has been made. The KWS is also tasked with coordinating and commanding the Mau joint operation. A permanent KWS security deployment has been established in the Mau, underlining the Service's commitment to the conservation of the Mau Complex, which is a source of livelihood to over five million Kenyans and a source of water for Lake Nakuru National Park, as well as the world famous Maasai Mara. The Mau Forest Complex forms

Kenya Wildlife Training Institute (KWSTI)

KWSTI in Naivasha is one of KWS training units. Apart from offering diploma and certificate courses, it has been recognized as a centre for wetland management training. The Institute offer courses for local and international wetland practitioners. One of such courses was Inland Wetland Management Training course for 19 middle level managers from the Wetland Management Department, Ministry of Water and Environment of Uganda.

The Endowment Fund

During the period under review, the KWS submitted a draft deed to the Attorney General for the registration of the KWS Trust Fund, and consent was given in December 2008. Several world-renowned philanthropists and conservationists were approached, five – one from Canada, Germany, South Africa and two from Kenya - confirmed their interest. The Fund has nine members in all, and is expected to be launched in 2009.

Wildlife compensation

Adequate compensation for death and injury by wildlife remains a challenge. This issue was discussed at length during the policy and legislation review workshops that were conducted in all wildlife areas. The process adopted a participatory process whereby communities were able to

express their views on various issues critical to a harmonized approach to wildlife conservation and management. Communities were able to contribute to discussions on key issues including ceilings for compensation and mechanisms for its implementation. The proposed policy is awaiting parliamentary approval. Compensation claims for death and injury caused by wild animals amounting to about Kshs 33 million were released from the Ministry of Forestry and Wildlife during the year. These were dispersed countrywide to the beneficiaries through respective District Commissioners.

Institutional strengthening and provision of skilled manpower

Kenya Forest Service came into being in February 2007. The immediate need required creation of new institutions and strengthening of existing ones. The service has to date established 10 functional forest conservancies, 300 Community Forest Associations which have facilitated operationarization of the Service and conservation of forests.

Increase of tree cover in the country.

Through establishment, rehabilitation and protection forest conservation and restoration has been enhanced. This has further been improved through the additional forest cover under industrial plantation development. Promotion of tree planting on farm with a major focus on dryland forestry has contributed to the increase in tree cover countrywide.

Recovery of forest lands, Gazettement and relocation of illegal occupants of forest land has contributed to restoration of forests in the country while the rehabilitation and restoration efforts has enhanced the quality of both natural and plantation forests.

Forest Planning and Management:

The Forest Act 2005 makes it mandatory that all forests are managed through an approved management plan. During the period under review, the service supported the formulation of 20 participatory forest management plans out of which 14 have been approved. Two ecosystem management plans were completed for Aberdare and Mt Kenya forest ecosystems while plans for Mt Elgon and Nandi hill ecosystems were drafted.

Infrastructure development:

Access forest roads and infrastructure support management of the forestry resources through patrols and access to the resources. Over 1,000km of roads were rehabilitated and maintained throughout the report period.

Private Public Partnerships

Various stakeholders were involved in forestry development. This included development partners, corporate organizations and communities. This has increased synergies in achieving the Vision 2030 goals.

Programme/sub-programme	Intended output	Output Achieved	Remarks
Programme: FORESTRY DEVELOPMENT, RESEARCH AND MANAGEMENT Outcome: Increased forest cover			
Forestry development, research and management	<ul style="list-style-type: none"> • Operational/functioning Institutions, • Establish and equip a GIS section to map all forest resources 	<ul style="list-style-type: none"> • Kenya Forest Service (KFS) operationalised, • community based management system in place • Section established and equipped 	Support to management of water towers.
	<ul style="list-style-type: none"> • Rehabilitation of degraded area • Develop framework for monitoring hydrological parameters in all water towers. • Survey and mapping 	<ul style="list-style-type: none"> • 200,000 hectares of degraded area rehabilitated. • 250,000 hectares assessed and inventoried, included 50,000 ha of mangrove • Valuation of ecosystem services(1 ecosystem valued) • Boundaries secured • 3 new forests gazetted • Hydrological monitoring of five water towers 	Flagship program
	<ul style="list-style-type: none"> • Establish exotic plantations. • Prepare forest management plans. • Certification of forests and forest products • Manage inventory of forest plantations 	<ul style="list-style-type: none"> • 30,000 ha of exotic plantation planted • 20 plans completed • Certification processes in place • marketing strategies developed 	Vision 2030 support initiative.
	<ul style="list-style-type: none"> • Establish farm and commercial forests • Produce tree seedlings and Promote tree growing in schools • Develop and disseminate technologies for on farm forest resource management, utilization and forest information systems. • Promote forest based SMES 	<ul style="list-style-type: none"> • 150,000 Ha of farm and commercial forestry • 500,000 seedlings produced • At least 3 technologies developed and disseminated • Information management system developed at Hq and networked with Conservancy and zonal 	Vision 2030 support initiative

		offices.	
	<ul style="list-style-type: none"> Conserve dry land forest and Develop master plan on dry land forests Develop strategies for management of invasive species 	<ul style="list-style-type: none"> 150,000 Ha of woodland conserved Strategies in place and 2,500 business plans formulated 1,200 Energy conservation initiatives 	Vision 2030 support initiative.
	<ul style="list-style-type: none"> Develop and maintain roads in the forests 	<ul style="list-style-type: none"> 1,000km of forest roads maintained 	support to management of flagship program
	<ul style="list-style-type: none"> Reproduce Natural tree seeds 	600 kg of natural tree seed collected	support to management of flagship program
Programme: WILDLIFE CONSERVATION AND MANAGEMENT			
Outcome: An increase in wildlife population and park earnings			
Wildlife Conservation and Management	<ul style="list-style-type: none"> 100 % response rate to poaching incidences 1000 officer trained Recovery of trophies Number of border patrols 	<ul style="list-style-type: none"> 4,316 offenders prosecuted in various courts of law Recovery of 1,939 assorted trophies comprising of 487 pieces of ivory and 618 pieces of bush meat. Recovery of 46 firearms and 773 ammunitions. 1,049 officers trained 6 cross border wildlife security operations (Kenya – Tanzania – Uganda) 	Flagship
	<ul style="list-style-type: none"> 70 kilometers of fence done in Mt.Kenya 30 kilometers of fence done in Tsavo Create a baseline on Wildlife migration corridors. 80% Response rate to human wildlife conflict issues 	<ul style="list-style-type: none"> 35 km of fence done in both Mt.Kenya and Tsavo. Corridors identified 100% response rate to human wildlife conflict cases 	Flagship
	<ul style="list-style-type: none"> 100 schools and colleges to be visited 	<ul style="list-style-type: none"> Conservation education equipment procured 112 schools and colleges visited 	Flagship
	<ul style="list-style-type: none"> 3 MEAs multilaterals to be signed and 	<ul style="list-style-type: none"> Participated in wildlife multilateral agreements (CITES, Ramsar, 	Flagship

	Wildlife agreement to be updated	Lusaka Taskforce)	
	<ul style="list-style-type: none"> • Enhance Financial sustainability 	<ul style="list-style-type: none"> • Endowment fund set up with trustees 	Flagship
	<ul style="list-style-type: none"> • 3 Habitat areas of Mt. Kenya, Tsavo and Meru restored • Species specific management plans. • 2 park management plans developed 	<ul style="list-style-type: none"> • 10 Translocations done • Lion, Zebra, Rhino strategy done • 2 park management plans done (Amboseli and Nairobi) 	Flagship
	<ul style="list-style-type: none"> • Improve forest cover and habitat value • Maintaining integrity of the ecosystems and landscapes. 	<ul style="list-style-type: none"> • Generation of scientific information for decision making. • Rehabilitating degraded forests areas with appropriate species(Mt.Kenya) • Assessment of status of ecosystems and landscapes done. 	Flagship
	<ul style="list-style-type: none"> • Branding of national parks and reserves • International marketing of the parks. 	<ul style="list-style-type: none"> • 2 parks branded • Participate in World Tourism Market International exhibition participation(London,Milan,Russia), 	flagship
	<ul style="list-style-type: none"> • 400 km of road routinely maintained • 1 airstrips uplifted to bitumen level 	<ul style="list-style-type: none"> • 350 kilometres done in various parks • 1 airstrip upgraded to bitumen (Nakuru) 	Flagship
	<ul style="list-style-type: none"> • Sensitizing youth groups in wildlife conservation and protection 	<ul style="list-style-type: none"> • 9,000 youths sensitized country wide. 	Flagship

2.2 Key Indicators of Subsector Performance

Water and Irrigation

Sub Programme (SP)	Key Outputs	Key Indicators
PROGRAMME 1: Water Supply and Sewerage Services		
Outcome: Access to adequate and reliable water supply increased by 4% and sewerage/sanitation increased by 2%		
SP1.1 Urban water and sewerage	<ul style="list-style-type: none"> • 26 medium size towns urban water supplies infrastructure expanded 	<ul style="list-style-type: none"> • No. of urban water supplies infrastructure expanded
SP1.2 Rural water supply	<ul style="list-style-type: none"> • 180 new water and sanitation projects constructed annually 	<ul style="list-style-type: none"> • No. of water and sanitation projects constructed
SP1.3 Water for informal settlements	<ul style="list-style-type: none"> • 92 new boreholes drilled and 56 existing boreholes equipped annually 	<ul style="list-style-type: none"> • No. of boreholes drilled • No. of boreholes equipped
PROGRAMME 2: Water Resources Management and Water Storage		
Outcome: Water storage capacity increased by 10 million m³		
SP2.1 Water Resources Management	<ul style="list-style-type: none"> • 300 water resource monitoring stations rehabilitated and operationalised by 2012 	<ul style="list-style-type: none"> • No. of monitoring stations rehabilitated • No. of monitoring stations operationalized
SP2.2 Water Storage and Flood Control	<ul style="list-style-type: none"> • 2 large dams constructed by 2012 • 22 Medium size dams constructed by 2012 • 88 small dams and water pans constructed annually 	<ul style="list-style-type: none"> • No. of large dams constructed • No. of Medium size dams • No. of small dams and water pans constructed
PROGRAMME 3: Provision of Irrigation and Drainage Infrastructure		
Outcome: Land utilization increased by 5,000 hectares		
SP3.1 Development of Irrigation and Drainage infrastructure	<ul style="list-style-type: none"> • 475 small-holder community irrigation schemes constructed annually 	<ul style="list-style-type: none"> • No. of irrigation schemes constructed
SP3.2 Land Reclamation	<ul style="list-style-type: none"> • 1,700 water conservation and rain water harvesting structures constructed in ASALs annually 	<ul style="list-style-type: none"> • No. of water conservation and rain water harvesting structures constructed

2.2.2 Environment and Mineral Resources

Sub-Programme	Key Outputs	Key Indicators
1. Environment Management and Protection; Natural Resource Data and Information.		
Outcome: Sustainably managed environment and natural resources		
Resource Surveying and Remote Sensing	3 databases established	Land use/cover database Wildlife/livestock database Vegetation database
	7,037 Sample Units in the target districts completed, distribution maps, statistics, trends, reports	Sample Units in the target districts completed, distribution maps, statistics, trends, reports
	Spatial distribution maps, statistics, trends, reports	No. of Maps & reports
	Human/wildlife conflict map, satellite imagery report	No. of Maps & reports
	Land use map, settlement patterns	No. of Maps & reports
	1 ecological map	Ecological maps
National Environment Management	Multilateral Environmental Agreements (MEAs) Action Plans	No. of Action Plans
	1 inventory	coastal and marine resources Conservation inventory
	1 ESD Policy in place	Education for Sustainable Development (ESD) Policy
	Baseline survey 10% illegal discharges stopped	Baseline surveys and reduced illegal discharges in Water bodies ¹
	1 inventory established	Inventory of biological resources
	1 set of standard Prosecutions of noise pollutants	National Noise and Vibration Pollution standards No. of prosecutions actualized
	Number of EIA licenses issued	No. Inventory Reports, licenses issued and of prosecutions made
	1 Policy in place	Chemical and waste policy

Sub-Programme	Key Outputs	Key Indicators
1. Environment Management and Protection; Natural Resource Data and Information.		
Outcome: Sustainably managed environment and natural resources		
	1 Inventory	Inventory and data base of ODSs,
	1 national inventory	National inventory on Green Houses Gases(GHG)
	Environment guidelines	No of Guidelines developed
	1 SoE report	State of Environment (SOE)
Lake Victoria Environment management	Harmonization of water and fisheries policies	No. of surveys
Nairobi Rivers Rehabilitation	60 Km rehabilitated and restored	length in Km. rehabilitated and restored Nairobi river
	30 metres of the riparian reserve delineated	length in metres delineated
	48 campaigns held 3,000 pieces of awareness material printed and distributed	Awareness Created
	4 Evaluations and 3 closed discharge points	-Monitoring of Nairobi Rivers' Basin Clean up Exercise: -Stopped Illegal Discharge and Dumping:
2. Mineral Resources Management		
Outcome: Improved Sustainable management of mineral resources.		
Mineral Resources Development	4 additional mining entities engaged	No. of additional mining entities engaged in mineral development
	1 database established	Geo data base developed
Geological Survey and Mineral Exploration	700 Square km mapped	Area of unmapped parts of Kenya mapped
	3 minerals explored and assessed	Minerals explored and assessed
	5 Geo-hazard prone areas mapped	No. of geo-hazard prone areas in selected districts mapped
	10 sites documented	No of Geo-tourism sites documented

Sub-Programme	Key Outputs	Key Indicators
1. Environment Management and Protection; Natural Resource Data and Information. Outcome: Sustainably managed environment and natural resources		
3. Meteorological Services and Climate Change. <i>Outcome improved meteorological information and services</i>		
	6 FM stations established	FM stations Establish
	12 dissemination outlets/tools	Meteorological information collected and disseminated
	2 upper air observatories established	Improved upper air observations
	200 students trained	no of students trained in meteorology
	Status reports	Disaster management and early warning system established
	Secretariat in place	Climate change secretariat
	1 national climate change response strategy	Climate change strategy

