



COUNTY GOVERNMENT OF KISUMU

---

## KISUMU COUNTY ENVIRONMENT POLICY 2019

Contents	
<b>FOREWORD</b> .....	5
<b>ACKNOWLEDGEMENTS</b> .....	6
<b>ACRONYMS AND ABBREVIATIONS</b> .....	7
<b>1. INTRODUCTION</b> .....	8
<b>2. SITUATIONAL ANALYSIS</b> .....	10
<b>3. GOAL, OBJECTIVES AND GUIDING PRINCIPLES</b> .....	Error! Bookmark not defined.
3.1. Goal.....	Error! Bookmark not defined.
3.2. Objectives.....	Error! Bookmark not defined.
3.3. Guiding Principles.....	Error! Bookmark not defined.
<b>4. MANAGEMENT OF ECOSYSTEMS AND SUSTAINABLE USE OF NATURAL RESOURCES</b> .....	17
4.1. Forest Ecosystems.....	17
4.2. Freshwater and Wetland Ecosystems.....	18
4.3. Hills /Mountains Ecosystems.....	19
4.4. Land.....	19
4.5. Soils.....	20
4.6. Minerals.....	21
4.6.1. Sand.....	Error! Bookmark not defined.
4.6.2. Gravel.....	Error! Bookmark not defined.
4.6.3. Bitumen.....	Error! Bookmark not defined.
4.6.4. Oil and Gas.....	Error! Bookmark not defined.
4.7. Biodiversity.....	21
4.8. Wildlife Resources.....	22
4.9. Livestock.....	23
4.10. Fisheries.....	23
<b>5. ENVIRONMENTAL STEWARDSHIP</b> .....	24
5.1. Natural Capital and Valuation.....	Error! Bookmark not defined.
5.2. Tourism.....	25
5.3. Consumption and Production Patterns.....	26
5.4. Industrialization and Environment.....	27
5.5. Infrastructural Development and Environment.....	28
5.6. Management of Chemicals.....	28
5.7. Human Settlements.....	29

5.8.	Energy Use, Efficiency and Conservation .....	29
5.9.	Climate Change.....	30
5.10.	Emergency Preparedness and Disaster Management .....	31
5.11.	Gender, Vulnerability and Environment .....	32
5.12.	Invasive and alien species.....	<b>Error! Bookmark not defined.</b>
6.	<b>ENVIRONMENTAL QUALITY AND HEALTH .....</b>	<b>33</b>
6.1.	Air Quality.....	33
6.2.	Water and Sanitation.....	34
6.3.	Waste Management.....	35
6.3.1.	Solid Waste Management .....	<b>Error! Bookmark not defined.</b>
6.3.2.	Liquid Waste Management .....	<b>Error! Bookmark not defined.</b>
6.4.	Radiation.....	35
6.5.	Toxic and Hazardous Substances .....	36
6.6.	Noise.....	36
6.7.	HIV and AIDS and the Environment.....	36
6.8.	Environmental Diseases .....	37
7.	<b>RESEARCH, EDUCATION AND MONITORING.....</b>	<b>38</b>
7.1.	Scientific Research and Information Management .....	38
7.2.	Education, Communication and Awareness.....	38
7.3.	Environmental Monitoring and Assessment.....	<b>Error! Bookmark not defined.</b>
8.	<b>ENVIRONMENTAL GOVERNANCE.....</b>	<b>39</b>
8.1.	Environmental Legal Reforms .....	<b>Error! Bookmark not defined.</b>
8.2.	Institutional Arrangements.....	40
8.3.	Human Resources Development and Capacity Building .....	40
8.4.	Partnerships and Stakeholder Involvement.....	41
8.5.	Funding Mechanisms.....	41
8.6.	Regional and International Cooperation.....	42
9.	<b>IMPLEMENTATION STRATEGIES AND ACTIONS.....</b>	<b>42</b>
9.1.	Integration of Environmental Concerns in all Policy, Planning and Development Processes.....	43
9.2.	Clarifying Roles and Responsibilities .....	43
9.3.	Environmental Compliance.....	44
10.	<b>GLOSSARY.....</b>	<b>45</b>



