



**REPUBLIC OF KENYA**

**MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES**

**DRAFT NATIONAL WETLANDS CONSERVATION AND MANAGEMENT POLICY**

**JULY 2013**



## **EXECUTIVE SUMMARY**

Wetlands are natural or man-made areas that are seasonally or permanently flooded with water and include swamps, marshes, bogs, shallow lakes, ox-bow lakes, dams, riverbanks, floodplains, water catchment areas, fishponds, rice paddies, lakeshores, mangroves, sea grass beds, deltas, estuaries, coral reefs and seashores. In Kenya, wetlands occupy about 3% to 4% of the land surface, which is approximately 14,000 km<sup>2</sup> and fluctuates up to 6% during the rainy seasons.

Kenya ratified the Ramsar Convention on Wetlands of International Importance in 1990. The convention obligates contracting parties to formulate and implement their planning so as to promote the conservation of wetlands. The process of developing this policy started in 1997 culminating in the publication of the Draft National Wetlands Conservation and Management Policy in April 2008. The draft policy was further subjected to a series of multi-stakeholder consultative process in order to align it to the Constitution of Kenya 2010.

Wetlands contribute directly and indirectly to the national economy through provisioning, supporting, regulatory and cultural services. The Government of Kenya has made significant strides towards the formulation of this policy and supported the development of the Kenya Wetlands Atlas (2012) which maps the country's wetland resources. A master plan for the conservation and sustainable management of water catchment areas in Kenya has also been developed to guide practical and transformative actions for the sustainable management of these complex ecosystems. Furthermore, a nationwide inventory of wetlands to take stock of the resources, challenges and opportunities for their sustainable development and management is ongoing. This policy also fulfills the aspirations of the Constitution, Kenya's Vision 2030, the National Land Policy and the Draft Environment Policy 2013.

Wetlands contribute directly and indirectly to the national economy through provisioning, supporting, regulatory and cultural services. However, wetlands continue to face a myriad of challenges including reclamation and encroachment for agriculture, settlement and industrial development; invasive and alien species; pollution and eutrophication. Other key challenges include ownership of wetlands, overlapping institutional mandates, inadequate resources, inadequate linkage between research, planning and policy development.

The goal of this policy is to ensure wise use and sustainable management of wetlands in order to enhance sustenance of the ecological and socio-economic functions of Kenya's wetlands for the benefit of present and future generations. This is based on the principles and values of, among others, wise use, precautionary principle, public participation, devolution and ecosystem based management, taking cognizance of the national and international cooperation.

This policy therefore sets out policy statements on how the Government intends to address wetland conservation and management challenges with the following objectives:

- i. To establish an effective and efficient institutional and legal framework for integrated management and wise use of wetlands.
- ii. To enhance and maintain functions and values derived from wetlands in order to maintain ecosystem goods and services protect biological diversity and improve livelihood of Kenyans.
- iii. To promote communication, education and public awareness among stakeholders.
- iv. To improve scientific information and knowledge base on Kenyan wetland ecosystems.
- v. To strengthen institutional capacity on conservation and management of wetlands.
- vi. To promote innovative planning and integrated ecosystem management approaches towards wetlands conservation and management in Kenya
- vii. To promote partnership and cooperation at county, national, regional and international levels for the management of transboundary wetlands and migratory species.

## TABLE OF CONTENTS

|  |    |
|--|----|
| <b>EXECUTIVE SUMMARY</b> .....   | 3  |
| TABLE OF CONTENTS .....  | 5  |
| <b>1.0 INTRODUCTION</b> .....  | 11 |
| 1.1 GOAL, PRINCIPLES AND OBJECTIVES .....  | 13 |
| Goal.....  | 13 |
| Guiding Principles and Values.....   | 13 |
| <b>2.0 IMPORTANCE OF WETLANDS</b> .....  | 15 |
| 2.1 Ecological Importance.....   | 15 |
| 2.1.1 Flood Control and Soil Erosion Prevention: .....                                   | 15 |
| 2.1.2 Water Discharge and Recharge:.....   | 15 |
| 2.1.3 Water Purification, Nutrient and Natural sinks for pollutants.....                 | 15 |
| 2.1.4 Climate change mitigation and adaptation.....                                      | 15 |
| 2.1.5 Wildlife Habitats and Centers of Biodiversity: .....                               | 16 |
| 2.1.6 Prevention of Saline Water Intrusion: .....  | 16 |
| 2.1.7 Special values of seasonal wetlands .....  | 16 |
| 2.2 Socio-economic importance .....  | 16 |
| 2.2.1 Energy Production.....   | 16 |
| 2.2.2 Transport and Communication .....  | 16 |
| 2.2.3 Religious and Cultural Significance .....  | 17 |
| 2.2.4 Tourism and Recreation: .....  | 17 |
| 2.2.5 Sources of water .....   | 17 |
| 2.2.7 Fish and other food products:.....   | 17 |
| 2.2.8 Soil and Minerals.....   | 17 |
| 2.2.9 Animal and Plant Products:.....  | 17 |
| 2.3 Research and Education .....   | 18 |
| <b>3.0 CHALLENGES AND POLICY STATEMENTS IN WETLAND CONSERVATION AND MANAGEMENT</b> ..... | 19 |
| 3.1 Wetland Degradation.....   | 19 |
| 3.1.1 Reclamation and Conversion of wetlands .....                                       | 19 |
| 3.1.2 Restoration and Rehabilitation of Degraded Wetlands .....                          | 20 |
| 3.1.3 Overexploitation of wetland goods and services.....                                | 20 |
| 3.1.4 Pollution of wetlands .....  | 20 |
| 3.1.5 Alien and Invasive Species .....   | 21 |
| 3.2 Conservation and Management .....  | 21 |
| 3.2.1 Management of wetlands under the diverse Land Tenure Systems.....                  | 21 |
| 3.2.2 Management of Wetlands outside Protected Areas.....                                | 22 |
| 3.2.3 Managing Wetlands of International Importance .....                                | 22 |
| 3.2.4 Managing man-made Wetlands.....  | 23 |