2.2.3 Forestry and Wildlife

Programme/sub-programme	Key Output	Key Indicator
PROGRAMME: Forestry Development and Management Outcome: Increased forest cover		
Sub-programme 1: Institutional strengthening and provision of skilled manpower.	<ul style="list-style-type: none"> • Operational/functioning Institutions, • Finalized Forestry policy • Establish and equip a remote sensing section to map all forest resources • Training programmes at Kenya Forest College (KFC) 	<ul style="list-style-type: none"> • Conservation Secretariat • Kenya Forest Service (KFS), • Operationalize and Strengthen Conservancy institutions thro' constructions & staffing • Forest Conservation Committees (FCCs), • Community Forest Association (CFAs) • Center established • KFC curriculum implemented.
Sub-programme 2: Natural Forests Conservation	<ul style="list-style-type: none"> • Rehabilitation of degraded area • Re-forestation with indigenous trees • Natural forests resource assessed, surveyed & inventoried- include mangroves • Secure all forest boundaries • Gazette new forests • Develop framework for monitoring hydrological parameters in all water towers. • Strategies for forest dependent Biodiversity 	<ul style="list-style-type: none"> • 200,000. Hectares of degraded area rehabilitated. • 50,000 ha of re-forestation with indigenous trees • 250,000 ha assessed and inventoried, include 50,000 ha of mangrove • Valuation of ecosystem services(1 ecosystem valued) • Boundaries secured • 3 new forests gazetted • Hydrological monitoring of five water towers • In all natural forests
Sub-programme 3 Industrial plantations	<ul style="list-style-type: none"> • Established exotic plantations. • Prepare forest management plans. • Certification of forests and forest products • Survey & mapping 	<ul style="list-style-type: none"> • 30,000 ha of exotic plantation planted • Develop marketing strategies • 20 plans completed • Certification processes in place

	<ul style="list-style-type: none"> • Management inventory of forest plantations 	
Sub-programme 4: Farm and private commercial forestry	<ul style="list-style-type: none"> • Established farm and commercial forests • Promote tree growing in schools • Produce tree seedlings • Develop & disseminate technologies for on farm forest resource management, utilization and forest information systems. • Promote forest based SMES 	<ul style="list-style-type: none"> • 150,000 Ha of farm and commercial forestry • 500,000 seedlings produced • At least 3 technologies developed & disseminated • Information management system developed at HQ and networked with Conservancy and zonal offices.
Sub-programme : 5 Dry land forest conservation and management	<ul style="list-style-type: none"> • Conserved dry land forest • Developed master plan on dry land forests • Develop strategies for management of invasive species 	<ul style="list-style-type: none"> • 150,000 Ha of woodland conserved • Strategies in place • 2,500 business plans formulated • 1200 Energy conservation initiatives
Sub-programme 6: Road infrastructure and maintenance	<ul style="list-style-type: none"> • Developed and maintained roads in the forests 	<ul style="list-style-type: none"> • 1000km of forest roads maintained
PROGRAMME: Wildlife Conservation and Management		
Outcome: An increase in wildlife population and park earnings		
Sub-programme 1: Conservation & Protection of Wildlife	<ul style="list-style-type: none"> • 100 % response rate of reported poaching incidences • Recruitment and Capacity building for 400 officers • 4 cross border wildlife security operations (Kenya – Tanzania – Uganda and Ethiopia) • Recovery of firearms and ammunitions. • Recovery of assorted trophies i.e. ivory and bush meat. 	<ul style="list-style-type: none"> • Number of cases successfully prosecuted. • Number of officers recruited and trained • Number of border patrols • Number of firearms and ammunitions recovered • Number of trophies, pieces of ivory and bush meat recovered

	<ul style="list-style-type: none"> • 65 km of fence done in Mt. Kenya and Tsavo • Stakeholder consultations on wildlife migration corridors • Mapping of the corridors • Population distribution survey along wildlife migration corridors. • 100% response rate to human wildlife conflict issues 	<ul style="list-style-type: none"> • Number in Km of fencing done • Number of stakeholder meetings held • GIS maps • Population distribution maps • % response rate to human wildlife conflict cases
	<ul style="list-style-type: none"> • 120 schools & colleges visited 	<ul style="list-style-type: none"> • Number of schools visited and sensitized on conservation education
	<ul style="list-style-type: none"> • 5 MEAs multilaterals signed and Wildlife agreement updated • Participation in wildlife multilateral agreements (CITES COP 15, Lusaka Taskforce) 	<ul style="list-style-type: none"> • Number of MOUs signed • Number of research partnerships participated in
	<ul style="list-style-type: none"> • Enhance financial sustainability 	<ul style="list-style-type: none"> • Launch of Endowment fund • 10% increase of current funds in the Kitty.
	<ul style="list-style-type: none"> • 3 Habitat areas restored • 2 park management plans developed • 4 Translocations done • 2 wildlife strategies done 	<ul style="list-style-type: none"> • Number of habitat sites restored • Number of management plans developed • Number of translocations done • Number of strategies done • Number of species specific management plans developed (invasive species)
	<ul style="list-style-type: none"> • Improve forest cover and habitat value • Maintaining integrity of the ecosystems and 	<ul style="list-style-type: none"> • Ha of degraded forests rehabilitated areas with appropriate species • Generation of scientific information for decision

	landscapes	making. <ul style="list-style-type: none"> • Assessment reports of status of ecosystems & landscapes. •
	<ul style="list-style-type: none"> • Operationalisation of the fund 	<ul style="list-style-type: none"> • Governance in place (Trustees) • Launch of Fund • Number of programs created to enhance financial sustainability.
Sub-programme 2: National Parks & Reserves Management	<ul style="list-style-type: none"> • Visibility of KWS parks/ Branding of 2 national parks and reserves • Participation in International exhibitions 	<ul style="list-style-type: none"> • Number of parks and reserves branded • Number of exhibitions participated in including World Tourism Market.
Sub-programme 3 Youth Conservation Education	<ul style="list-style-type: none"> • Sensitization of 10,000 youth country wide in wildlife conservation and protection 	<ul style="list-style-type: none"> • Number of youth groups sensitized on wildlife conservation and protection.

2.3 Expenditure Analysis

2.3.1 Recurrent Expenditure

Table 2.1 and Appendix 1.1 – 1.3) shows the analysis of recurrent expenditure (Approved and Actual) by subsectors in the Environment Water and Irrigation Sector for the period 2006/07 to 2008/09. Analysis indicate that the total Sector's actual recurrent expenditure increased from Ksh. 4,658.8 million (excluding Forestry and Wildlife subsector) in 2006/07 to KShs. 9,650.2 million in 2008/9. The actual recurrent expenditures increased significantly in the Water and Irrigation subsector, increasing from Kshs 2,928.8 million in 2006/07 to Kshs 4,171.2 million in 2008/09.

Table 2.1: Analysis of Sector Recurrent Expenditure 2006/07-2008/09 (Kshs. millions)

Sub-Sector	2006/07		2007/08		2008/09	
	Approved	Actual	Approved	Actual	Approved	Actual
Water and Irrigation	3,013.8	2,928.8	3,608.8	3,574.1	4,677.1	4,171.2
Environment and Mineral Resources	1,841	1,730	1,836	1,743	2,164	1,978
Forestry and Wildlife	N/A	N/A	3,289	3,158	3,705	3,501
TOTAL	4,854.8	4,658.8	8,733.8	8,475.1	10,546.1	9,650.2

As presented in Table 2.1, expenditure analysis for the Ministry of Forestry and Wildlife was not applicable for the 2006/2007 FY since the Ministry had not been established. Towards the end of 2007/2008 FY, the Ministry did not have a significant increase in resources although its mandate had been extended especially in the management of forestry resources. The slight increase in resources is associated to revised salaries for civil servants in Job groups A-N.

Over the Financial Years 2007/2008 to 2008/2009, the Ministry's Recurrent Expenditure accounted for averagely 70% of the total recurrent expenditure (see also Appendix 1.3)

2.3.2 Development Expenditure

Table 2.2 and Appendix 1 present data on the sector and subsector development expenditure (approved and actual) for 2006/07 to 2008/09 financial year. The total actual development increased from Kshs. Kshs. 5,928 million in 2006/07 FY to Kshs. Kshs 11,737 million in 2008/07 FY.

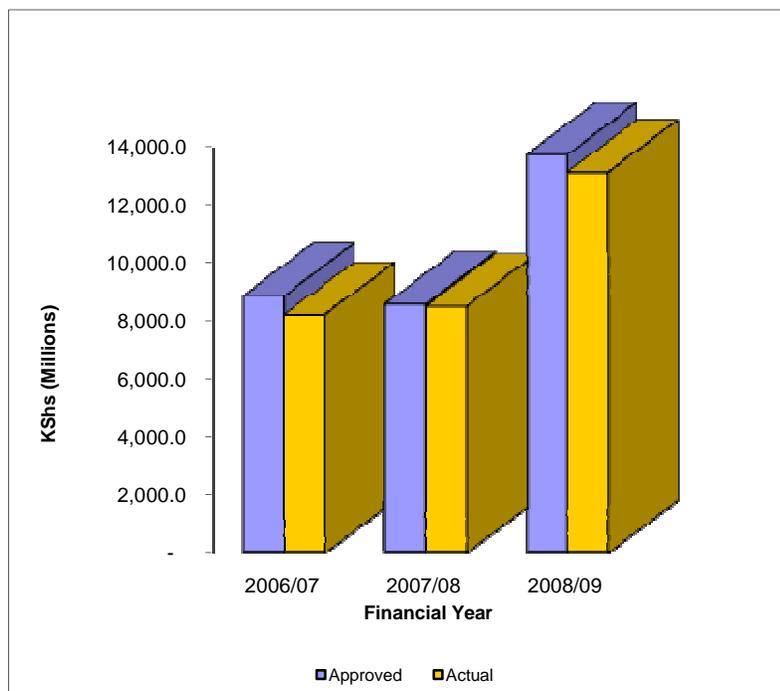
Table 2.2: Analysis of Sector Development Expenditure 2006/07-2008/09 (Kshs. millions)

Sub-Sector	2006/07		2007/08		2008/09	
	Approved	Actual	Approved	Actual	Approved	Actual
Water and Irrigation	5,884	5,318	4,991	4,950	9,090	9,041
Environment and Mineral Resources	923	610	1,464	630	1,254	1,188
Forestry and Wildlife	N/A	N/A	2,201	872	1,883	1,508
TOTAL	6,807	5,928	8,656	6,452	12,227	11,737

Water Subsector

In the Water and Irrigation subsector, there was significant increase in the approved and actual development expenditure (see Figure 2.1). The increased total development expenditure in 2008/09 compared to the previous two years was due to increased GOK development funding by 45% to Kshs 9.1 billion in 2008/09 from Kshs 5.0 billion in 2007/08. The extra funding was for the implementation of *Kazi Kwa Vijana* Programme and emergency water provision through drilling of boreholes in Nairobi City and other areas. Figure 2.1 also shows that there was minimal variance between the Approved and Actual Development expenditure. This is due to high absorption of GoK funds which is estimated at 95.6 percent in 2008/09 financial year (FY) and 99 percent in 2007/08 FY. Overall, the absorption of funds was 81.2 percent in 2008/09 with development partners contributing 61.9 percent.

Figure: 2.1: Trends in Approved and Actual Development Expenditure, Ministry of Water and Irrigation, 2006/07 – 2008/09



There was also considerable increased funding from development partners by 21% to Kshs 10.3 billion from Kshs 8.2 billion in 2007/08 (see Appendix 1.1). The increased funding were mainly for the implementation of water and sanitation projects. Overall, the funding increased by 72.9% from Kshs 16.8 billion in 2007/08 to Kshs 24.1 billion in 2008/09. In 2006/07 the funding levels were Kshs 13.1 billion.

During the period under review, the unpredictability and slow release of Donor Funds hampered the implementation of planned development projects. In 2008/09, the actual receipts were Kshs

6.4 billion out of the approved estimates of Kshs 10.3 billion, which is 61.8%. (See Appendix 1.1)

The trend in the expenditure of Donor funds is presented in Figure 2.2. The gap between approved and actual expenditures is mainly due to low disbursement of funds from development partner which was 61.8% as compared to GOK at 95.6%. In order to narrow the gap, there is need to harmonize disbursement of donor funds through deepening of SWAP. On GOK funds, there is need to ensure timely exchequer releases since this has strong bearing on implementation of infrastructural projects.

Figure 2.2: Trends in the Donor Approved vs. Actual Expenditure, Ministry of Water and Irrigation) 2006/07 - 2008/09

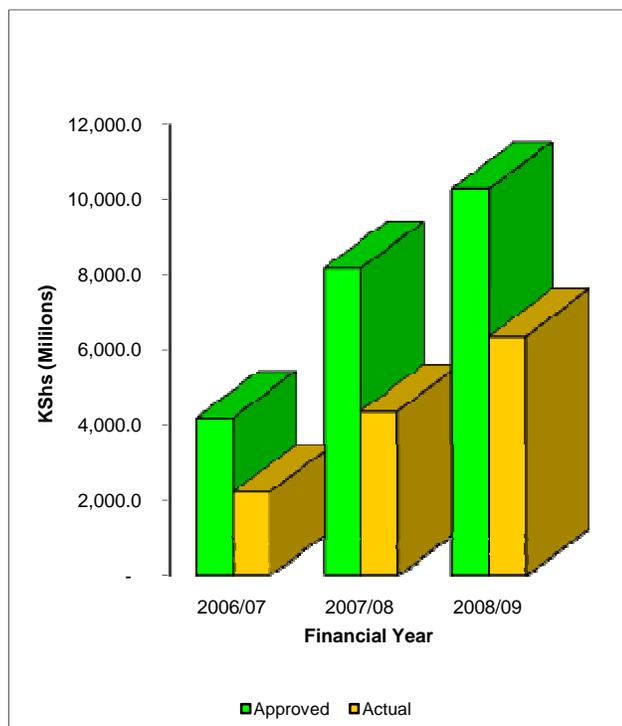
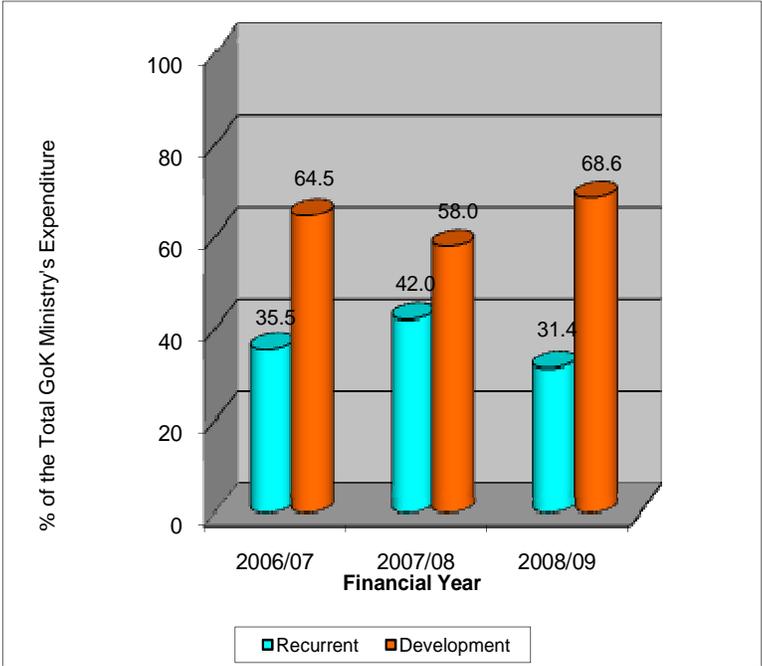


Figure 2.3 presents a comparison in the recurrent and development expenditure. Total actual expenditure is higher in Development at 78.9% in 2008/09 than 72.1% due to increased development funding under *Kazi Kwa Vijana* Programme and emergency water supplies in Nairobi and other areas. There is also a general trend in increased funding from development partners for water and sewerage infrastructure development.