## **FOREWORD**

## **ACKNOWLEDGEMENTS**

**ACRONYMS AND ABBREVIATIONS**

ADP	Annual Development Plan
CGK	County Government of Kisumu
CIDP	County Integrated Development Plan
COK	City of Kisumu
EHIA	Environmental Health Impact Analysis
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
GDP	Gross Domestic Product
GIS	Geographical Information Systems
ICZM	Integrated Coastal Zone Management
IWRM	Integrated Water Resources Management
SDGs	Sustainable Development Goals
MEAs	Multilateral Environmental Agreements
NBSAP	National Biodiversity Strategy and Action Plan
EIMS	Environmental Information Management System
NEMA	National Environment Management Authority
PES	Payment for Environmental Services
SEA	Strategic Environmental Assessment
UNEP	United Nations Environment Program
ITCZ	Intra Tropical Convergence Zone
ERSWEC	Economic Recovery Strategy for Wealth and Employment Creation
MTEF	Medium Term Expenditure Framework
M&E	Monitoring and Evaluation
EAC	East African Community
AU	African Union
NEPAD	New Partnership for Africa's Development
SPIC	Strategic Plan Implementation Committee
SWOT	Strengths, Weaknesses, Opportunities and Threats
P-PESTEL	Policies, Political, Economic, Social, Technological, Environment and Legal
CEO	Chief Executive Officer
SMS	Short Message Service
IFMIS	Integrated Financial Management Information System
KV2030	Kenya Vision 2030
CORD	Coalition for Restoration of Democracy
GoK	Government of Kenya
RBM	Results Based Management
MTP	Medium Term Plan
AOP	Annual Operational Plan
HIV	Human Immunodeficiency Virus
AIDS	Acquired Immuno Deficiency Syndrome
CEC	County Executive Committee
ICT	Information Communication Technology
CSO	Civil Society Organization
MCA	Member of County Assembly
HR	Human Resources

## 1. INTRODUCTION

- 1.1. Environment is a broad term representing the totality of the surrounding such as plants, animals, microorganisms, socio economic and cultural factors. It includes the physical factors of the surroundings of human beings such as land, water, atmosphere, sound, odor, taste, the biological factors of animals and plants and the social factors of aesthetics and includes both the natural and the built environment.
- 1.2. The Department of Water Irrigation Environment and Natural Resources (WIENR) is one of the 10 Ministries within County government of Kisumu (CGK) Executive mandated with environmental planning and management. The Department has as its core business, formulation, integration, co-ordination, supervision and implementation of policies, plans and programs, projects and activities relative to protection and conservation as well as the sound management and enhancement of the environment within Kisumu County.
- 1.3. Key functions of the department of WIENR include but are not limited to the following within Kisumu County; Advise the County Government on matters relating to environmental management; Formulate plans, strategies, policies and laws for environmental governance; ensure effectiveness and efficiency in management of solid waste, and ecosystems; enforcement of environmental laws and regulations; public education and awareness creation on environmental issues.
- 1.4. Kisumu County is blessed with a huge biodiversity base and enjoys a unique tropical climate with varying weather patterns due to differing topographical dimensions. The county has a wide variety of ecosystems namely hills, forests, freshwaters (rivers, lake and streams), wetlands, all offering many opportunities for sustainable human, social and economic development. These ecosystems are natural capitals which provide important regulatory services (such as forests and hills serving to regulate water flow, and sustain biodiversity), provision services (such as forests providing timber and fuel wood), cultural services (such as aesthetic, recreational or spiritual values and uses) and supporting services (such as soil formation, nutrient cycling and primary production).
- 1.5. A rapidly growing population, high population density, water scarcity, falling food production, and low resilience to climate change characterize Kisumu County. The combined effects of climate change and rapid population growth are increasing food insecurity, environmental degradation, and increased poverty levels in the county. The Kisumu County Integrated Development Plan (CIDP) II (2018 -2022) identifies environmental degradation and climate change as key development challenges.
- 1.6. The survival and socio-economic well-being of Kisumu County citizens is ultimately intertwined with the environment. Most citizens depend directly or indirectly on environmental goods and services. In addition, the County's environmental resources contribute directly and indirectly to the local and national economy through revenue generation and wealth creation in such productive sectors as agriculture, fisheries, livestock, water, energy, forestry, trade, tourism and industry.