|  |           |
|--|-----------|
| 3.2.5 Managing Trans- boundary Wetlands.....                                     | 23        |
| 3.3 Research, Education and Awareness .....                                      | 23        |
| 3.3.1 Inventorying, Monitoring and Information Systems.....                      | 23        |
| 3.3.2 Capacity and Human Resource Development.....                               | 24        |
| 3.3.3 Education and Public Awareness .....                                       | 24        |
| <b>4.0 LEGAL AND INSTITUTIONAL ARRANGEMENTS.....</b>                             | <b>26</b> |
| 4.1 Legal and Institutional Framework. ....                                      | 26        |
| 4.2 Resource Mobilization .....  | 27        |
| <b>5.0 LINKAGES AT COUNTY, NATIONAL, REGIONAL AND INTERNATIONAL LEVELS .....</b> | <b>28</b> |
| 5.1 Coordination and linkages in wetland management.....                         | 28        |
| 5.2 Mainstreaming Gender, Youth and Special Groups.....                          | 28        |
| 5.3 Non-State Actors.....  | 28        |
| 5.4 Public Health and HIV/AIDs .....   | 29        |
| 5.5 Promoting International obligations.....                                     | 29        |

## Glossary of terms

**“Agriculture”** means all farming activities including cultivation, agro-forestry, bee keeping, livestock management and aquaculture;

**“Alien and invasive species”** means a species that is not an indigenous species or an indigenous species trans-located to a place outside its natural distribution range in nature;

**“Alteration”** means any man-made change in the natural state of a wetland;

**“Beach”** means a geological landform of loose particles often composed of rock, sand, gravel, shingle, pebbles or cobble, found at the landward margin of a lake or coast line, the lower limits approximating to the position of the highest and lowest tidal water levels;

**“Benefit sharing”** means the sharing of benefits that accrue from the utilization of genetic resources;

**“Biodiversity”** means the variability among living organisms from all sources including ecosystems and the ecological complexes of which they are a part. It encompasses the ecosystem, species and genetic diversity;

**“Community”** means community of people living in a defined geographical area and identified by common history, common culture or common residence in an area, and may comprise of representative members of the organized institutions in the private sector or members of the civil society who use wetland resources;

**“Conservation Area”** is any area (including national parks and reserves) wholly or partially designated and approved for conservation of wildlife.

**“Conservation”** means the protection, maintenance, rehabilitation, restoration and enhancement of the environment for sustainable use;

**“Drainage of wetlands”** means the removal or exclusion of water from a wetland by pumping, excavation of channels, planting of fast growing non-wetland trees or plants, abstraction of water from a river entering a wetland, channeling, or reclamation;

**“Endangered species”** means any species which is in danger of extinction throughout all or a significant portion of its range due to man-made or natural changes in the environment or as may be declared by the relevant national authority;

**“Environmental Impact Assessment”** means a systematic examination conducted to determine whether or not an activity or project will have any adverse impacts on the environment;

**“Endemic species”** means plants and animals that are peculiar to a particular habitat, area, or region and are not found in other places;

**“Genetic resource”** means any genetic material of plant, animal, microbial or other origin containing functional units of heredity;

**“Hunting”** includes the doing of an act immediately directed at killing, wounding, injuring or capture of any animal and the taking or willful interference with any nest, lair or other place where a dependent young animal is born, hatched, or reared;

**“In-situ”** means in the natural or original place or position where flora or fauna occurs

**“Inventory”** means a detailed list, report or record of resources, or the process of making such a list, report or record;

**“Lake”** means a body of fresh or salt water of considerable size, completely surrounded by land, or a natural body or pool of water;

**“Lakeshore”** means the rising ground from the highest normal water mark, bordering or adjacent to a lake in the form of rock, mud, gravel or sand;

**“Livestock”** includes cattle, horses, donkeys, mules, pigs, sheep, goats, camels and all other domesticated animals;

**“Low tide”** means the historical recorded point of the lowest level of contact between the water and the shore or the bank as the case may be mostly for large water bodies or coastal wetlands;

**“Management plan”** means a management plan for a wetland, riverbank, lakeshore or seashore.;

**“Natural capital”** include resources of the land, air, water, animals and plants including their aesthetic qualities;

**“Natural resources”** means the physical, non-human factors and components whether renewable or non-renewable including-surface and ground water, forests and wildlife;

**“Payment for Ecosystem Services (PES)”** means market-based approach to conservation based on the twin principles that those who benefit from environmental services (such as users of clean water) should pay for them, and those who generate these services should be compensated for providing them;