More resources were committed to Development during the period under review at Kshs 19.4 bn in 2008/09 which is 47.2% increase from Kshs 13.2 bn in 2007/08. The increase in commitment was 30.6% from Kshs 10.1 billion in 2006/07. This trend is likely to continue with the increase of funding from GOK and development partners for the implementation of MTP flagship projects especially construction of large and medium size dams and rehabilitation and expansion of irrigation schemes.

Figure 2.3 Actual Recurrent and Development Expenditures as a % of Total GoK Ministry's Expenditure, 2006/07 - 2008/09 (Ministry of Water and Irrigation)



Environment and Mineral Resources Sub-sector

The subsector’s budgetary absorption rate as shown in the Figure 2.4 below stands at 83% averagely from the Approved Estimates. This figure is higher in the 2008/09 at 93% and lower at 72% in FY 2007/08. The expenditure FY 2007/08 was affected by the Sustainable Land Management Project (World Bank project) which was included in the printed Development estimates books but the activities were not implemented.

Figure 2.4: Environment and Mineral Resources Approved vs Actual Expenditure performance 2006/07 – 2008/09

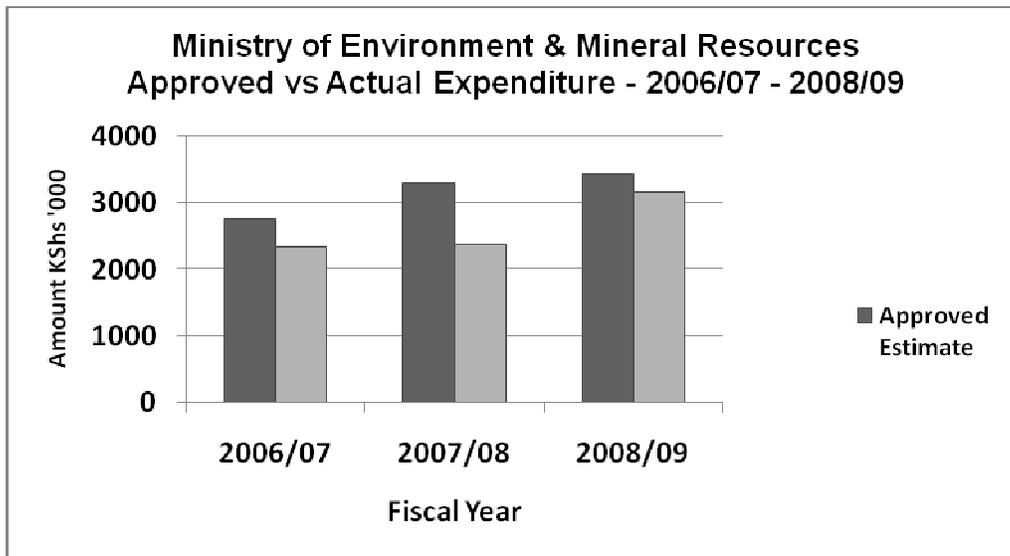
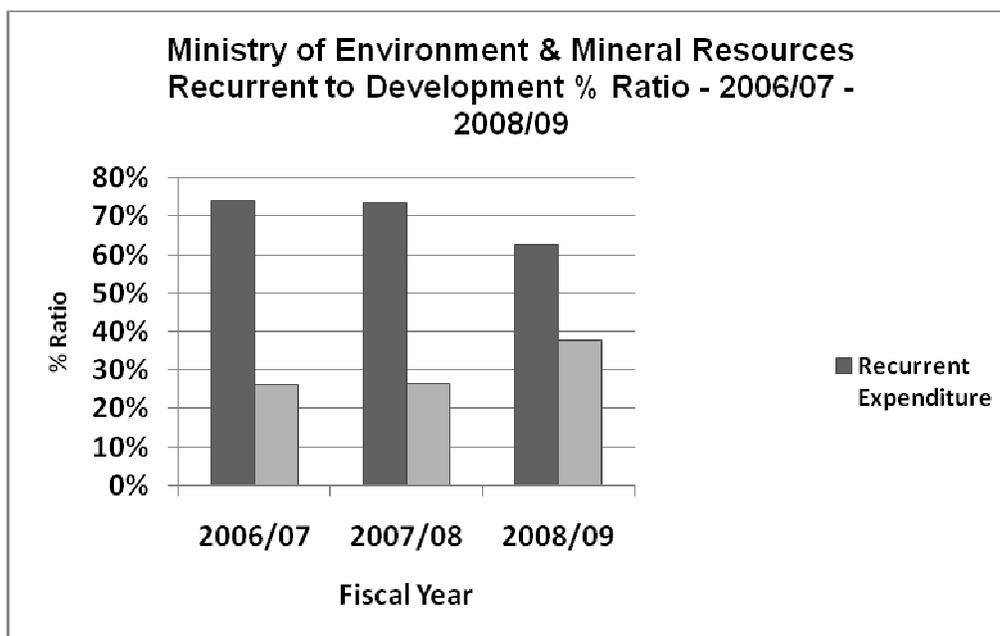


Figure 2.5 shows that the subsector’s Development expenditure has been increasing by an average of 6% annual. This could be attributed to increased capital projects in the subsector. Some of the projects included modernization within the departments under the sector.

Figure 2.5: Environment & Mineral Resources percentage ratio of Recurrent to Development Expenditure 2006/07 – 2008/09



Absorption in development however have been rising steadily with low absorption being attributed to a) unused GoK funds because donor counterpart project funds are not released, b) late release of exchequer and c) nonpayment of Sector's merchants due to problem of cheque leafs from Central Bank of Kenya (CBK).

Forestry and Wildlife

In the Forestry and Wildlife subsector, Development Expenditure accounted for 30%. The absorption of funds was averagely 73% in 2007/2008 Financial Year while there was a significant improvement in 2008/2009 Financial Year to 90%. The low absorption in 2007/2008 was mainly due to low disbursement of donor funds which could be associated to the effects of post election violence during the last two quarters of 2007/2008FY. Local revenue collections were also low hence not all exchequers were released during the same period. In 2008/2009 FY, the political climate improved greatly which saw the donor community improve their disbursement and also local revenue collections improved.

2.3.3 Analysis of Externally Funded Programmes

Environment

PROGRAMME	Type	Donor	Approved 2008/9
Preparation of the second phase management of LVEMP	Loan-Rev	IDA	49,000,000
Environment Sector programme support-Headquarters	Grant-AIA	DANIDA	60,162,000
Environment Sector Programme Support-NEMA	Grant-AIA	DANIDA	60,000,000
(CDEMP) Capacity Building Facilities NEMA (CBF)	Grant-AIA	EEC	91,325,030
Capacity building and technology Assistance	Grant-AIA	UNEP	8,709,448
Phasing out ozone depleting substances project	Grant-Rev	UNEP	9,479,125
Capacity building and bio-carbon fund	Grant-Rev	IDA	10,000,000
Mt Elgon Regional Ecosystem Conversation Mgt	Grant-Rev	EDF/EEC	18,905,540
TOTAL			307,581,143

Forestry and Wildlife

Donor fund disbursement improved from 28% to 60% through 2007/08 to 2008/09. This was mainly due to increased donor confidence.

	BUDGET ESTIMATES			ACTUAL EXPENDITURE	
	DONOR	2007/08	2008/09	2007/08	2008/09
Miti Mingi Maisha Bora & Intensified Social Forestry	FINLAND	63	150	39	64.7
National Forest Programme	FAO	7	N/A	NIL	N/A
Mt Kenya East Pilot Project	IFAD	108	127.3	80	115.1
FAO Netherlands partnership Acacia Operation	FAO	45	N/A	NIL	N/A
Natural Resources Management- KWS	USAID	50	51.7	24.6	31.3
Institutional Strengthening - KFS	FINLAND	16	N/A	NIL	N/A
Natural Resources Management- KFS	IDA	352	250	16	143.5
Meru Conservation Area	AFD	393	N/A	64	N/A
Green Zones Development Project	ADF	103	292.4	91	164.1
TOTAL		1,137	871.4	315	518.6
Percentage Release of Donor Funds				28%	60%

2.4 Review of Pending Bills

As at June 2009, the pending bills analyses by subsector are presented below:

Water and Irrigation

There were no pending bills during the year 2008/09. The total pending bill of Kshs 96.4 million for 2007/08, and the cumulative pending bills in 2007/08 amounting to Kshs 928 million for National Water Conservation and Pipeline Corporation was paid during the financial year under review.

Environment and Mineral Resources

	Due to lack of liquidity			Due to lack of provision		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Recurrent Pending Bills						
Utility telephone	3	0.8	41	63.2		
Electricity			6			
Water			5			
Personal claims		0.2				
Others-specify		12	132			
Development Pending Bills						
Utility telephone		0.6	41			
Electricity			12			
Water			7			
Personal claims		1				
Others-specify		414	39.7	500.0		
Total pending bills	3	429	283.7	563.2		

The Kenya Meteorological Department had embarked on National Early Warning System for Food Security (NEWSS) Project with Phase I involved with acquisition and installation of Weather Surveillance Radar. This project stalled at 64% completion leaving a debt of KShs. 500 Million. The Department had also inherited bills going back since the breakup of East African Community (EAC). This debt has accumulated to over KShs. 60 Million in the years and the current allocation to the Sector cannot service the debt. The rest of the pending bills were due to lack of liquidity towards the closure of financial years.

Forestry and Wildlife

The Ministry did not have pending bills in the 2007/2008 FY while in 2006/07FY the Ministry had not been established. In the financial year 2008/2009 the Ministry had pending bills totalling Kshs 11.9Million due to lack of liquidity. All the pending bills related to goods supplied and work done at the Ministry headquarter. The pending bills comprised of only 4% of the total Ministry's expenditure.

Type/Nature	Due to lack of Liquidity			Due to lack of provision		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
1.Recurrent						
Purchas of office furniture and equipment	N/A	N/A	1,900,000	N/A	N/A	
2. Development						
Refurbishment of Buildings	N/A	N/A	10,000,000	N/A	N/A	
Total Pending Bills	N/A	N/A	11,900,000	N/A	N/A	

2.4.1 Recurrent Pending Bills

Water and Irrigation

Due to lack of Liquidity			Due to lack of Provision		
2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
59.68	55.79	0	283.51	0	0

Environment and Mineral Resources

Recurrent Pending Bills	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
	Utility telephone	3	0.8	41	63.2	
Electricity			6			
Water			5			
Personal claims		0.2				
Others-specify		12	132			

Forestry and Wildlife

Type/Nature	Due to lack of Liquidity			Due to lack of provision		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
1.Recurrent						
Purchase of office furniture and equipment	N/A	N/A	1,900,000	N/A	N/A	
Totals	N/A	N/A	1,900,000	N/A	N/A	

2.4.2 Development Pending Bills

Environment and Mineral Resources

Development Pending Bills	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Utility telephone		0.6	41			
Electricity			12			
Water			7			
Personal claims		1				
Others-specify		414	39.7	500.0		
Total pending bills	3	429	283.7	563.2		

Forestry and Wildlife

Type/Nature	Due to lack of Liquidity			Due to lack of provision		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Refurbishment of Buildings	N/A	N/A	10,000,000	N/A	N/A	
Total	N/A	N/A	10,000,000	N/A	N/A	

CHAPTER THREE:

3.0 MEDIUM TERM PRIORITIES AND FINANCIAL PLAN FOR THE MTEF PERIOD 2010/11-2012/13

3.1 Prioritization of Programmes and Sub-Programmes

3.1.1 Programmes and their Objectives

The sector has three sub-sectors with a total of eight major programmes being implemented and various sub-programmes. The programmes are as shown below;

Water

Programme 1: Water Policy and Management

To facilitate the implementation of subsector programmes

Programme 2: Water Supply and Sewerage Services

Increase access to adequate and reliable water supply and sewerage/sanitation services to the nation.

Programme 3: Water Resources Management and Water Storage

Increase availability of sustainable water resources through effective management and protection of water sources.

Programme 4: Provision of Irrigation and Drainage Infrastructure

Increase utilization of land through irrigation, drainage and land reclamation

Environment

Programme 1: Environment Management and Protection; Natural Resource Data and Information.

To protect, conserve, and sustainably manage the environment

Programme 2: Mineral Resources Management.

Development of geological and mineral resources databases and formulation, implementation and review of the existing mining policies and legislation

Programme 3: Meteorological Services and Climate Change.

To facilitate accessible meteorological information and services and infusion of scientific knowledge to spur socio-economic growth and development

Programme 4: General Administration and Support Services

To coordinate and provide support services to the technical actors in the Environment and Mineral Sub-Sector.

Forestry and Wildlife

Programme 1: Forestry and wildlife policy regulation and coordination

Objective: To coordinate and provide policy guidance to the technical agencies in the forestry and wildlife development and management.

Programme 2: Forestry Development and Management

Objective: To enhance the role of forest in social economic development of the country and disseminate forest research findings to the Kenya People.

Programme 3: Wildlife Conservation and Management

Objective: To enhance wildlife conservation and management for national heritage and socio-economic development.

3.1.2 Programmes, Sub-programmes, Expected Outputs, Outcomes and Key Performance Indicators for the Sector

This section examines various programmes and sub-programmes in the sector, the expected outputs, outcomes and key performance indicators. These are highlighted below as per sub-sectors.