- 1.7. It is against this the environment has been an essential pillar of Kenya's development blueprint and Kisumu County Integrated Development Plan 2018-2022. Environmental imperatives were initially captured through periodic development planning cycles. Whole sections or chapters of successive National Development Plans have dealt with the environment since independence. But modern-day environment management and planning in Kenya can be traced to the Rio Earth Summit of 1992, which helped a great deal in raising the understanding of the link between environment and development. Following the Summit, Kenya initiated the National Environment Action Plan (NEAP) process. This was completed in 1994. It recommended the need for a national policy and law on the environment. It is significant therefore that the global environment body UNEP is located in Nairobi. Kisumu County CIDP 2010-2022 has also emphasized the need to have Kisumu County Environmental Policy and Law and hence this process of policy formulation.
- 1.8. The promulgation of The Constitution of Kenya 2010 and other new developments like climate change marked an important chapter in Kenya's environmental policy development and subsequently the county's policy development. The Sustainable Development Goals bring to the fore the need for county level engagement in environmental protection. The 2010 Constitution has been hailed as a 'Green' Constitution and contains elaborate provisions with considerable implications for sustainable development. These range from environmental principles and implications of Multilateral Environmental Agreements (MEAs) to the right to a clean and healthy environment as enshrined in the Bill of Rights. Chapter V is entirely dedicated to land and environment. It also captures a host of social and economic rights which are of environmental character such as the right to water, food and shelter, among others.
- 1.9. It is the responsibility of the county government through the department responsible for environmental issues to ensure that policies are reviewed and formulated to meet the aspirations of the Constitution and emerging issues in the management of the environment for prosperity. Such a policy should aim at providing a holistic framework to guide the management of the environment and natural resources in Kisumu County. It should further ensure that environment is mainstreamed in all county government policies in order to facilitate and realize sustainable development at all levels. This would help promote green economy, enhance social inclusion, improve human welfare and create opportunities for employment and maintenance of a healthy ecosystem.

The process of formulating this policy was initiated in 2018 by the directorate of policy and research under the department of Water, Irrigation, Environment and Natural Resources through a participatory and consultative process that involved engagement with the public and various stakeholders. This culminated in the production of the Draft County Environment Policy, 2019.



## 2.2. Topography

The county can be divided into 3 topographical zones namely: the Kano Plains, the upland area of Nyabondo Plateau and the midland area of Maseno. The Kano Plains lie on the floor of the Rift Valley, which is a flat stretch bordered to the North and East by the escarpment, while the upland area comprises of ridges which rise gently to an altitude of 1,835m above sea level. The major attractive physical features in the county are the overhanging huge granite rocks at Kisian and the legendary Kit Mikayi in Kisumu West Sub-county; the Lake Victoria, which is the second largest fresh water lake in the world; the geographically famous rice-growing Kano Plains; and lake islands (e.g. Ndere National Park which are major tourist attractions). The granite rocks are to a small extent exploited by the local population to produce building ballast. Sand harvesting from river deposits and baking bricks is a common feature in Maseno and Nyakach, Kano and Kajulu.

## 2.3. Drainage

There are three major rivers flowing into the Winam Gulf namely: the Nyando, Kibos and Sondu. The rivers are heavily silted resulting in extensive formation of lakeside swamps. The Kano Plains, due to the structure on the floor of these escarpments, is vulnerable to flooding during heavy rains especially the lower Kano Plains and in particular, the low-lying areas of Nyando.

## 2.4. Climatic Conditions

Kisumu has a tropical climate. The altitude in the county varies from 1,144 metres above sea level on the plains to 1,525 metres above sea level in the Maseno and Lower Nyakach areas. This greatly influences temperatures and rainfall in the county. The County has two rainy seasons, with the long rains occurring in March and May while the short rains occur in September to November. Maseno has a mean annual rainfall of 1,630mm, Kisumu 1,280 mm, Ahero 1,260 mm, Kibos 1,290 mm, Muhoroni 1,525 mm, and Koru 1,103 mm. The lowland area which forms a trough of low rainfall receives a mean annual rainfall of between 1,000mm and 1,800mm. The mean annual maximum temperature ranges 25°C to 35°C and the mean annual minimum temperature ranges 9°C to 18°C. The high rainfall and the nature of soils in the Kano Plains have supported subsistence agriculture. However, small-scale farmers find it difficult to prepare the land for planting since black cotton soils are difficult to work on manually during dry season and during heavy rains.

## 2.5. Demography

The 2009 Population and Housing Census estimated the population of the county at 968,909 persons made up of 474,687 males and 494,222 females.

## 2.6. Administrative Units

Kisumu County is made up of seven constituencies namely Kisumu East, Kisumu West, Kisumu central, Nyando, Seme, Nyakach and Muhoroni with a total of 35 wards and several villages.

## 2.7. Vulnerability to climate change

A rapidly growing population, high population density, water scarcity, falling food production, and low resilience to climate change characterize Kisumu County. The combined effects of climate change and rapid population growth are increasing food insecurity, environmental degradation, and increased poverty levels in the county. The Kisumu County Integrated Development Plan (CIDP) II (2018 -2022) identifies environmental degradation and climate change as key development challenges.