**“Polluter Pays Principle”** means that the cost of cleaning up any element of the environment damaged by pollution, compensating victims of pollution, cost of beneficial uses lost as a result of an act of pollution and other costs that are connected with or incidental to the foregoing, is to be paid or borne by the polluter;

**“Pollution”**, means any direct or indirect alteration of the physical thermal, chemical or biological properties of the water resource:

**“Pre-cautionary Principle”** is the principle that where there are threats of damage to the environment, whether serious or irreversible, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation;

**“Protected Area”** means an area declared to be a protected area under the applicable law;

**“Restoration”** means regeneration or putting back a wetland, riverbank or lake shore or sea shore to the state it was in or near to what it was before it was modified;

**“River bank”** means the rising ground from the highest normal water mark, bordering or adjacent to a river in the form of rock, mud, gravel or sand and in cases of flood plains include the point where the water surface touches the land, that land not being the bed of the river;

**“River”** includes a permanent and seasonal river;

**“Seasonal wetlands”** means areas occasionally flooded by water during certain periods of time in a year;

**“Strategic Environmental Assessment”** refers to a range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter linkages with economic and social considerations;

**“Sustainable use”** means present use of the environment or natural resources which does not compromise the ability to use the same by future generations or degrade the carrying capacity of supporting ecosystems;

**“Swamp”** means any shallow depression on which water collects either intermittently or permanently and where there is a small depth of surface water or a shallow depth of ground water and a slight range of fluctuation either in the surface level of the water or of the ground water level so as to permit the growth of aquatic vegetation;

**“Water Catchment Areas”** means areas from which rain water flows into a water course;

**“Water”** includes drinking water, river, stream water course, reservoir, well, dam, canal, channel, lake, swamp, open drain or underground water;

**“Wetlands”** means areas of land that are permanently or occasionally water logged with fresh, saline, brackish, or marine waters, including both natural and man-made areas that support characteristic plants and animals the depth of which at low tide should not exceed 6 metres. These include swamps, marshes, bogs, shallow lakes, ox-bow lakes, dams, riverbanks, floodplains, rice paddies, water catchment areas, fishponds, lakeshores and seashores. They also include coastal and marine wetlands such as deltas, estuaries, mud flats, mangroves, salt marshes, sea grass beds and shallow reefs.

## **FOREWORD**

## 1.0 INTRODUCTION

In Kenya, wetlands are defined as areas of land that are permanently or occasionally water logged with fresh, saline, brackish, or marine waters, including both natural and man-made areas that support characteristic plants and animals, the depth of which at low tide does not exceed 6 metres. These include swamps, marshes, bogs, shallow lakes, ox-bow lakes, dams, riverbanks, floodplains, rice paddies, water catchment areas, fishponds, lakeshores and seashores. They also include coastal and marine wetlands such as deltas, estuaries, mud flats, mangroves, salt marshes, seagrass beds and shallow reefs. These wetlands occupy about 3% to 4% of the land surface, which is approximately 14,000 km<sup>2</sup>, and fluctuate up to 6% during the rainy seasons.

The need to develop a national policy to guide the conservation and management of wetlands in Kenya has been recognized since 1990 when the country ratified the Convention on Wetlands of International Importance especially as Waterfowl Habitat of 1971 (the Ramsar Convention). Article 3 of the Convention obligates contracting parties to “formulate and implement their planning so as to promote the conservation” of wetlands. However, the actual process of policy development started in 1997 and climaxed in the publication in April 2008 of the revised Draft Sessional Paper on National Wetlands Conservation and Management.

Wetlands constitute part of critical natural capital for the country’s economy. For instance, from horticulture alone Lake Naivasha contributes over 5.3 billion Kenya shillings (US 63 million dollars) while over thirty thousand ( 30,000) people derive their livelihoods from this important wetland ecosystem. Lake Nakuru on the other hand, tourism contributes an estimated to 2.1 billion Kenya shillings (24 million US dollars) per year. In addition wetlands provide invaluable ecosystem goods and services such as provision of fish, water, reeds, crafts, building material and baskets, regulate climate and sequester carbon from the atmosphere and act as an important biodiversity habitat.

Despite the numerous benefits provided by wetlands, the sustainable management of wetlands in Kenya continue to face myriad of challenges. These include reclamation and encroachment for agriculture, settlement, urbanization and industrial development; conflicting laws and legislation, unsustainable hydro-power development, invasive and alien species; pollution and eutrophication and other emerging challenges such as oil and gas development; as a result of which the integrity of wetlands has been compromised. Additionally, management of wetlands cuts across several sectors including fisheries, forestry, wildlife, environment and water. Therefore, formulating wetlands legislation in isolation is a challenge. Currently there is greater

recognition of the importance of wetlands to the overall environmental, economic and social spheres by the government.

The Government of Kenya through the Ministry of Environment, Water and Natural resources has produced the Kenya wetlands atlas (2012) which maps the country's wetland resources. It provides visual evidence of the severity of the changes taking place in the wetlands occasioned by intense and detrimental human activities. The publication provides decision makers planners and managers with visual information about the state of the country's wetland resources using satellite images, graphics and ground photos.

A master plan for the conservation and sustainable management of water catchment areas in Kenya has been developed which is meant to guide practical and transformative actions for the sustainable management of these complex ecosystems. Additionally, there is an on-going nationwide inventory of wetland resources to take stock of the resources, challenges and opportunities for their sustainable development and management. The Constitution of Kenya 2010 has elevated the right to a clean and healthy environment for all as fundamental in the Bill of Rights..