Water and Irrigation

Sub Programme (SP)	Key Outputs	Expected outcomes	Key Performance Indicators
PROGRAMME 1: Water Policy and management			
Outcome: Policy formulation and implementation of subsector programmes			
SP 1: Water Policy and management	<ul style="list-style-type: none"> • Properly and correctly guided policy direction 	<ul style="list-style-type: none"> • Assured water resource availability, accessibility and irrigation development 	<ul style="list-style-type: none"> • No. of people with access to water • No of hectares put under irrigation
PROGRAMME 2: Water Supply and Sewerage Services			
Outcome: Access to adequate and reliable water supply increased by 4% and sewerage/ sanitation increased by 2%			
SP2.1 Urban water and sewerage	<ul style="list-style-type: none"> • 26 medium size towns urban water supplies infrastructure expanded 	<ul style="list-style-type: none"> • Urban access to safe water increased from 60% to 75% by 2012 • Urban access to improved sanitation increased from 55% to 70% by 	<ul style="list-style-type: none"> • No. of urban water supplies infrastructure expanded

		2012	
SP2.2 Rural water supply	<ul style="list-style-type: none"> • 180 new water and sanitation projects constructed annually 	<ul style="list-style-type: none"> • Rural access to safe water increased from 40% to 65% by 2012 	<ul style="list-style-type: none"> • No. of water and sanitation projects constructed
SP2.3 Water for informal settlements	<ul style="list-style-type: none"> • 92 new boreholes drilled and 56 existing boreholes equipped annually 	<ul style="list-style-type: none"> • Urban access to safe water increased from 60% to 75% by 2012 • Rural access to safe water increased from 40% to 65% by 2012 	<ul style="list-style-type: none"> • No. of boreholes drilled • No. of boreholes equipped
PROGRAMME 3: Water Resources Management and Water Storage			
Outcome: Water storage capacity increased by 10 million m³			
SP3.1 Water Resources Management	<ul style="list-style-type: none"> • 300 water resource monitoring stations rehabilitated and operationalized by 2012 	Accurate Water Resources Information easily accessible Equity in distribution of water resources	<ul style="list-style-type: none"> • No. of monitoring stations rehabilitated • No. of monitoring stations operationalized
SP3.2 Water Storage and Flood Control	<ul style="list-style-type: none"> • 2 large dams constructed by 2012 • 22 Medium size dams constructed by 2012 • 88 small dams and water pans constructed annually 	Volume of Water increased by 4.4 billion m ³ by 2012	<ul style="list-style-type: none"> • No. of large dams constructed • No. of Medium size dams • No. of small dams and water pans constructed
PROGRAMME 4: Provision of Irrigation and Drainage Infrastructure			
Outcome: Land utilization increased by 5,000 hectares			
SP4.1 Development of Irrigation and Drainage	<ul style="list-style-type: none"> • 475 small-holder community irrigation 	50,000 ha of irrigated land by 2012	<ul style="list-style-type: none"> • No. of irrigation schemes constructed

infrastructure	schemes constructed annually		
SP4.2 Land Reclamation	<ul style="list-style-type: none"> • 1,700 water conservation and rain water harvesting structures constructed in ASALs annually 		<ul style="list-style-type: none"> • No. of water conservation and rain water harvesting structures constructed

Environment and Mineral Resources

Sub-Programme	Key Outputs	Performance Indicators
PROGRAMME 1: Environment policy development and regulation		
Outcome: Developed Environmental policies		
Environment policy development and regulation	Kenya climate strategy formulated.	One strategy on climate change formulated.
	Noise, water and air quality regulations.	No. of Noise, water and quality regulations developed/reviewed
	Draft National strategy for Multilateral Environmental agreements (MEAs)	One draft National strategies on Multilateral Environmental Agreements (MEAs) established.
PROGRAMME 2. Environment Management and Protection; Natural resource data and Information.		
Outcome: Sustainably managed environment and natural resources		
SP 2.1 Resource Surveying and Remote Sensing	Land use/cover database Wildlife/livestock database Vegetation database	3 databases established
	Sample Units in the target districts completed, distribution maps, statistics, trends, reports	7,037 Sample Units in the target districts completed, distribution maps, statistics, trends, reports
	Spatial distribution maps, statistics, trends, reports	No. of Maps & reports
	Human/wildlife conflict map, satellite imagery report	No. of Maps & reports
	Land use map, settlement patterns	No. of Maps & reports

	Reports on ecological changes in three districts i.e. Taita Taveta, Kajiado and Kitui.	1 ecological map
SP 2.2 National Environment Management	Multilateral Environmental Agreements (MEAs) Action Plans	No. of Action Plans
	coastal and marine resources Conservation inventory	1 inventory
	Education for Sustainable Development (ESD) Policy	1 ESD Policy in place
	Baseline surveys and reduced illegal discharges in Water bodies	1 baseline survey 10% illegal discharges stopped
	Inventory of biological resources	1 .Number of access permit issued. 2.Number of monitoring and inspection reports
	National Noise and Vibration Pollution standards Prosecutions of noise pollutants	1 set of standard
	Number of EIA licenses issued	No. Inventory Reports, licenses issued and of prosecutions made
	Chemical and waste policy	1 Policy in place
	Inventory and data base of ODSs,	1 Inventory
	National inventory on green houses gases(GHG)	1 national inventory
	Environment guidelines	No of Guidelines developed
	State of Environment (SOE)	1 SoE report
SP2.3 Lake Victoria Environment management	Harmonization of water and fisheries policies	Task force has been formed on water release policy, the national project coordination is in place since September
	Pollution control in lake Victoria	
	Water shed management (Nyando basin)	
SP 2.4 Nairobi Rivers Rehabilitation	Rehabilitated and restored Nairobi river	60 Km rehabilitated and restored
	30 metres of the riparian reserve delineated	Area delineated
	Awareness Creation:	48 campaigns held 3,000 pieces of awareness material

		printed and distributed
	Monitoring of Nairobi Rivers' Basin Clean up Exercise:	4 Evaluations
	Stopped Illegal Discharge and Dumping:	3 closed discharge points
PROGRAMME 3. Mineral Resources Management		
Outcome: improved Sustainable management of natural resources		
SP 3.1 Mineral Resources Development	Area of unmapped parts of Kenya mapped	700 Square km mapped
	No. of additional mining entities engaged in mineral development	4 additional mining entities engaged
	Geo data base developed	1 databases established
SP 3.2 Geological Survey and Mineral Exploration	Minerals explored and assessed	3 minerals explored and assessed
	No. of geo-hazard prone areas in selected districts mapped	5 Geo-hazard prone areas mapped
	No of Geo-tourism sites documented	10 sites documented
PROGRAMME 4. Meteorological Services and Climate Change.		
Outcome: improved meteorological information and services		
SP 4.1 Meteorological Services and Climate Change Activities	FM stations Established	6 FM stations established
	Meteorological information transmission, processing and dissemination improved	Integrated Meteorological Information system installed at Meteorological Headquarters
	Improved meteorological observation networks	- Wind profile system installed and Pilot Briefing System at airport (JKIA) - 12 Automatic Weather Stations acquired and installed - 1 Weather surveillance radar acquired - Install 2 upper-air observing stations
	Capacity building in meteorology	200 students trained
	Disaster management and early warning system established	- 6 Automatic Hydro-meteorological stations installed for monitoring of floods and water towers - 3 broadband seismic equipment installed
	Establish Meteorological Conference Centre and Museum	Construction of the premises
SP 4.2 Climate Change	Weather Modification: Phase I: Initial meteorological studies consisting of radar, satellite and airborne observations (air chemistry and cloud	No. of research reports produced

	physics) in conjunction with numerical model simulations performed	
	National Climate change strategy	1 national climate change response strategy
	Education and Awareness mechanism	Mitigating measures adopted by communities

Forestry and Wildlife

Programme/sub-programme	Key Outputs	Key Performance indicators
PROGRAMME 1: Forestry and wildlife policy regulation and coordination		
Outcome: Policy regulation and implementation of sub sector programmes		
SP 1.: Forestry and wildlife policy regulation and coordination	<ul style="list-style-type: none"> • Integrated policies in Forestry & wildlife • Establish Forestry & wildlife Monitoring & Evaluation Systems. • Development Forestry & Wildlife rare species conservation Strategy. 	<ul style="list-style-type: none"> • Number of policies Forestry & wildlife integrated • No. of Monitoring & Evaluation systems established. • No. of rare species Conservation strategy developed.
PROGRAMME 2: Forestry Development and Management		
Outcome: Increased Forest Cover		
SP 2.1: Institutional strengthening and provision of skilled manpower.	<ul style="list-style-type: none"> • Operational/functioning Institutions established. • Forestry policy Finalized • 5076, No of people employed 	<ul style="list-style-type: none"> • No of institutions established • No of people employed.
SP 2.2: Natural Forests Conservation	<ul style="list-style-type: none"> • Five(5) water towers Rehabilitated • Five(5) water towers Regenerated • Five(5) water towers protected • Proportion of Marine (mangroves) protected 	<ul style="list-style-type: none"> • No. of hectares rehabilitated • No. of hectares regenerated. • No of ha planted and protected
SP2. 3: Industrial Plantations	<ul style="list-style-type: none"> • Increased industrial forest plantation cover • Increased revenue generation from industrial plantations 	<ul style="list-style-type: none"> • No of ha planted, maintained • No of reports and maps • Reports and revenue generated

SP 2.4: Farm and private commercial forestry	<ul style="list-style-type: none"> Established farm and commercial forests 	<ul style="list-style-type: none"> No of ha under tree cover on farms
SP : 2.5 Dry land forest conservation and management	<ul style="list-style-type: none"> Conserved dry land forest Developed master plan on dry land forests 	<ul style="list-style-type: none"> No of ha conserved and No of plan developed
SP2. 6 Road infrastructure and maintenance	<ul style="list-style-type: none"> Developed and maintained roads in the forests 	<ul style="list-style-type: none"> No of km maintained
PROGRAMME 3: Wildlife Conservation and Management		
Outcome: An increase in wildlife population and park earnings		
Sub-programme 1: Conservation & Protection of Wildlife	<ul style="list-style-type: none"> 100 % response rate of reported poaching incidences Recruitment and Capacity building for 400 officers 4 cross border wildlife security operations (Kenya – Tanzania – Uganda and Ethiopia) Recovery of firearms and ammunitions. Recovery of assorted trophies i.e. ivory and bush meat. 	<ul style="list-style-type: none"> Number of cases successfully prosecuted. Number of officers recruited and trained Number of border patrols Number of firearms and ammunitions recovered Number of trophies, pieces of ivory and bush meat recovered
	<ul style="list-style-type: none"> 65 km of fence done in Mt. Kenya and Tsavo Stakeholder consultations on wildlife migration corridors Mapping of the corridors Population distribution survey along wildlife migration corridors. 100% response rate to human wildlife conflict issues 	<ul style="list-style-type: none"> Number in Km of fencing done Number of stakeholder meetings held GIS maps Population distribution maps % response rate to human wildlife conflict cases
	<ul style="list-style-type: none"> 120 schools & colleges visited 	<ul style="list-style-type: none"> Number of schools

		visited and sensitized on conservation education
	<ul style="list-style-type: none"> • 5 MEAs multilaterals signed and Wildlife agreement updated • Participation in wildlife multilateral agreements (CITES COP 15, Lusaka Taskforce) 	<ul style="list-style-type: none"> • Number of MOUs signed • Number of research partnerships participated in
	<ul style="list-style-type: none"> • Enhance financial sustainability 	<ul style="list-style-type: none"> • Launch of Endowment fund • 10% increase of current funds in the Kitty.
	<ul style="list-style-type: none"> • 3 Habitat areas restored • 2 park management plans developed • 4 Translocations done • 2 wildlife strategies done 	<ul style="list-style-type: none"> • Number of habitat sites restored • Number of management plans developed • Number of translocations done • Number of strategies done • Number of species specific management plans developed (invasive species)
	<ul style="list-style-type: none"> • Improve forest cover and habitat value • Maintaining integrity of the ecosystems and landscapes. 	<ul style="list-style-type: none"> • Ha of degraded forests rehabilitated areas with appropriate species • Generation of scientific information for decision making. • Assessment reports of status of ecosystems & landscapes.

	<ul style="list-style-type: none"> • Operationarization of the fund 	<ul style="list-style-type: none"> • Governance in place (Trustees) • Launch of Fund • Number of programs created to enhance financial sustainability.
Sub-programme 2 National Parks & Reserves Management	<ul style="list-style-type: none"> • Visibility of KWS parks • Branding of 2 national parks and reserves • Participation in International exhibitions 	<ul style="list-style-type: none"> • Number of parks and reserves branded • Number of exhibitions participated in including World Tourism Market.
Sub-programme 3: Youth Conservation Education	<ul style="list-style-type: none"> • Sensitization of 10,000 youth country wide in wildlife conservation and protection 	<ul style="list-style-type: none"> • Number of youth groups sensitized on wildlife conservation and protection. • .

3.2 Analysis of Resource Requirements

3.2.1 Analysis of Resource Requirements by the Sector

Resource requirements by the sector for 2010 Financial Year and the projected estimates for 2011/12 – 2012/13 are presented in Table 3.2.1. The sector requires Kshs. 75 Billion in next financial year to undertake highlighted activities. This is an increase of about 91% of the FY 2009/10 printed estimates.

Sub-sectors	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
Water and Irrigation	29,174	51,499	56,661	62,231
Environment and mineral resources	4,333	10,407	10,760	12,069
Forestry and wildlife	5,773	13,291	13,594	14,680
Sector Requirements	39,280	75,197	81,015	88,980

3.2.2 Analysis of Resource Requirements by the Sub-Sector

Sub Sector- Water and Irrigation				
Programme	2009/10	2010/11	Projected Estimates	
			2011/12	2012/13

Water Policy and management	542.1	569.2	593	643.1
Water Supply and Sewerage/Sanitation	22,316.1	35,779.40	40,317.30	44,505.90
Water Resources Management and Water Storage	3,752.2	8,479.3	8,814.3	9,559.3
Provision of Irrigation and Drainage Infrastructure	2,563.8	6,671.1	6,936.4	7,522.7
TOTAL	29,174	51,499	56,661	62,231
Sub Sector- Environment and Mineral Resources				
			Projected Estimates	
Programme	2009/10	2010/11	2011/12	2012/13
Environment policy development and regulation	530	583	617	672
Environment Management and Protection; Natural resource data and Information.	2,348	6,282	6,420	7,427
Mineral Resources Management	294	550	759	580
Meteorological Services and Climate Change	1,161	2,992	2,964	3,390
TOTAL	4,333	10,407	10,760	12,069
Sub Sector- Forestry & Wildlife				
			Projected Estimates	
Programme	2009/10	2010/11	2011/12	2012/13
Forestry & wildlife policy regulation and coordination	235	450	540	650
Forestry Development & Management	3,757	8,967	8,865	9,530
Wildlife Conservation & Management	1,781	3,874	4,189	4,500
TOTAL	5,773	13,291	13,594	14,680

3.2.3 Analysis of Resource Requirement by Programmes and Sub-programmes

Water

1. Water Policy and management

Sub-programme	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
Water Policy and management	542.1	569.2	593.0	643.1
TOTAL	542.1	569.2	593.0	643.1

2. Water Supply and Sewerage/Sanitation

Sub-programme	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
Urban water and sewerage	17,009.90	27,516.40	31,240.30	34,531.90
Rural water supply	5,306	8,006	8,807	9,687
Water for informal settlements	0.2	257	270	287
TOTAL	22,316.1	35,779.40	40,317.30	44,505.90

- Water supply to informal settlements, rural areas and ASAL areas needs to be adequately funded.