The Constitution of Kenya recognizes the environment as a national heritage and promotes its sustainable management for the benefit of present and future generations. Matters regarding the environment are interspersed in the Constitution in Article 10 (2) (d) on sustainable development, Article 42 on the right to a clean and healthy environment and Chapter 5 on Land and Environment. Article 69 specifically provides the obligations of the state and all persons with respect to the environment. The Environmental Management and Co-ordination Act (EMCA), No.8 of 1999 also provides for the right to a clean and healthy environment under Section 3. All these provisions on the management of the environment apply to the management of wetland resources. This policy also fulfills the aspirations of Kenya's Vision 2030, the National Land Policy (2009).

The National Wetlands Conservation and Management Policy, developed through a rigorous multi-stakeholder consultative process, therefore seeks to secure and ensure the benefits of wetlands for posterity. It also aims at providing a framework for mitigating the diverse challenges that affect wetlands conservation and wise use in Kenya. Adoption of the policy also fulfills Kenya's obligations under the Ramsar Convention and other relevant Multilateral Environmental Agreements and provides the framework for tackling wetland threats.

## 1.1 GOAL, PRINCIPLES AND OBJECTIVES

The challenges affecting wetlands are impacting negatively on their ability to function optimally, thereby impeding their sustainable use and contribution to socio-economic development. In order to address these challenges, the National Wetlands Conservation and Management Policy is guided by the following principles and values.

### Goal

The goal of the National Wetlands Conservation and Management Policy is to ensure wise use and sustainable management of wetlands in order to enhance sustenance of their ecological and socio-economic functions for the present and future generations of Kenya.

### Guiding Principles and Values

- I. **Wise use:** Wise use of wetlands is the maintenance of the ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development.
- II. **Precautionary principle:** Where there are credible threats of serious or irreversible damage to key wetland resources, lack of full scientific certainty will not be used as a reason for postponing cost effective measures to prevent wetland degradation.
- III. **Polluter pays principle:** The polluter of wetland resources shall bear the full environmental and social costs of their activities.
- IV. **Equity:** The management of environment and natural resource will ensure equitable access to and benefit sharing of wetland resources for present and future generations.
- V. **Ecosystem Based Management Approach:** An integrated ecosystem approach to conserving wetland resources will be adopted and enhanced to ensure that all ecosystems are managed in an integrated manner while also providing a range of benefits to people.
- VI. **Devolution:** For sustainable wetland management in Kenya, the National Government shall cooperate and consult with County Governments in the management and conservation of wetlands in accordance with the Constitution

- VII. **Coordination:** To promote sustainable management and conservation of wetlands, the government shall ensure effective coordination of different sectors, agencies and actors as well as implementation of different policies and laws that have a bearing on wetlands.
- VIII. **Public participation:** The government shall encourage public participation in the management and conservation of wetland resources in the country. In addition, the government shall ensure continuous education and awareness on matters wetlands.
- IX. **International and regional cooperation:** Multilateral Environmental Agreements and regional instruments will be domesticated and implemented cooperatively for better wetland management of transboundary resources.

### **Objectives**

The objectives of this policy are to:

- i. Enhance and maintain functions and values derived from wetlands in order to maintain ecosystem goods and services protect biological diversity and improve livelihood of Kenyans.
- ii. Promote innovative planning and integrated ecosystem management approaches towards wetlands conservation and management in Kenya
- iii. Strengthen institutional capacity on conservation and management of wetlands.
- iv. Promote communication, education and public awareness among stakeholders.
- v. Improve scientific information and knowledge base on Kenyan wetland ecosystems.
- vi. Establish an effective and efficient legal and institutional framework for integrated management and wise use of wetlands.
- vii. Promote partnership and cooperation at county, national, regional and international levels for the management of transboundary wetlands and migratory species.

## 2.0 IMPORTANCE OF WETLANDS

Wetlands are known to perform crucial functions and provide vital products and services essential for environmental integrity and human well-being. Being diverse in their interactions, wetland ecosystems provide essential benefits to communities and the environment. In recent times, the quantification of these goods and services has revealed enormous socio-economic and cultural values.

### 2.1 Ecological Importance

**2.1.1 Flood Control and Soil Erosion Prevention:** Wetlands act as sponges, absorbing excess storm water from heavy rainfall, thereby providing flow regulation, flood control and soil erosion prevention. Floodwater may be stored in the soils or retained as surface water, thereby reducing floodwater volumes downstream. In addition, wetland vegetation slows down the flow of floodwater resulting in silt and sediment retention and riverbank protection. Besides reduction of flooding events downstream, this process also ensures river flows are maintained for longer periods. Wetland vegetation also shields the soil from damage by strong waves and wind.

**2.1.2 Water Discharge and Recharge:** The retention ability of wetland enables them to discharge and recharge both surface and ground water resources. The impeded drainage allows the water to stay in one place long enough to maximize infiltration, enhancing recharge of groundwater aquifers. Excess water in wetlands and aquifers discharges into springs, rivers and other water bodies. Aquifers play a complementary role by recharging wetlands during dry spells.

**2.1.3 Water Purification, Nutrient and Natural sinks for pollutants:** Wetland vegetation absorbs nutrients and toxic substances such as heavy metals from inflowing water thereby improving the quality of water downstream. Nutrients and toxic substances originate from agricultural, domestic and industrial sources. The materials eroded in the watershed are filtered by the wetland vegetation resulting in water purification. The sediment retained in the wetland protects downstream resources, such as dams, farmlands, rivers and lakes from silting. Sediment retention in the flood plains benefits agriculture by renewing nutrients and soil.

**2.1.4 Climate change mitigation and adaptation:** Globally, wetlands are recognized as net carbon sinks providing invaluable and effective carbon capture and storage. For instance papyrus dominated wetlands in East Africa have been found to accumulate 480g-Cm<sup>-2</sup>yr<sup>-1</sup>. The wetland vegetation takes up carbon from the atmosphere and converts it into plant biomass during the process of photosynthesis. In many wetlands, waterlogged soil conditions prevent decomposition of the plant material thereby retaining carbon in the form of un-decomposed

organic matter. The long retention of carbon in wetlands reduces the amounts of atmospheric carbon, thereby reducing global warming. In terms of adaptation, wetlands provide unique areas for agriculture, control extreme flooding, provide water resource provisioning during extreme droughts and promote livelihood security to communities -hence improving the adaptive capacities of wetland dependent vulnerable communities.

**2.1.5 Wildlife Habitats and Centers of Biodiversity:** Wetlands are natural habitats for a variety of plants and animals some of which are of conservation significance including endemic, endangered and migratory species. Wetlands are also *in-situ* banks for genetic resources. They are breeding and spawning areas for fish and water birds. Thus, the management of wetlands for biodiversity conservation is critical.

**2.1.6 Prevention of Saline Water Intrusion:** Wetlands are essential for maintaining a buffer zone between freshwater and saline water. The destruction of wetlands due to over-extraction or drainage reduces the influx of freshwater and hence increases the intrusion of saline water. Intrusion of saline water deprives people, agriculture, industry, and ecological communities of valuable freshwater arable land and pasture.

**2.1.7 Special values of seasonal wetlands:** Seasonal wetlands include floodplains; seasonal marshes, lakes and springs; temporary pools in grassland, woodland and bush; and ephemeral rock pools, flooded rock slabs and seeps. They play a critical role in dryland ecology. Examples of seasonal wetlands include the Tana River Delta, Lake Amboseli, seasonal lakes between lava flows west of the Ngong Hills, and temporary rock pools at the edge of Nairobi city. They act as breeding and regeneration sites for animals and plants. During the rainy season, fish, reptiles, amphibians, invertebrates and birds disperse to seasonal wetlands to breed. Mammals such as wildebeest migrate to areas with seasonal rain pools for pasture and breeding. Trees such as the Tana River Poplar germinate on silt brought by flooding rivers. Seasonal wetlands are therefore critical feeding grounds for livestock, migratory waterfowl and wildlife.

## **2.2 Socio-economic importance**

**2.2.1 Energy Production:** Wetlands provide energy in various forms, the most important being hydropower generation and plant biomass. Several hydroelectric power plants have been constructed especially on the upper reaches of the Tana, Kerio and Sondu Miriu Rivers. Reeds such as *Papyrus* sp. and *Phragmites* sp. are harvested and dried by riparian communities to provide a source of fuel.

**2.2.2 Transport and Communication:** In many wetland areas, water transport is a common medium of conveying goods and people. It is efficient and cost effective compared to other modes of transportation.

**2.2.3 Religious and Cultural Significance:** Wetlands are important historical sites that comprise priceless components of Kenya's cultural heritage. Local communities have strong attachments to the sites because of their social, cultural and spiritual importance. The communities maintain indigenous knowledge and practices on environmental functions and values that are essential for their survival.

**2.2.4 Tourism and Recreation:** The nature and serenity of wetlands makes them important ecotourism and recreation centres. The presence of a wide range of wildlife species as well as their aesthetic value makes them a unique attraction for tourism, which is an important foreign exchange earner at the national level, a source of recreation for an increasingly urbanized society and a source of livelihood for local communities.

**2.2.5 Sources of water:** Wetlands are critical sources of water for multiple uses such as domestic and industrial use, irrigation, hydroelectric power generation, infrastructure development, aquaculture and livestock watering.

**2.2.6 Grazing grounds:** Wetlands form important grazing grounds for livestock and wild animals especially during dry seasons.

**2.2.7 Fish and other food products:** Wetlands sustain commercial and subsistence/artisanal fisheries in many areas. Their importance as fish nursery grounds and for replenishing natural stocks is recognised for over 70% of fish species globally. Fish farming within wetland areas is increasingly becoming an important alternative to natural production.

**2.2.8 Soil and Minerals:** Wetlands are major sources of clay and sand products for making bricks and ceramics. Alkaline and saline wetlands are essential sources of minerals such as soda ash and salt.

**2.2.9 Animal and Plant Products:** Wetlands provide a number of wildlife resources and products. Wetland plants are harvested to provide materials for construction and thatching, the cottage crafts industry, canoes, fishing baskets and traps. Wetland plants are also used for medicinal purposes and as a food source. Marine algae are an increasingly important source of food products. The economic values of wetlands cannot be over-stated. For instance, the Nyando Wetland in Kisumu County provides an aggregated economic value estimated at Ksh. 204.1 Billion shillings (US\$ 2.1 Billion) per year.