3. Water Resources Management

Sub-programme	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
Water Resources Management	626	1,859	2,045	2,174
Water Storage and Flood Control	3,197	6,620	6,769	7,385
TOTAL	3,752.20	8,479.30	8,814.30	9,559.30

4. Provision of Irrigation and Drainage Infrastructure

Sub-programme	Printed Estimates	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13

	2009/10			
Development of Irrigation and Drainage infrastructure	2,450	6,421	6,636	7,204
Land Reclamation	114	250	300	319
TOTAL	2,564	6,671	6,936	7,523
GRAND TOTAL	29,174	51,499	56,661	62,231

Environment

1. Environment policy development and regulation

Sub-Programmes	Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/2013
			Policy and Administrative Services	530

2. Environment Management and Protection; Natural resource data and Information

Sub-Programmes	Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/2013
Environmental policy and climate change response Mainstreaming and coordination	0	500	800	1,000
Environment management and Protection	1,128	3032	4,034	4,991
Nairobi Rivers Rehabilitation and Restoration programme	289	2000	1120	930
SP 1.4 Lake Victoria Environment Management	595	205	186	214
SP 1.5 Resource Survey and Remote Sensing	336	545	280	292
Total Gross Expenditure for the Programme	2,348	6282	6,420	7,427

- Upscale Nairobi river rehabilitation activities which include clean-up and compensation.
- Climate change, awareness creation, domestication of MEAs and solid waste management.

3. Mineral Resources Management

SP2.1 Mineral Resources Development	184	195	205	220
SP 2.2 Geological Survey and Mineral Exploration	110	355	554	360
Total Gross Expenditure for the Programme	294	550	759	580

Note: The requirement for funds is for development of a Mining Cadastre System (MCS) and contracted mineral exploration to enhance baseline information for increased investment in the mineral sector.

4. Meteorological Services and Climate Change.

SP 3.1 Meteorological Services and Climate Change Activities	1,161	2,496	2,404	2,757
SP 3.2 Weather Modification Programme	-	496	560	632
Total Gross Expenditure for the Programme	1,161	2,992	2,964	3,390
Grand Total for the Vote-21	4,333	10,407	10,760	12,069

Forestry and Wildlife

Program 1- Forestry and wildlife policy regulation and coordination				
Sub Programme	2009/10	2010/11	Projected Estimates	
			2011/12	2012/13
Forestry and wildlife policy regulation and coordination	235	450	540	650
Total	235	450	540	650

Program 2- Forestry Development & Management				
Sub Programme	2009/10	2010/11	Projected Estimates	
			2011/12	2012/13
Institutional Strengthening and Provision of Skilled Manpower	1,578	3,735	3,720	3,818
Natural Forest Conservation	1,051	2,487	2,309	2,576
Industrial Plantation	801	2,158	2,149	2,221
Dry land/Farm Forest Conservation & Management	303	513	609	819
Road infrastructure development and Maintenance	24	74	78	96
Total	3,757	8,967	8,865	9,530

The funds are increasing from Kshs 3.757 billion in the 2009/10 FY to Kshs 8.967billion in the 2010/11 FY this is due to;

- The need of absorbing 4800 former forestry department employees into KFS terms of service.
- The Mau restoration efforts and other water catchments areas.
- Increase in acreage under industrial plantation with the objective of increasing efficiency in wood utilization for wealth and employment creation.

Program 3- Wildlife Conservation & Management				
Sub Programme	2009/10	2010/11	Projected Estimates	
			2011/12	2012/13
Conservation & Protection of Wildlife	937	1,948	2,046	2,199
National Parks & Reserves Management	825	1,905	2,120	2,276
Youth Conservation Education	19	21	23	25
TOTAL	1,781	3,874	4,189	4,500
GRAND TOTAL	5,773	13,291	13,594	14,680

The additional funds will increase from Kshs 1,781million in 2009/10 FY to Kshs 3,874 million in 2010/11 FY in order to;

- Provide for the recruitment of additional 400 wildlife rangers.
- Procure park security equipment, monitoring surveillance, carryout translocation of the problem animals and areas of high human wildlife conflicts.

- Enhance conservation education and operationalize the Kenya Wildlife Service Fund [endowment fund.
- Support Mau Conservation Program where 120 rangers have been posted.
- Deployment of sniffer dogs and luggage scanning equipments for wildlife trophies at airports.

3.2.4 Economic classification

Water and Irrigation

	Printed Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
1.Current Expenditure				
Compensation of employees	1526	1,848	1,588	1,620
Use of goods and services	1460.4	4,888	1690.7	1772.3
Current Transfers to Gov't Agencies	2,103	2,691	2,140	3,686
Other Recurrent	0.6	104	0.7	0.8
2. Capital Expenditure				
Acquisition of non-financial assets	18,527	32,292	40,523	43,438
Capital Transfers to Gov't Agencies	5557.6	9,283	10,219	11,078
Other development	0	393	500	636
Total	24,085	41,968	51,242	41,643
Total Expenditure	29,174	51,499	56,661	62,231

Environment and Mineral Resources

	Approved Estimates 2009/10	Estimates 2010/11	Projected Estimates	
			2011/12	2012/13
1.Current Expenditure				
Compensation of Employees	848	933	970	1008
Use Goods and Services	555	2342	2574	2722
Current Transfers Govt. Agencies	446	1007	1100	1200
Other Recurrent	216	0	0	0
2.Capital Expenditure				
Acquisition of non-Financial Assets	1,465	5,934	5,556	6,489
Capital Transfers to Government Agencies.	182	191	560	650
Other Development	621	0	0	0
Total Expenditure of Vote 21	4,333	10,407	10,760	12,069

Forestry and Wildlife

	2009/10	2010/11	Projected Estimates	
			2011/12	2012/13
Recurrent Expenditure				
Compensation to Employees	61	3,680	3,682	3,977
Use of goods & Services	146	211	212	229
Current Transfers Govt Agencies	3,552	5,049	5,188	5,603
Other Recurrent	11	22	18	19
Total	3,770	8,962	9,100	9,828
Development Expenditure				
Acquisition of Non-Financial Assets	1,164	1,445	1,436	1,551
Capital Transfers Govt Agencies	206	2,000	2,200	2,374
Other development	633	884	858	927
Total	2,003	4,329	4,494	4,852
Total Expenditure of Vote	5,773	13,291	13,594	14,680

3.3 Analysis of Resource Requirements versus Allocation

3.3.1 Recurrent

Subsector	Resource Requirements 2010/11	Allocation 2010/11	Variance
Water and Irrigation	9,531	3,907	5,624
Environment and Mineral Resources	4,282	2,272	2,010
Forestry and Wildlife	8,962	3,294	5,668
Total Recurrent	22,775	9,473	13,302

3.3.2 Development

Subsector	Resource Requirements 2010/11	Allocation 2010/11	Variance
Water and Irrigation	41,968	9,230	32,738
Environment and Mineral Resources	6,125	1,103	5,022
Forestry and Wildlife	4,329	434*	3,895
Total Development	52,422	10,767	41,655

* 2010/2011 Allocation was retained as it was in the previous FY

3.3.3 Semi Autonomous Government Agencies

Water and Irrigation

Water Institutions	Resource Requirements 2010/11	Allocation 2010/11	Variance
Water Appeal Board	31.3	15	16.3
Water Services Regulatory Board	108.5	20	88.5
Water Resources Management Authority	1,365.7	40	1325.7
Water Services Trust Fund	260.0	21	239
Athi Water Services Board	2,368.9	40	2328.9
Tana Water Services Board	1,565.6	80	1485.6
Tanathi Water Services Board	2,298.8	65	2233.8
Rift Valley Water Services Board	2,486.1	60	2426.1
Lake Victoria North Water Services Board	1,708.0	160	1548
Lake Victoria South Water Services Board	1,730.3	70	1660.3
Northern Water Services Board	2,222.9	90	2132.9
Coast Water Services Board	1,838.7	50	1788.7
National Water Conservation and Pipeline Corporation	18,932.0	4,201	14731
National Irrigation Board	4,915.2	1,604	3311.2
Kenya Water Institute	179.6	50	129.6
Total	42,011.6	6,566	35,445.6

The SAGAs in the Water and Sanitation sub-sector are the implementing Agencies for development projects, thus the high budgetary requirements. Recurrent expenditure transfers requirements will remain at the current levels. Tanathi WSB was created during this FY 2008/09.

Environment and Mineral Resources

Institutions	Resource Requirements 2010/11	Allocation 2010/11	Variance
National Environment Management Authority	852	341	511
National Environment Trust Fund	75	50	25
Public Complaints committee	50	20.8	29.2
National Environment Tribunal	30	16	14

TOTAL	1,007	427.8	579.2
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Forestry and Wildlife

Forestry and Wildlife	Resource Requirements 2010/11	Allocation 2010/11	Variance
Kenya Forest Service	3,030	314	2,716
Kenya Wildlife Service	1,269	110	1,159
Wildlife Clubs of Kenya	30	10	20
Total	4,329	434	3,595

The funds requested will be utilized in

- Absorbing 4,800 former forestry department employees into KFS terms of service.
- The Mau restoration efforts and other water catchments areas.
- To increase in acreage under industrial plantation with the objective of increasing efficiency in wood utilization for wealth and employment creation.
- To recruit additional 400 wildlife rangers, to procure equipment park security and monitoring surveillance and carryout translocation of the problem animals and areas of high human wildlife conflict, enhance conservation education and operationalise the Kenya Wildlife Service Fund [endowment fund].
- Deployment of sniffer dogs and luggage scanning equipments for wildlife trophies at airports.

3.3.4 Programmes and Sub-Programmes

Water and Irrigation

1. Water Policy and Management

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Water Policy and management	569.2	345	224.2
TOTAL	569.2	345	224.2

2. Water Supply and Sewerage/Sanitation

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Urban water and sewerage	27,516.40	4,845	14,422
Rural water supply	8,006	2,000	6,006
Water for informal settlements	257	150	107
TOTAL	35,779.40	6,995	20,535

3. Water Resources Management

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Water Resources Management	1,859	700	1,159
Water Storage and Flood Control	6,620	3,858	8,839
TOTAL	8,479.30	4,558	9,998

4. Provision of Irrigation and Drainage Infrastructure

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Development of Irrigation and Drainage infrastructure	6,421	1,114	5,307
Land Reclamation	250	125	125
TOTAL	6,671	1,239	5,432
GRAND TOTAL	51,499	13,137	38,362

Environment and Mineral Resources

1. Environmental policy development and regulation.

Sub-Programmes	Resource Requirements 2010/11	ALLOCATION 2010/11	VARIANCE
SP 1.1 Administrative Services	583	530	53
Total Gross Expenditure for the Programme	583	530	53

2. Environment Management and Protection; Natural resource data and Information

Sub-Programmes	Resource Requirements 2010/11	ALLOCATION 2010/11	VARIANCE
SP 2.1 Environmental policy and climate change response Mainstreaming and coordination	500	100	400
SP 2.2 Environment management and Protection	3032	1,128	1,904
SP 2.3 Nairobi rivers Rehabilitation and Restoration programme	2000	389	1,611
SP 2.4 Lake Victoria Environment Management	205	595	(390)
SP 2.5 Resource Survey and remote sensing	545	336	209
Total Gross Expenditure for the Programme	6,282	2,548	3,734

3. Mineral Resources Management

SP3.1 Mineral Resources Development	195	184	11
SP 3.2 Geological Survey and Mineral Exploration	355	110	245
Total Gross Expenditure for the Programme	550	294	256

4. Meteorological Services.

SP 4.1 Meteorological Services and Climate Change Activities	2,496	1,161	1335
SP 4.2 Weather Modification Programme	496	0	496
Total Gross Expenditure for the Programme	2,992	1,161	1,831
Grand Total for the Vote-21	10,407	4,333	6,074

Forestry and Wildlife

Program 1- Forestry and Wildlife policy regulation and coordination			
Sub Programme	Resource Requirements 2010/11	Allocation 2010/11	Variance
Forestry and Wildlife policy regulation and coordination	450	413	37
Total	450	413	37

Program 2- Forestry Development & Management			
Sub Programme	Resource Requirements 2010/11	Allocation 2010/11	Variance
Institutional Strengthening and Provision of Skilled Manpower	902	553	349
Natural Forest Conservation	6,150	1,050	5,100
Industrial Plantation	800	262	538
Dry land/Farm Forest Conservation & Management	960	379	581
Road infrastructure development and Maintenance	155	34	121
Total	8,967	2,278	6,689

Program 3- Wildlife Conservation & Management			
Sub Programme	Resource Requirements 2010/11	Allocation 2010/11	Variance
Conservation & Protection of Wildlife	1,082	232	850
National Parks & Reserves Management	2,733	765	1,968
Youth Conservation Education	59	40	19
TOTAL	3,874	1,037	2,837

3.3.5 Economic classification

Water and Irrigation

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Recurrent Expenditure			
Compensation of employees	1,848	1,654	194
Use of goods and services	4,888	1,183	3,705
Current Transfers to Gov't Agencies	2,691	985	1,706
Other Recurrent	104	85	19

Total	9,531	3,907	5,624
Development Expenditure			
Acquisition of Non-Financial Assets	32,292	7,102	25,190
Capital Transfers Govt Agencies	9,283	2,041	7,242
Other development	393	87	306
Total	41,968	9,230	32,738
Total Expenditure of Vote	51,499	13,137	30,113

Environment and Mineral Resources

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Recurrent Expenditure			
Compensation to Employees	848	883	1,008
Use of goods & Services	555	2,392	2,722
Current Transfers Govt Agencies	446	1,007	1,200
Other Recurrent	216	0	0
Total	2065	4,282	4,930
Development Expenditure			
Acquisition of Non-Financial Assets	1,465	5984	6,489
Capital Transfers Govt Agencies	182	191	650
Other development	621	0	0
Total	2,268	6,125	7,139
Total Expenditure of Vote	4,333	10,407	12,069

Forestry and Wildlife

	Resource Requirements 2010/11	Allocation 2010/11	Variance
Recurrent Expenditure			
Compensation to Employees	80	61	19
Use of goods & Services	211	70	141
Current Transfers Govt Agencies	8,649	3,152	5,497
Other Recurrent	22	11	11
Total	8,962	3,294	5,668
Development Expenditure			
Acquisition of Non-Financial Assets	1,445	150	1295
Capital Transfers Govt Agencies	2,000	200	1,800
Other development	884	84	800
Total	4,329	434	3,895
Total Expenditure of Vote	13,291	3,728	9,563

CHAPTER FOUR: CROSS-SECTOR LINKAGES

4.1 Water

The centrality of water in economic and social development of the country is acknowledged in the Vision 2030. The performance of key sectors in the economy especially agriculture, livestock, manufacturing and tourism depends on the availability and reliability of required water resources. Energy, a vital resource in economic development is also dependent on water resources. Over 70 per cent of domestic energy needs are met from hydropower. It is important to note that, access to adequate and reliable supply of water is not only a key input to poverty reduction but also an important element for social stability, economic growth and meeting the targets of the Vision 2030 and Millennium Development Goals (MDGs). For example high poverty level in ASAL areas is attributed to lack of water. Consequently, the Government is committed to improving the management and protection of water resources to ensure that water is available for equitable allocation for all the demands in the country.

Water is not only an essential raw material in many industries that have a major influence on economic performance at the national level, but also at local and household levels. Improved access to water and sanitation plays a huge direct and indirect role in local communities in terms of the time savings, which is made available for economic activities. In addition, illness as a result of water related diseases has a negative bearing on the economy. The time, energy and resources saved by improved access to water and sanitation can very often be used on productive economic activities. Majorities of urban population lives in slum areas and get their water from private vendors at exorbitant prices whose quality is questionable unlike those living in medium and high class residential areas with individual water connections. This means that a significant proportion of household expenditure is spent on water. Reduced water prices would have a major impact on the economic status of these people and this may lead to economic growth.

Over the years catchment water resources and water sources have been degraded by deforestation, settlement and intense farming. This has caused reduced river flows and pollution resulting to having less water for domestic, agricultural and hydropower generation. To reverse the trend the government needs to prioritize conservation programmes aimed at efficient management of water resources by enforcing Water Act 2002 and promoting water conservation activities.

Conflict in pastoral areas is driven by many factors, including long-standing inter-communal tensions, competition over and commercialization of resources and especially water and grazing grounds, the proliferation of small arms, and the government's limited presence on the ground and its weak enforcement of the law. As a result, conflict continues to undermine socio-economic development in areas such as water, sanitation, forest and environmental management.

Inadequate physical infrastructure in Northern Kenya is a key challenge that must be addressed. Limited access to electricity restricts the scope for investment in water supply and irrigation development, most of the Rural ASAL areas water supplies are distributed using diesel propelled engines which not cost effective in absence of electricity supply.

4.2 Environment

The formulation of the Lands Policy is a key milestone in the environment sector because the administration of land has an impact on the management of the environment. The much legislation on Land use triggers the EMCA 1999 and hence calls for inclusion in their formulation, implementation and reviews. e.g the formulation and implementation of the waste management policy will include both Ministry of local Government and Ministry of Environment.

The recent reorganization of government saw some programmes and projects either split or shared between the Ministry and other Ministries e.g the protection and rehabilitation of catchment areas will be shared with the Ministry of Forestry and Wildlife and Ministry of Water and Irrigation. The Nairobi River Basins programme is being implemented by seventeen institutions (17) with the Ministry of Environment and Mineral Resources taking the lead in coordination. The emerging challenges of pollution, invasive species and climate change call for a multi dimensional approach from all sectors.

The formulation of regulations and standards together with their enforcement involves the communities, police, the judiciary and all the other sector stakeholders. The protection of the water catchments especially the five (5) water towers calls for the involvement of the lands sector due to resettlements, security, education, forestry- for rehabilitation and water to regulate abstraction. The NGOs especially the green Belt Movement and private sector has also strong links in enforcements, and implementation of programmes and projects.

4.3 Forestry and Wildlife

The sub Sector is charged with the responsibility of increasing the forest cover in the Country. Issues of forest cover affect directly the challenge of global warming which is an environmental issue, rehabilitation of the water towers and water catchment areas is a collaborative effort with all those concerned with water. KWS is also currently responsible for management of water catchment areas of Aberdares, Chyulu Hills and Mt. Elgon and Mt. Kenya.

Wildlife is the number one tourism product in Kenya. The travel adversaries and such incidences that affect tourism have a direct influence on wildlife revenue generation. This is true because Kenya Wildlife Service rises on average about 65% of its revenue from tourism activities. Therefore it is works hand in hand with Ministry of Tourism in promoting Kenya as a tourism destination. Wildlife Clubs of Kenya works closely with the Ministry of Tourism especially through the revival of the Domestic Tourism Council of Kenya (DTCK). The Ministry of Tourism also sponsors competition among students especially members of the wildlife clubs during the World Tourism Week.

Infrastructure management (roads, airstrips and bridges) in the National Parks. This is linked to Ministry of roads and infrastructure sector. The Wardens and the Forest Guards undergo paramilitary training. This has a linkage with the Office of the President as the disciplined and armed wing. Universities: - The sub sector carries out major research through KEFRI. Others

include KFS and KWS and hence has collaboration with both local and international universities. Ministry of Agriculture- the Forest officers carry out active forest extension services to farmers and other forest stakeholders to benefit from forest management approaches and technologies. The demand for agro forestry technologies will increase with expansion of on-farm tree growing. About seventy (70) percent of Kenyans live in rural areas. These people have a very strong confidence in medicinal plants in treating various ailments. Most of these plants are found in the forests. Ministry of Science and Technology: Provides guidance in Science technologies and innovation policies. Ministry of Youth –the Ministry carries out participatory forest management and dissemination of research findings that targets the youth and women groups. Ministry of Education- the Ministry has offer the years worked closely with schools through WCK to mobilize for the creation of Wildlife Clubs. The Ministry of Education has allowed WCK to visit learning institutions in the country to educate and create awareness on Environmental Education. Ministry of Heritage- some historical sites are in the protected areas. The Ministry therefore works closely with the Ministry of Heritage to ensure that the sites are well preserved.

Wildlife Corridors

Kitengela Areas and Ngare Ndare Corridors

Throughout Kenya we see human encroachment on migration corridors, habitat fragmentation and poaching. Human populations are increasing and wildlife habitats are coming under increasing “pressure”. Most of the wildlife corridors have been habituated by people and in some areas the corridors are used as agricultural land. This has led communities and landowners expressing hostile and negative attitudes toward wildlife as a result of conflicts, and the numbers of reprisal killings of wildlife are mounting to conflict. Under vision 2030 points to the need to reclaim these corridors to reduce conflict through electric fencing and compensation.

KWS is carrying out official searches on land parcels within the corridor for purposes of negotiations and securing the area. This corridor connects Lewa downs area with Mt. Kenya conservation. KWS is also carrying out survey for registration of an easement and identification of more land to secure.

CHAPTER FIVE:

EMERGING ISSUES AND CHALLENGES

Emerging issues arising from this sector include the climate change, globalization, use of biotechnology and the economic stimulus plan. The major challenges under the sector include environmental degradation, decreasing forests cover, deterioration of water quantity and quality, pollution and waste management, impact of climate change and global warming, inadequate adoption of biotechnology, and lack of integrated environmental planning strategy towards attaining the sustainable development objective. Underlying all these challenges is the need to reform and introduce, where necessary, policy and institutional reforms that will enhance the attainment of comprehensive management of the environment and the related resources.

5.1 Emerging issues

Climate change and Carbon credits:

There is an overwhelming evidence of climate change in Kenya and one of the apparent signals is the rapid disappearance of glacier on Mt Kenya. Other indicators include decline in lake water levels and volumes of river flows, recurrent droughts and floods, rising temperatures and sea levels as well as damage caused by Ultra-Violet (UV-B) radiation to the environment, human and plant health. These elements pose a serious challenge to the country's economic development and food security. The sector is faced with the challenge of addressing the consequences arising from the climate change together with a major challenge in training and capacity building; for example, E-waste, medical waste, abandoned ship and wreckage, containers with toxic materials and oil spill pose a great challenge in their management in modern times and require specialized training and equipment to deal with them. A potential avenue that demands particular attention is exploiting the opportunities brought about by the global carbon trade through Clean Development Mechanisms (CDM), voluntary markets and the Reducing Emissions from deforestation and degradation (REDD).

Global effects

Globalization has had tremendous effect on various processes within the sector. Advancement of Information, communication and technology has enabled instant sharing of information and events, therefore making the reaction to situations immediate. Also, the format of reporting and transmission of data for instance, meteorological, has changed worldwide from Alpha-Numerical to Table Driven Code Format. In this view there is an urgent need to embrace the opportunities presented by the advancement and quickly address the challenges emerging as result. While the free market has created market equilibrium through equitable demand and supply, it also poses danger to the third world countries such as dumping and pollution, if not controlled. The sector should therefore draw policies and establish mechanisms to ensure the environmental quality is not compromised.

Use of biotechnology

Conventional procedures of biotechnology are used in Kenya today. Biotechnology has a big potential in poverty reduction, enhancement of food security and conservation of the environment and biodiversity. The sector should therefore give priority to the provision of relevant infrastructure, framework facilities, and other resources for the rapid and safe development and application of biotechnology. It should aim to ensure that the sector's

biotechnology industry develops in a sustainable way, while getting its benefits to its key areas, including achieving high yields, improved quality, and developing species that are resistant to adverse physiological and climatic elements.

Economic stimulus plan

As the global recession mayhem hits country by country, Kenya has been hit by the recession in no small way. However, this is only one of the several economic hammer blows the economy has suffered from. Some of the other main ones are the post election mayhem, a succession of deficient rains, rampant inflation, coupled with high food prices and rising hunger. There is no guarantee that some of these events will not be experienced again in the country and therefore affect the sector. In response to this, the country has initiated a six month timeline economic stimulus plan project aimed at giving the economy an injection as well as identifying key areas that are underperforming. There is need for the sector to accept and put more consideration to this plan and extend it beyond the six months to provide a vehicle towards the realization of its dual objective of boosting economic and social activity.

Sector based planning and budgeting

The introduction of sector based planning and programme based budgeting has resulted to situations where activities are undertaken in different subsectors which do not have the resources and at times the capacity to implement. For instance the environment sector constructs and maintains roads yet the budget and capacity for this is with the Transport sector. This demands negotiations for these resources which are made difficult due to weak inter sector linkages. In the previous MPER, there were recommendations that the Ministry's gets financing from the tourism sectors to enable KWS carry out domestic and international marketing campaigns, and KFS to get funds from the roads sector for the forest roads and this was not addressed.

Amorphous nature of the sector and frequent subsector reorganizations introduces uncertainties and disrupts consistency in approaches, planning, budgeting and implementation.

5.2 Challenges

The sector faces a number of challenges some of which cut across sub-sectors and are very significant.

5.2.1 Water and Irrigation Sub-sector

Low level of funding:

Despite the critical role played by the water and irrigation sub-sector in economic and social development of the country as acknowledged in the Vision 2030 and the Medium Term Plan (MTP), the sub-sector has been receiving low levels of funding thus hindering implementation of planned projects and programmes, and especially the Vision 2030 flagship and the MTP programmes. For example water storage through the construction of large multipurpose dams for irrigation and provision of water for other uses has not been given priority in the allocation of budgetary resources. This has resulted to poor strategies in dealing with erratic and unpredictable weather changes. Flooding has taken its toll on human life and property and droughts continue

to cause huge losses to human life, including deaths to people and livestock due to inadequate budgetary resources for water storage and floods control

Water Scarcity:

Renewable fresh water per capita stands at 647 cubic meters and is projected to fall to 235 cubic meters by 2025 if supply does not keep up with population increase. There are also regional imbalances in water availability and utilization that must also be addressed. Highland areas, the Coast and the Lake Region have better water access than the ASAL districts. The state of existing water supply systems has been deteriorating to low investment in rehabilitation and expansion to address the high unaccounted for water (currently estimated at 50 per cent) and the growing water demand to improve customer satisfaction especially in urban areas. Water and sanitation coverage has remained very low and especially in rural and Asal areas, and the informal settlements. The distances to the nearest water points pose a challenge particularly to women and girls who bear the responsibility of fetching water. Most time is spent on this activity hence compromising the girls' education and time for other productive activities for the women and makes these people vulnerable to contracting water borne diseases due to consumption of water of poor quality and thus increasing the country's health care budget.

Water Security:

Provision of water throughout the year presents a major challenge. Inadequate water harvesting is responsible for regional imbalance in water security with some parts of the country having a lot of water during rainy seasons and little or no water during dry periods. This is further compounded inadequate water storage infrastructure and extreme climatic changes that cause flooding and immense negative impact on both the social and economic fronts. The realization of food security goal has continued to be elusive due to over reliance on rain fed agriculture. Many socio-economic indicators including food security have been worsening. Currently, about 15.3 million Kenyans are considered to be chronically food insecure. It is also estimated that 2 million people require food relief annually, but the number fluctuates to even over 10 million depending on the severity of drought

Water quality monitoring

The quality of water has deteriorated overtime due to a number of factors such as increased commercial farming activities, rapid industrialization, inadequate capacity for surveillance and laxity in law enforcement. In most cases untreated effluents and chemical waste from various sources are discharged directly into water bodies. This has made the cost of water treatment very expensive and caused increases in water related diseases such cholera and typhoid. Water resources monitoring covers only 30 per cent of the total estimated available supply. This constrains effective water resource planning and management. In the plan period, relevant capacity for surveillance and monitoring trends in water flows and abstraction, industrial effluent discharge and appropriate water use practices will be given a priority.

Water Catchment Management:

Deforestation has caused severe degradation of the country's main water towers as a result of human population increase and intrusion into catchment for settlement and farming. This has led to reduced flows in a number of rivers and lowering of water levels in the lakes thereby disrupting water use activities. The population patterns display in-migrations from the high

potential areas to arid and semi-arid areas as well as from rural areas into urban areas. In non-urban areas, the human population increases have been compounded with increased livestock populations with the net consequences of intense resource use competitions, conflicts, environmental degradation, and poverty. Within the urban areas, this has caused challenges in provision of water and sewerage services. This calls for strategies to bring in sustainable water resources management and protection, and formulation of guidelines and code of practice for groundwater investigation, construction of dams and drilling of boreholes with long life-span, protection of water catchment areas and ground water artificial recharge.

5.2.2 Environment and Mineral Resources Sub-sector

Low Staffing Levels: Low staffing levels in technical cadres, for instance in the Mines and Geological Department and Kenya Meteorological Department and DRSRS is a major challenge affecting implementation of sector projects and programmes.

It is recommended that recruitment of additional technical staff be undertaken to alleviate the shortages.