### **2.3 Research and Education**

Many wetlands are important sites for scientific research and education. They are often used to study long term global environmental status and trends. Research areas within wetlands include ecology, social science, fisheries, ornithology, hydrology, geology, pollution control, medicine, agriculture, climatology, and paleolimnology.

### **3.0 CHALLENGES AND POLICY STATEMENTS IN WETLAND CONSERVATION AND MANAGEMENT**

Wetlands contribute significantly to the socio-economic development of Kenya and the health of our environment. They however face diverse and severe threats including unsustainable human activities within the wetland catchment area and in the wetlands, lack of coordinated and holistic policy guidelines, and climate change. The threats have induced changes that have eroded the ecological and socio-economic values and services derived from wetlands. The underlying threat remains lack of recognition of the importance of wetlands and the roles they play in both the national economy and community livelihoods. The Challenges and Threats below are followed by Policy Statements to address them.

#### **3.1 Wetland Degradation**

##### **3.1.1 Reclamation and Conversion of wetlands**

Reclamation and conversion of wetlands for agricultural development, human settlement and industrial development is one of the biggest threats to wetland conservation and management. In the past, wetlands have been regarded as “wastelands”, which can be converted for other economic gains. This has led to large-scale drainage and conversion for alternative uses without regard to ecological and socio-economic values. Seasonal wetlands are particularly threatened, especially during the dry seasons. Some of them are converted to agriculture, not reserved during land demarcation, and ignored in road construction and other infrastructural development. This is compounded by lack of harmony among the various laws and regulations related to delineation, conservation and management of the riparian/buffer zones in different wetland ecosystems. The Government shall:

**Policy Statement 1:** Ensure that any reclamation, conversion, burning, alteration of a wetland, or introduction of alien and invasive species in a wetland will be subject to approval standard procedures including Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), Cost Benefit Analysis (CBA), and wide stakeholder consultations.

**Policy statement 2:** Promote restoration and rehabilitation of degraded wetlands.

**Policy Statement 3:** Undertake socio-economic valuation of wetlands to inform planning and decision making.

**Policy Statement 4:** Harmonize wetland riparian (buffer) zones and setback limits for all wetland ecosystems in the country.

### **3.1.2 Restoration and Rehabilitation of Degraded Wetlands**

Many wetlands have been degraded through drainage, pollution, sedimentation, introduction of exotic species, catchment degradation, over exploitation of resources, upstream damming and diversion, among others. The benefits derived from these wetlands have therefore been lost or reduced. In order to promote the restoration and rehabilitation of degraded wetlands, the government shall:

**Policy Statement 1:** Support restoration and rehabilitation of wetlands.

**Policy Statement 2:** Put in place monitoring frameworks to ensure maintenance of wetland integrity.

**Policy Statement 3:** Promote market based instruments and incentives such as Payment for Ecosystem Services (PES) and tax rebates to enhance restoration and rehabilitation activities.

### **3.1.3 Overexploitation of wetland goods and services**

Increasing human population and change from subsistence to commercial exploitation of wetland resources continue to exert increasing pressure on limited wetland resources, resulting in the decline of the quality of regulating, provisioning, cultural and support services provided by wetlands. To address this challenge, the government shall:

**Policy statement 1:** Promote sustainable extraction and utilization of goods and services derived from wetlands.

**Policy statement 2 :** Promote environmentally-friendly alternative livelihood activities in line with the wise use principle.

### **3.1.4 Pollution of wetlands**

The quality of many water sources in Kenya is declining as a result of municipal, agricultural and industrial wastes/ discharges. These have negatively impacted water quality and biodiversity within the wetland ecosystems thereby reducing their values. Increased nutrient loads have led to eutrophication which leads to algal blooms. In certain areas excessive abstraction of fresh waters, salt water intrusion (salinization), diversions, and catchment degradation, have led to increased salinity. In this regard, the government shall:

**Policy Statement 1:** Support and promote compliance with and enforcement of relevant legislation related to environmental pollution.

**Policy Statement 2:** Enhance public awareness on proper management of waste..

### **3.1.5 Alien and Invasive Species**

Wetlands are highly vulnerable to alien and potentially invasive species. Many wetlands have in the past been affected by the introduction of alien invasive species that have altered the biodiversity characteristic and diminished the services provided by wetlands. For example, the introduction of Nile perch nearly eliminated the indigenous fish species of Lake Victoria while water hyacinth, *Salvinia* sp. and *Mimosa* sp. have affected numerous wetlands. Introduced species easily occupy new niches due to lack of competition and predators. These have various impacts on the landscape. They negatively impact oxygen and water retention capacities, transport, hydropower energy development, biodiversity and human and economic quality of life especially in the context of climate change, and lack of scientific evidence for planning and decision-making. In view of this, the government shall:

**Policy Statement 1:** Develop and implement a national strategy and action plan for identification, mapping, management and monitoring of alien and invasive species in wetland and associated ecosystems

**Policy Statement 2:** Undertake action research, public education and awareness campaigns on the dangers of invasive species and the methods to control them.

**Policy statement 3:** Institute measures for prevention, eradication and control of invasive species that have major environmental and economic impacts.

## **3.2 Conservation and Management**

### **3.2.1 Management of wetlands under the diverse Land Tenure Systems**

Land under the Constitution includes any body of water on or under the surface; marine waters in the territorial sea and exclusive economic zone and natural resources completely contained on or under the surface. The Constitution provides that all land belongs to the people of Kenya collectively as a nation, as communities and as individuals. It classifies land as public, private or community land and states that all rivers, lakes and other water bodies defined by an Act of Parliament are public land.