Uncoordinated policies and institutional frameworks: Inefficient and conflicting policies in the sector are a bottleneck in the implementation of programmes. For instance, the current Mining Act, which was enacted in the 1940s is outdated and does not effectively address issues in the mining sector. Conflicting sectoral policies have also continued to pose a challenge in the execution of sector mandates.

It is recommended that the new Mining and Minerals Act and Mining Policy be concluded in order to facilitate enhancement of investments in development of the mineral sector so that it may contribute more to the GDP.

Low enforcement of environmental regulations and standards: Low capacity for enforcement of environmental regulations and standards, for instance by NEMA is a challenge affecting the execution of the sector mandate. Examples are the water pollution and noise levels regulations which are not adequately enforced due to lack of capacity.

It is recommended that enforcement capacity be enhanced through recruitment of additional staff such as inspectors coupled with provision of monitoring equipment.

Low Investments in the economic instruments in conservation: Investments in economic instruments in the energy sector such as Clean Development Mechanisms (CDMs), Carbon Credits, polluter pays principle are not fully exploited.

It is recommended that economic instruments in conservation be promoted and marketed effectively.

Low investment in environment and mineral resources: There is a low level of investment in the environment and mineral resources which needs to be addressed. For instance, the mineral

sector contributes just over 1% to the GDP yet there is immense mineral potential which needs to be developed.

It is recommended that investments in minerals and other natural resources be enhanced through research and development to provide baseline information followed by aggressive marketing and promotion in local, regional and international forums such as trade fairs, exhibitions and conferences.

Lack of databases for monitoring: The sector generally has inadequate databases. It is recommended that this situation be addressed through creation and maintenance of databases which should be up-dated regularly.

Lack of own office space for the Ministry: it is recommended the ministry be funded to construct its own office.

5.2.3 Forestry and Wildlife Sub-sector

Major challenges face the Forestry and Wildlife subsector include:

Low investments in forestry and wildlife: The funding levels projected in the MTP in line with the Vision 2030 flagship projects are inadequate to deliver the desired outputs within the MTP period. For instance since the operationalisation of KFS the service is yet to undertake a full recruitment process to absorb the hitherto Forest department staff. There are inadequate forest guards and rangers to manage forests and parks. The flagship projects in these sectors are labour intensive and shall require additional funding.

Population increase: Despite steps taken to stabilize human population, Kenya's population has showed a steady increase and is projected to continue increasing over-time. The population patterns display migrations from rural areas into urban areas. In non-urban areas, increase in human population has resulted in increased economic activities as well as livestock populations with the net consequences of intense resource use, competitions, conflicts and environmental degradation. The majority of the population in Kenya relies on forest resources for their energy requirements especially charcoal and firewood. Over eighty percent (80%) of the domestic energy consumption in the country is accounted for by wood-fuel, yet there have been very little efforts to enhance efficiency and sustainability in the wood energy sector. The increased resource competition is an immediate challenge to conservation.

Human Wildlife Conflict and Compensation: Increasing human-wildlife conflict (HWC) is a major problem in wildlife areas. Acute water shortage and inadequate dry season pasture has severely affected wildlife, livestock and humans. As competition for the available resources continues, there have been rising levels of human wildlife conflicts. In addition to climate variability, increased HWCs have been attributed to extending human activities in areas originally preserved for wildlife. Currently, the compensation framework is still contentious and a common understanding is yet to be achieved. In addition, the bureaucratic process followed before the payment of compensation disadvantages a large majority of the rural poor.

Trans-boundary resources management and MEA's: Kenya borders a number of countries and has various shared resources which include rivers, mountains, wildlife and forest ecosystems. These causes conflict in management of the resources resulting from different policies applied by respective governments. For example the transboundary management of wildlife where hunting is prohibited in Kenya and allowed in Tanzania. The management of these resources calls for a concerted and collaborative effort in harmonizing policies and legislations to maintain the integrity of the resources.

Multi-stakeholder involvement: The recent government policy requiring that environmental management and conservation be stakeholders driven, poses a challenge of coordination and benefit sharing. This arises from the diverse interests and policies each of the stakeholders bring on board creating conflicts in the conservation and management efforts. The multi stakeholder's initiative calls for harmonized and coordinated approach.

Environmental Degradation: The quality of the environment is generally declining due to indiscriminate human activities, such as deforestation and conversion of forests to other uses, inappropriate agricultural practices, and overexploitation of natural resources. This has a multiplier effect resulting in climate change leading to unpredictable droughts and floods and therefore impacting negatively on the natural habitat. Further, deforestation has caused severe degradation of the country's main water towers. This has led to reduced flows in a number of rivers and lowering of water levels in the lakes thereby disrupting water and electricity supply. Formulation of guidelines and code of practice for utilization of natural resources, harmonization of policies and legislations as well as enforcement need to be prioritized.

Monitoring of Resources: The sector faces the challenge of assessing and monitoring the country's natural resources which, include, water, forests, wildlife and minerals. Baseline data and information to guide sector decision making is inadequate. In addition there is inadequate capacity to monitor status of the resources. In the plan period, relevant capacity for assessing and monitoring trends in water flows and abstraction, status of forests and wildlife and minerals will be given a priority. The sector requires to put into place monitoring mechanisms.

Climate change and Carbon credits: There is an overwhelming evidence of climate change in Kenya and one of the apparent signals is the rapid disappearance of glacier on Mt Kenya. These elements pose a serious challenge to the country's economic development and food security. The challenge of addressing the consequences arising from the climate change together with a major challenge in training and capacity building; specialized training and equipment to deal with them. Forestry and wildlife resources are particularly prone to adverse impacts of climate change and the sector faces a key challenge in developing adaptation and mitigation measures to counter the impacts.

CHAPTER SIX: RECOMMENDATIONS

Water and Irrigation Subsector

For the next three years, the following steps will be taken by the sub-sector in order to achieve its policy objectives and to be able to properly address the challenges identified report.

1. Increase investment for construction of water storage facilities, namely large and small dams and water pans to boost water storage capacity for irrigation, floods control, domestic and industrial use. Increased investments in water storage and irrigation development are necessary and indispensable in reducing Kenya's dependence on rain-fed agriculture particularly during these times of erratic weather patterns caused by climate change. The unpredictable water crisis (drought and floods) that faces the country from time to time is normally due to unfavorable weather conditions and lack of investment in water storage infrastructure.
2. Develop a water storage investment plan to be financed with participation of the public private sector partnership to move water storage from 5.3m³ to 16 m³ by 2012. This will be aimed at increasing water storage and area under irrigation to assist in crop production which is independent of weather conditions to cushion the country against food insecurity which results to food imports, expensive food relief operations and water rationing trucking.
3. Build the capacity of Water Resources Management Authority (WRMA) to be able to cope with the challenges of water resources management and protection including water quality surveillance, monitoring and enforcement of standards.
4. Intensify exploitation of the country's irrigation potential which currently stands at 539,000 hectares, out of which only 114,600 hectares have been exploited due to inadequate investment financing on water storage facilities, low participation of stakeholders and deterioration of the existing irrigation infrastructure. Exploitation of this potential would significantly contribute to national food production and security through improvement in production of crops such as sugar, rice, horticulture, maize and other food crops. This will require expansion of irrigable land by at least 40,000 hectares per year in line with the irrigation policy.
5. Increase investment in construction, expansion and rehabilitation of urban and rural water supplies to cope with the growing demand of water for domestic use which has resulted to water rationing, water trucking and water use conflict due to scarcity. The country is behind the MDGs targets on water and sanitation in both rural and urban areas but worst in rural areas and the informal urban areas. Increasing coverage will require construction of new water facilities, rehabilitation and argumentation of existing water supplies and drilling of additional boreholes. It will also require expansion of sewerage facilities for both save and good living environment. It is planned that at least 3 million people in

these areas need to be served with clean potable water and gain access to sanitation annually if the country is to achieve MDGs and meet Vision 2030 objectives.

Proposed critical areas of investment in 2010/11 financial Year:-

1. Scaling up water storage to improve water security increase storage capacity through construction additional water storage infrastructure. The ongoing 5 dams will require **Kshs4.3 billion** to service the ongoing contracts in 2010/11 and **Kshs3.5 billion** to start construction of 9 other dams.
2. Scaling up irrigation in order to reduce dependence of rain-fed agriculture to address food security. To up scale the area under irrigation from the current 2,000 hectares to 40,000 hectares yearly targeting public and smallholders' irrigation schemes for food security and reduce reliance on rain fed agriculture, **Kshs 5.0 billion** is required annually.
3. Increasing water coverage to achieve MDGs. This will require construction of new water facilities, rehabilitation and augmentation of existing water supplies, expansion of sewerage facilities i.e. urban water supply in 26 towns, 180 rural water supply schemes, and informal settlements in major urban areas; and the Mzima pipeline rehabilitation and augmentation). At least 3 million people are targeted to be served with clean potable water and gain access to sanitation at a cost of **Kshs6.5 billion** in the 2010/11 FY.
4. Catchment conservation through the implementation of the Catchment Management Strategies, WRMA institutional capacity strengthening, Water Quality and pollution control and Water Resource Assessment at **Kshs1.0 billion**, including possible Artificial Ground Water Recharge (aquifers) in Nairobi, Tiwi, L. Naivasha, Merti, North Eastern, Kabatini, Rongai.

Environment and Mineral Resources

- The Ministry's contribution to the economy can be enhanced further and current situation can be rectified if the programmes and measures stipulated to address the constraints are well implemented and adequate budgetary resources provided/generated.
- There is urgent need to continue with the structural reforms e.g delinking KMD from the mainstream Civil Service to a Semi – Autonomous Government Agency (SAGA) called Kenya Meteorological Agency (KenyaMET). The de-linked KMD will be able to offer more efficient and effective services and will have legal framework on which to generate and source for funds within and outside the country. The proposed model of a de-linked KMD will adopt the "Partially Public" meteorological service model, used by most de-linked meteorological services in the world. Under this model, the Government will provide 75% of the total budget to support basic meteorological services provided to Government Ministries and weather forecasts for Public Good. The balance of 25% will be generated through

commercial services provided under the legal framework to the various key sectors i.e. aviation, shipping, tourism and other specialized customer tailored weather products users.

- It is worth noting that, in the last 30 years, settlement has taken a more complex pattern with movements of people from high to low potential lands, compounded by rapid rural-urban migration. The rapid rural-urban migration has led to unplanned/slum settlements, especially in the major urban centres, while the drift to the marginal areas has led to degradation of the fragile ASAL ecosystems. The encroachment on ASALs by people from the high potential lands has also resulted into land use conflicts especially between agriculturalists and pastoralists as well as increased human-wildlife conflicts.
- The Ministry is proposing the growing of 7.6 million tree seedlings in the next 10 years by identifying a school per constituency per year to grow trees to increase the forest coverage.
- The Ministry also requires to construct a Head Office.
- Global environmental trends, increasing migration, information communication technology (ICT) as well as a number of other local and external factors have affected management of environment and natural resources, both positively and negatively. Cognisant of the environmental challenges facing the country, the Ministry through its Directorate and Technical Departments will continue to take necessary interventions with a view to achieving the following:
 - Increased effectiveness in implementing Environmental Management & Coordination Act 1999; with universal compliance for completion of Environmental Impact Assessments (EIA), Strategic Environmental Assessments (SEA) and Environmental Audits (EA) and demonstrate their value in ensuring positive environmental outcomes;
 - Ensuring universal compliance and enforcement of environmental regulations, guidelines and standards; enabled by prioritising secondary legislation.
 - Prosecution of offenders failing to meet the provisions of EMCA (1999), environmental standards, regulations, and guidelines;
 - Coordination of environmental matters amongst all lead agencies/stakeholders;
 - Functioning District and Provincial Environment Committees to ensure cost-effective and efficient implementation of National, Provincial and District Environmental Action Plans;
 - Enhanced awareness, debate and action on the environment in all sectors leading to attitude change and acceptance that environmental management is a shared responsibility;
 - Effective environmental planning, research, inventorying and monitoring;
 - Conducting periodic evaluations of environmental interventions, such as invasive weed removal in Lake Victoria, plans for dealing with hazardous waste (such as nuclear waste)
 - Implementation of actions in the Multilateral Environment Agreements;
 - Integration of environmental concerns into national development policies, plans and programmes – increasingly called “Mainstreaming”;

- Providing the secretariat for the Kenya Strategic Investment Framework (KSIF) for Land Degradation under the TerreAfrica programme of NEPAD / World Bank
- Coordinated management of environmental disasters and restoration;
- Establishment of an award scheme for best environment practices among individuals and among organizations at district, provincial and national levels.

Forestry and Wildlife subsector

- There is need to increase investments in forestry and wildlife development and conservation. Forestry contributes 3.5% of GDP (Preliminary FRA-FAO/UN) excluding environmental services and wildlife in tourism which is higher than the 1% of GDP as perceived. Investments in this subsector will result to increased contribution to GDP.
- Additional investments are required to ensure rehabilitation of the five water towers (Mau, Mt.Kenya, Mt.Elgon, Cherangany and Aberdares), reclamation of wildlife corridor and a migratory routes and upgrading of Premium parks. These are flagship programmes which are labour intensive.
- As the government continues to increase the improvement and sustainability budgets, efforts should be made to encourage development partners to assist in protection, afforestation promotion of forestry and wildlife activities. In addition promote on farm and dryland forestry.
- The sector should enhance support to build fences around the protected areas.
- The sector to strengthen and harmonize bilateral and multilateral forestry and wildlife agreements.
- Treasury to provide funds to absorb all KFS staff for harmonious working relationship.
- A potential avenue that demands particular attention is exploiting the opportunities brought about by the global carbon trade through Clean Development Mechanisms (CDM), voluntary markets and the Reducing Emissions from deforestation and degradation (REDD).
- In lieu of realizing the inadequate funding and a big financial gap between allocation and requirement, it is prudent for Treasury to include a conservation levy in the use of our natural resources e.g. water, mining ,tourism ,energy among others.

CHAPTER SEVEN: CONCLUSION

Water and Irrigation

Kenya suffers from water scarcity since demand outstrips the stock of renewable freshwater. The current water supply is inadequate with only 57 per cent of households using water from sources considered safe. There are disparities in urban water access with informal settlements recording lower levels. Surface water resources account for 86 per cent while ground water accounts for 14 per cent. Trans-boundary waters constitute 54 per cent of water resources in the country. The government remains conscious and committed to trans-boundary water management frameworks aimed at enhancing the socio-economic development of the people. Likewise, strategies for inter-basin water transfer will be considered.