The provisions of the Constitution were an attempt to deal with the myriad of problems identified in land administration and management in Kenya. These include encroachment onto public land and natural resources. The Constitution has placed obligations on all citizens to cooperate with state organs and other persons to ensure ecologically sustainable development and use of natural resources. Despite the

existence of these provisions, wetlands have continued to face a myriad of challenges related to land ownership including encroachment into wetland and riparian areas. The Government therefore shall:

**Policy Statement 1:** Map, delineate and publicize boundaries for all wetlands within its jurisdiction.

**Policy Statement 2:** Regulate, protect, manage and conserve all wetlands including those within public, private and community land in line with the Constitution.

**Policy Statement 3:** Recognize and permit cultural and traditional practices for use of wetland resources subject to existing guidelines, policies, laws and legislation.

### **3.2.2 Management of Wetlands outside Protected Areas**

Many wetland areas including deltas provide vital services such as biodiversity reservoirs, ecological services, water sources, grazing areas and have cultural values. The Government has established parks and reserves to ensure that natural habitats are adequately protected as conservation areas. However given that majority (80%) of fragile wetland ecosystems are situated outside protected areas, they continue to face serious and deleterious impacts including loss of biodiversity and loss of other socio-economic benefits. In this case, the government shall:

**Policy Statement 1:** Identify unique wetlands for designation as conservation areas

**Policy Statement 2:** Develop and implement appropriate management plans through a participatory process.

### **3.2.3 Managing Wetlands of International Importance**

Kenya is a signatory to the Ramsar Convention and as such is required to identify critical wetlands of international importance (Ramsar Sites) based on the laid down criteria. Six sites have been listed under these criteria. These are Lakes Nakuru, Naivasha, Baringo, Bogoria, Elementaita and the Tana River Delta. Despite their designation, they continue to face severe threats mainly from human activities. The government therefore shall:

**Policy Statement 1:** Ensure effective management and conservation of all Ramsar sites

**Policy Statement 2:** Identify and list wetland sites that fulfill Ramsar criteria.

### **3.2.4 Managing man-made Wetlands**

Man-made wetlands include dams, constructed wetlands, fishponds, rice paddies and sewage treatment ponds. Constructed wetlands for example have gained prominence worldwide as alternative cost-effective and environmentally friendly technologies in wastewater treatment. Others such as dams, fish ponds and rice paddies are also important for food production and aesthetic uses. In Kenya the use of these types of wetlands has been minimal despite their huge potential. In this regard, the government shall:

**Policy Statement 1:** Promote the use of constructed wetlands for waste water management in the relevant sectors such as industries, schools, agriculture and municipalities.

**Policy Statement 2:** Establish and sustainably manage man-made wetlands for food production, water supply, hydro power production and livelihoods.

### **3.2.5 Managing Trans- boundary Wetlands**

A number of trans-boundary wetlands are shared between Kenya and its neighbours. These include Lakes Victoria, Turkana, Jipe and various rivers such as Ewaso Ngiro South, Sio, Malakisi, and Mara. These wetlands face various conservation and management challenges and there is need for collaborative measures on their management.

Kenya is party to the Treaty Establishing the East African Community and the Protocol on Environment and Natural Resource Management, which require Member States to cooperate in the management of trans-boundary resources. To play an effective role in promoting the sustainable management of trans-boundary wetlands, the government shall:

**Policy Statement:** Develop harmonized regional approaches and policies for sustainable management of trans-boundary wetlands.

## **3.3 Research, Education and Awareness**

### **3.3.1 Inventorying, Monitoring and Information Systems**

Sustainable management of wetlands requires comprehensive data obtained through an all-inclusive inventory, research and use of indigenous knowledge. Currently

management of wetlands is based on inadequate information as there is no comprehensive national database to inform planning and decision making.

To ensure that decisions about management and conservation of wetlands are based on sound scientific data and evidence, the government shall:

**Policy statement 1:** Inventorize all wetlands in the country.

**Policy statement2:** Establish, maintain and update a standardized county and national wetlands database.

**Policy Statement 3:** Adopt and implement measures for continuous generation, storage, and dissemination of scientific information on wetlands and wetland resources and using the same to inform planning and decision making over wetlands conservation and management.

### **3.3.2 Capacity and Human Resource Development**

One of the reasons for the degradation of wetlands has been the inadequate human capacity to manage, enforce and give appropriate guidance on wetland conservation and management. In addition there is a general lack of infrastructure to support sustainable wetland management. To improve human resource and infrastructural capacity for sound wetlands management, the Government shall institute measures to:

**Policy Statement:** Build capacity for sustainable wetlands management and conservation

### **3.3.3 Education and Public Awareness**

Wetlands are often degraded because the public is either not fully aware or does not appreciate the diversity of wetland functions and values. Education and public awareness is essential to create commitment and positive attitudes towards conservation and sustainable utilization of wetland resources.

**Policy Statement 1:** Promote education and public awareness on wetland resources to encourage understanding and participation of the public, private sector, county governments, NGOs and other interested parties through all appropriate means.