The average annual rainfall in Kenya varies from about 250 mm in the ASAL areas to 1800 mm in the Lake Victoria region. The country's water endowment is also low and currently stands at 647 cubic metres per capita per year hence Kenya's classification as a water scarce country. In recognition of the importance of sustainable management of water resources, the government initiated reforms in the sector through the enactment of the Water Act 2002. Further, the government, together with other riparian countries within the Nile Basin has developed the Nile Basin Cooperative framework for development and management of the shared water resources particularly Lake Victoria.

The available water is often inadequate for industrial, commercial, domestic as well as livestock and wildlife use. This scarcity has intensified competition among various users and often results to conflicts. Involvement of local communities in the management of water resources through formation of Water Resource Users Association (WRUAs) has resulted in reduced illegal abstractions, reduced catchments encroachment, rehabilitation of catchments areas and river bank protection. A positive outcome has been observed in River Ewaso Nyiro North which is flowing up to 110 km as opposed to previous flow of 40 km, and the flow is for a longer period of time.

Water is also a vital requirement in hydro-power generation as hydro-power accounts for 72 per cent of the country's electrical power generation. Geothermal power production and its sustainability are largely dependent on natural ground water recharge. The government has implemented far reaching reforms in the Water sector within the legal framework provided by the Water Act 2002. Various water institutions have been established effectively separating the functions of policy formulation, service delivery and regulation of the water supply and sanitation and resources. Due to the reforms that have been instituted in the sector the water services provision has steadily improved which needs to be sustained with increased investment in infrastructure rehabilitation and expansion. The present infrastructure is dilapidated and is leading to massive water loss in the form of uncounted for water (UFW).

To achieve the goal of increasing the area under irrigation to 1.2 million hectares and to improve efficiency over the next five years, it will be necessary to finalise the policy, legal and

institutional framework for irrigation and also develop a national irrigation master plan. This will indicate priority areas and also promote coordination of irrigation projects in the country in a manner that will empower communities and also allow private sector participation, where necessary. The existing schemes will, therefore, need to be rehabilitated and expanded while new ones are put in place. Empowering communities to manage their schemes and thereby increase productivity to optimum levels will achieve increasing the sustainability of irrigated and drained areas. Investment in human resource capacity development will be important to achieving this end.

Currently only 114,600 hectares (about 20 per cent of irrigable land) have been utilized for agricultural production. It is therefore prudent to construct more water storage facilities towards increasing land area under irrigation. In addition, increase area under drainage to 90,000 hectares by 2012, and these facilities will contribute to flood control and reduce associated environmental costs that mainly impact heavily on the rural poor. Programmes designed to increase water and irrigation in the rural areas include Groundwater resources and Hydro geological Mapping in Turkana and Marsabit districts as well as strengthening water resources data and information for resource management programmes to increase total volume of water through reduced encroachment to catchments areas and rehabilitation and protection of river basins will be implemented. Increase of water storage and harvesting for flood control will increase water supply in the rural areas. Construction of multi-purpose dams, rehabilitation/drilling of boreholes, development of water pans and improvement of sanitation and improved environmental pollution are some of the programmes designed to increase water supply for domestic, livestock and irrigation in ASAL areas.

The National Environmental Sanitation and Hygiene policy gives the basic policy framework in implementing sanitation and hygiene activities in Kenya. The School Water, Sanitation and Hygiene (WASH) policy and guidelines emphasize specific issues that must be considered in school environments. Development of water supplies has not been matched by a corresponding increase in facilities of sanitary disposal of wastewater. As a result, wastewater is discharged into mainstream rivers, valley depressions and dams leading to high pollution levels. In addition, main sewer systems suffer from constant breakages and/or leakage due to increased discharge to fixed systems.

The national sanitation coverage increased from 45 per cent in 1990, to 48 per cent in 2006. Difference in access to adequate sanitation between urban and rural environments still persists, with the formally planned urban areas being better served than rural areas, and urban informal settlements. Approximately 80 per cent of the outpatient hospital attendance in Kenya is due to preventable diseases while 50 per cent of these are water, sanitation and hygiene related. Hygiene and sanitation are also major determinants of poverty, disproportionately affecting women and children. Safe sanitation is critical to improvement of health of the population. The policy in implementation of all water supply project now lays emphasis on including sanitation components both rural and urban water supply.

Environment and Mineral Resources

For the next three years, the following steps should be taken by the Ministry in order to achieve its stated policy objectives and to be able to properly address the constraints identified in this review.

- The Ministry should be allowed to recruit technical staff to replace those leaving the service.
- The share of the recurrent budget allocated to O&M to be reviewed upwards especially for the DRSRS and Mines and Geological Departments.
- The finalization of the *Mineral and Mining policy* and the review of the Mining legislation should be speeded up to enable the sectors to operate efficiently.
- Adequate funds should be provided for the operationarization of the institutions established under the EMCA (*Public Complaints Committee and National Environment Tribunal*)
- Continued and strengthening of skills development and post-graduate training especially mineral statisticians / economists to assist in preparation of reports and information.

- The accurate and timely weather products from KMD enable the Government to offer early warning for safety of life and protection of property on weather-related hazards, plan for greater productivity, facilitate information for efficient use of natural resources and as such achieve better management in their utilization. This results in Government achieving its strategic objectives of growth, productivity and generation of revenue for enhancement of service delivery to the people. Better quality products from KMD would therefore, assist the Government in conservation of the natural environment by giving indicators of environment pollution and climate change/variability through modern and efficient monitoring, measurement and observations of the necessary weather parameters.

- The Kenya Meteorological Department's fear is that, the regional centers being sponsored by International Organizations and housed at KMD might end up being relocated from Kenya to other countries. This will lead to Kenya losing its leading role as a centre of excellence in meteorology in the region and Africa in general and hence reflect negatively on the status of Nairobi being a communications and travel hub in the region. This will result into lose of prestige and revenue to Kenya. KMD's regional responsibilities in meteorology are therefore, at a very high risk of being assigned to other countries in the region. However, as mentioned earlier, KMD being a service Department to other key sectors of the economy can therefore be regarded to have contributed to the success of the core poverty reduction programmes. The fundamental fact is that these sectors require KMD's services. For instance,
 - The aviation industry, where it is estimated that KMD contributes to the earnings of 25% of the Air Navigation charges collected by Kenya Civil Aviation Authority (KCAA) formerly DCA.
 - 10% of the earnings collected by Kenya Airports Authority (KAA) in landing and taking off fees at the airports.
 - In Agriculture and Food Security management, it is estimated that KMD advisories and forecasts can contribute to more than 50% increase in earnings if used appropriately and timely.

- KMD provides free services to defence forces and especially Kenya Air force where it has full-fledged meteorological forecasting and observation offices.
- KMD as the designated Tsunami Early Warning Centre is linked to the National Disaster Operation Centre (NOC) at the Office of the President and issues information for Disaster Preparedness and Mitigation in support of the Hyogo Framework on Disaster Risk reduction.

Forestry and Wildlife

In conclusion, despite the fact that most of the Ministry's budget is directed to SAGAs, the funds still address priority areas of the Ministry which are forestry and wildlife conservation. However the funding need to be increased in line with the number of listed programmes to support vision 2030. The Vision 2030 recognises the forestry and Wildlife sub-sector to spearhead the country's journey into the category of middle-income status by 2030. High targets have consequently been set for the sub sector towards this goal and the achievement of these goals needs financial commitment from the Government as well as cooperation from other stakeholders. Of major concern is the rehabilitation of the Mau Forest Complex. The invasion of the forest has affected adversely the water levels in major rivers and also directly affected the communities who relied on the Mau for provision of water for consumption and livestock. For the sub sector to remain on course a number of projects have to be initiated immediately and the Ministry needs enough funds to implement its component of the flagship projects.

APPENDICES

APPENDIX 1: Analysis of Recurrent and Development Expenditure

1.1 Water and Irrigation

	Approved Estimates			Actual Expenditure		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Recurrent – GoK	3,013.8	3,608.6	4,677.1	2,928.8	3,574.1	4,128.1
Development – GoK	5,884.0	4,991.0	9,090.0	5,318.0	4,950.0	9,041.0
Total Expenditure (D+R)	8,897.8	8,599.6	13,767.1	8,246.8	8,524.1	13,169.1
Donor	4,206.1	8,189.3	10,307.0	2,234.9	4,377.8	6,375.8
Total Exp. (D+R+Donor)	13,103.9	16,788.9	24,074.1	10,481.7	12,901.9	19,544.9
Recurrent as % of Total GoK Ministry's Expenditure	23.0	21.5	19.4	27.9	27.7	21.1
Development as % of Total GoK Ministry's Expenditure	77.0	78.5	80.6	72.1	72.3	78.9

1.2 Environment and Mineral Resources

	APPROVED ESTIMATES			ACTUAL EXPENDITURES		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Recurrent	1,841	1,836	2,164	1,730	1,743	1,978
Development	923	1,464	1,254	610	630	1,188
Total Expenditure	2,764	3,300	3,418	2,340	2,373	3,166
Recurrent as % of Total Sector's expenditure	67%	56%	63%	74%	73%	62%
Development as % of Total Sector's expenditure	33%	44%	37%	26%	27%	38%

1.3 Forestry and Wildlife

	APPROVED ESTIMATES			ACTUAL EXPENDITURES		
	2006/2007	2007/2008	2008/2009	2006/2007	2007/2008	2008/2009
Recurrent	N/A	3,289	3,705	N/A	3,158	3,501
Development	N/A	2,201	1,883	N/A	872	1,508
Total Expenditure	N/A	5,491	5,587	N/A	4,030	5,008
Recurrent as a % of Total Budget	N/A	60%	66%	N/A	78%	70%
Development as a % of Total Budget	N/A	40%	34%	N/A	22%	30%

APPENDIX 2: Analysis of Expenditures by Economic Classification

Water and Irrigation

Analysis of Expenditures by Economic Classification (Kshs. Millions)

Recurrent Budget	Approved Estimates			Actual Expenditure		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Compensation of Employees	1,351.0	1,594.0	1,764.0	1,302.0	1,577.0	1,523.0
Use of Goods and Services	850.8	1,057.8	1,853.1	832.8	1,048.1	1,616.1
Subsidies, Grants and Other Transfers	621.0	733.0	812.0	613.0	727.0	701.0
Acquisition of Non-financial Assets	191.0	224.0	248.0	181.0	222.0	212.0
Total Recurrent Budget	3,013.8	3,608.8	4,677.1	2,928.8	3,574.1	4,171.2
Development Budget						
Compensation of Employees	-	-	-	-	-	-
Use of Goods and Services	588.0	499.0	781.0	532.0	495.0	780.0
Subsidies, Grants and Other Transfers	1,765.0	1,497.0	2,342.0	1,595.0	1,485.0	2,342.0
Acquisition of Non-financial Assets	3,531.0	2,995.0	5,967.0	3,191.0	2,970.0	5,919.0
Total Development Budget	5,884.0	4,991.0	9,090.0	5,318.0	4,950.0	9,041.0

APPENDIX 3: Analysis of Expenditures by Programmes

Water and Irrigation

Analysis of Expenditures by Programmes (Kshs. Millions)

	Approved Estimates			Actual Expenditure		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Programme Name – Water Supply and Sewerage /Sanitation services						
Recurrent Budget	2,283.8	2,725.6	3,724.1	2,225.8	2,720.1	3,306.1
Compensation of Employees	986.0	1,152.0	1,288.0	950.0	1,151	1,192.0
Use of Goods and Services	705.8	881.6	1,662.1	691.8	878.1	1,452.1
Subsidies, Grants and Other Transfers	453.0	530.0	593.0	451.0	529.0	511.0
Acquisition of Non-financial Assets	139.0	162.0	181.0	133.0	162.0	155.0
Development Budget	4,943.0	4,192.0	6,558.0	4,467.0	4,158.0	6,481.1
Compensation of Employees	-	-	-	-	-	-
Use of Goods and Services	494.0	419.0	656.0	446.0	416.0	648.0
Subsidies, Grants and Other Transfers	1,483.0	1,258.0	1,967.0	1,340.0	1,247.0	1,901.1
Acquisition of Non-financial Assets	2,966.0	2,515.0	3,935.0	2,681.0	2,495.0	3,932.0
Total Expenditures	7,226.8	6,917.6	10,282.1	6,692.8	6,878.1	9,787.1
Programme Name – Water Resources Management and Water Storage						
Recurrent Budget	378	442	494	364	442	426
Compensation of Employees	189	221	247	182	221	213
Use of Goods and Services	75	88	99	73	88	85
Subsidies, Grants and Other Transfers	87	102	113	84	102	99
Acquisition of Non-financial Assets	27	31	35	25	31	29
Development Budget	647	549	2,142	600	545	2,170
Compensation of Employees	-	-	-	-	-	-
Use of Goods and Services	65	55	86	58	54	86
Subsidies, Grants and Other Transfers	194	165	258	190	163	258
Acquisition of Non-financial Assets	388	329	1,798	367	328	1,753
Total Expenditures	1,025	991	2,636	964	987	2,596
Programme Name – Provision of Irrigation and Drainage Infrastructure						
Recurrent Budget	352	441	459	339	410	396
Compensation of Employees	176	221	229	170	205	198

Use of Goods and Services	70	88	92	68	82	79
Subsidies, Grants and Other Transfers	81	101	106	78	94	91
Acquisition of Non-financial Assets	25	31	32	23	29	28
Development Budget	294	250	390	266	249	390
Compensation of Employees	-	-	-	-	-	-
Use of Goods and Services	29	25	39	27	25	39
Subsidies, Grants and Other Transfers	88	75	117	80	75	117
Acquisition of Non-financial Assets	177	150	234	159	149	234
Total Expenditures	646	691	849	605	659	786
Total R+ D Expenditures	8,897.8	8,599.6	13,767.1	8,261.8	8,524.1	13,169.1

APPENDIX 4: Donor Sources of Finances

4.1 Water and Irrigation

Donor Sources of Finances (Kshs. Millions)

	Approved Estimates			Actual Expenditures		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Donor	4,206.1	8,189.3	10,307.0	2,234.9	4,377.8	6,375.8
Revenue	764.9	1,905.4	4,159.5	581.5	1,493.6	2,218.7
Loan	445.6	142.0	2,329.2	361.6	130.4	1,051.5
Grant	319.3	1,763.5	1,830.3	220.0	1,363.2	1,167.2
A-in-A	3,441.2	6,283.9	6,147.5	1,653.4	2,884.2	4,157.2
Loan	1,424.4	3,534.4	4,622.5	843.7	2,338.6	3,726.7
Grant	2,016.8	2,749.5	1,525.0	809.7	545.6	430.5
Other (<i>specify</i>)	-	-	-	-	-	-
Total	13,103.9	16,788.9	24,074.1	10,481.7	12,901.9	19,544.9

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