**Policy Statement 2:** Incorporate wetland conservation and management issues into the national environmental education strategy and other available and relevant systems

**Policy Statement 3:** Establish guidelines and procedures on wise use of wetland resources for various purposes.

**Policy statement 4:** Promote recognition and application of traditional indigenous knowledge in wetland management.

## **4.0 LEGAL AND INSTITUTIONAL ARRANGEMENTS**

### **4.1 Legal and Institutional Framework.**

Lack of a holistic institutional framework has affected wetland management in Kenya. Different aspects of wetland conservation and management are handled by different agencies. This has therefore meant that no single agency is in charge of overall coordination. This has contributed to massive wetland loss and degradation.

The Kenyan Government has undertaken reforms aimed at conservation of environmental resources including wetlands. The Constitution reaffirms the government commitment on sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensures the equitable sharing of the accruing benefits. This includes enactment of legislation related to conservation and management of wetlands in the country. The relevant laws include the Environmental Management and Coordination Act No.8 of 1999, the Merchant Shipping Act of 2009, the Wildlife Conservation and Management Act of 1989, Forests Act (2005), Fisheries Act (Cap. 378) and the Water Act (2002).

Despite the numerous pieces of legislation, sustainable management of wetlands in Kenya has not been realized. To address this, the government shall:

**Policy Statement 1:** Identify and strengthen a coordinating and supervisory agency at national and county levels, and provide adequate resources to implement the National Wetlands policy.

**Policy Statement 2:** Harmonize all laws and regulations relating to wetland management in Kenya.

**Policy Statement 3:** Mainstream wetland management in all the relevant institutions.

**Policy Statement 4:** Develop strategies for the implementation of National Wetland policy at county and national levels.

**Policy Statement 5:** Adopt and implement an ecosystem-based approach in the management of all wetlands, especially the water catchment areas.

**Policy statement 6:** Institute legal mechanisms for regulating access to wetland genetic resources, benefit sharing and technology transfer.

#### **4.2 Resource Mobilization**

Sustainable financial resources have remained the principal impediment to promoting sustainable development and environmental protection. National budgetary resources have failed to adequately provide for wetland conservation and management. As a result, the country has been unable to effectively respond to challenges of wetland conservation and management. To address this challenge, the government shall:

**Policy Statement 1:** Allocate and mobilize adequate resources from development partners, private sector and other agencies to support conservation and management of wetlands.

## **5.0 LINKAGES AT COUNTY, NATIONAL, REGIONAL AND INTERNATIONAL LEVELS**

### **5.1 Coordination and linkages in wetland management**

Pressure imposed on wetland ecosystems and resources are often caused or influenced by external factors from other sectors. There is need to create synergies between the wetland actors and the policies that govern counties as well as the National Land Policy. The Government shall:

**Policy Statement 1:** Institute an appropriate mechanism for achieving harmonization of the various sectoral policies that relate to wetlands

**Policy Statement 2:** Establish and strengthen linkages between different actors for planning, implementation and information sharing in wetland conservation and management.

### **5.2 Mainstreaming Gender, Youth and Special Groups**

The exploitation of wetland resources follows specific and distinct gendered patterns. In addition, environmental incomes derived from wetland ecosystems have shown remarkable disparities due to unequal power relations that discriminate against some special groups. Similarly the traditional gender roles have inhibited the participation of women and youth in sustainable wetland management initiatives leading to their marginalization. In order to ensure social inclusion and equity in sustainable management of wetlands, the government shall:

**Policy Statement 1:** Involve women, youth and other special groups such as the elderly and people with disability in participatory wetland management planning, decision making and implementation processes.

**Policy Statement 2:** Ensure the one-third gender rule in wetland management structures.

### **5.3 Non-State Actors**

Participatory wetland management will be enhanced, by involving concerned non-state actors and local communities in planning and implementation of wetland conservation activities. This

approach will be used to plan and implement wetland management plans among other strategies to bring on board other stakeholders in wetland management. To address this, the government shall:

**Policy Statement 1:** Support non-state actors and local communities to undertake wetland related conservation activities.

#### **5.4 Public Health and HIV/AIDs**

Wetlands are known to harbour specific vectors that cause water borne and water related diseases which are of concern to public health. These diseases and the HIV/AIDs pandemic have had far reaching impacts on wetland management through increased dependency in wetland resources thereby undermining wetland related programmes. The government shall:

**Policy Statement 1:** Ensure that HIV/AIDs is mainstreamed in wetland programmes and projects.

**Policy Statement 2:** Promote biological control mechanisms to mitigate the impacts of vectors causing water borne and water related diseases.

#### **5.5 Promoting International obligations**

A number of provisions in International Agreements, Protocols and Conventions provide guidance on sustainable wetland management and conservation. These include the Ramsar Convention, Convention on Conservation of Migratory Species of Wild Animals (CMS), UNESCO World Heritage Convention, The United Nations Convention to Combat Desertification (UNCCD), United Nations Framework Convention on Climate Change (UNFCCC), African Eurasian Water Bird Agreement (AEWA) and Convention on Biological Diversity (CBD). In addition, there are regional and continental agreements such as the Nairobi Convention and the East Africa Community (EAC) protocol on environment and natural resource management that provide opportunities for Kenya to cooperate with other member states on management of trans-boundary wetland resources. To promote these international obligations, the government shall:

**Policy Statement 1:** Ensure that all provisions of relevant conventions and agreements are domesticated and implemented.

**Policy Statement 2:** Ensure synergy and coordinated national approach in implementation of Multilateral Environmental Agreements (MEAs) relating to wetlands.