## 2.8. Growth and Development

Kisumu County has witnessed unprecedented political and socio-economic transformation since independence and more so after devolution in 2013. High population growth, shrinking productive land and technological changes are some of the significant changes. These interlinked components provide the backdrop against which to view changes in the state of the county's environment. This is because they serve as some of the most forceful drivers of environmental change. The main human activities contributing to environmental degradation in Kisumu include unsustainable land use practices, poor soil and water management practices, deforestation, overgrazing and pollution. Kisumu County performs below the national average on most socio-economic indicators. The county scores 0.49 on the Human Development Index (HDI)—a composite measure of development that combines indicators of life expectancy, educational attainment and income. This falls below the national average of 0.56. Poverty is prevalent in the county and manifests itself in other socio-economic outcomes such as poor nutrition, health, and education, as well as a lack of access to basic services. Unemployment is a major challenge in the county, especially among youth. The majority of the population is employed in fishing related activities, transport (mainly boda-boda /motor bike taxis) and agricultural activities, with some limited opportunities in commercial ventures and public service within Kisumu City. As more young people enter the workforce due to rapid population change, the pressure on available employment opportunities and natural resources is expected to grow.

2.9. These activities contribute a great deal to degradation of the country's scarce natural resources such as land, fresh waters and biodiversity thereby threatening the livelihoods of many people. They also undermine the sink function of the environment which operates through such processes as nutrient recycling, decomposition and the natural purification and filtering of air and water.

2.10. Environmental degradation in Kisumu County directly contributes to climate change as is witnessed in the rising costs of water treatment, food imports and health services. These are not only increasing human vulnerability and health insecurity but also draining the county's economic resources. The expansion of human activities into marginal areas leading to clearance of natural habitats such as forests and wetlands has been a major driving force behind land degradation throughout the county. The continuous loss of biological resources translates into loss of economic potential and options for commercial development.

- 2.11. This backdrop provides the justification for this Environment Policy. It gives the framework to guide the county's efforts in addressing the ever-growing environmental issues and challenges such as:
- 2.11.1. ***Environmental governance:*** Many sectoral policies and laws are not harmonized with each other and with the Constitution. These include policies and laws concerning agriculture, land, water, forestry, trade and industry, which have significant implications on the environment. The sectoral rather than integrated and ecosystems approach to management of natural resources has proved inadequate in addressing environmental challenges. In addition, weak enforcement of laws and weak implementation of policies remain major issues of concern in the County.
  - 2.11.2. ***Loss of biodiversity,*** Kisumu County continues to lose her biodiversity due to habitat destruction, overgrazing, deforestation, pollution, unsustainable harvesting of natural resources, bio piracy and introduction of invasive and alien species, among others. Invasive and alien species are a major threat to the environment. They threaten indigenous species through the effects of predation, alteration of habitat or disruption of ecosystem functions. The challenge of dealing with loss of biodiversity becomes even more complicated when one is dealing with shared resources where laws and policies of respective countries and Counties are not harmonized.
  - 2.11.3. ***Valuation of environmental and natural resources:*** The value of environmental resources is hardly reflected in pricing of marketed goods and services. Environmental and natural resources are largely considered as public goods. This is symptomatic of market failure. Integrating environmental considerations into the behavior of enterprises and consumers would reflect a change in consumption and production patterns. Prioritization of environment and natural resources remains low among policy makers partly due to inadequate appreciation of the total economic value of the sector. Thus, there is less public investment in the sector.
  - 2.11.4. ***Rehabilitation and restoration of environmentally degraded areas:*** There are several degraded areas in Kisumu County which require rehabilitation and restoration. These include wetlands, riverbanks, deforested areas, eroded shoreline, hilltops and disused quarries and mines.
  - 2.11.5. ***Urbanization, waste management and pollution:*** The rapid rate of urbanization has been caused by natural growth of the urban population and rural-urban migration. Urbanization often leads to destruction of sensitive ecosystems. Poor waste management causes urban pollution and poor health. Thus, many urban environmental problems are the result of poor management, planning and absence of coherent urban policies. Special and emerging waste such as electronics, pampers, cosmetics, and sanitary towels call for special management practices.
  - 2.11.6. ***Climate change, energy, security and disaster management:*** Climate change poses significant environmental challenges for Kisumu County as evidenced by the frequent droughts and water shortages that even affect power supplies. This at a time when power demand is on the rise and utilization of renewable energy sources exclusive of hydro remains relatively low. Other adverse impacts of climate change can be seen in the form of frequent and severe

natural disasters such as floods, and prolonged droughts. Increased frequency and intensity of extreme climatic conditions continue to undermine the county's sustainable development. Managing climate-related disasters remains a significant challenge.

- 2.11.7. **Public participation, environmental education and awareness:** Broad public participation in decision making processes is one of the fundamental preconditions for sustainable development. This presupposes access to timely and accurate information on the environment. Sound environmental management has to be based on openness and participation at all levels. Therefore, it is imperative that environmental education and public awareness is promoted at all levels.
- 2.11.8. **Data and information:** Inadequate and disaggregated data is a challenge for integrated planning and management of the environment.
- 2.11.9. **Poverty:** Rising poverty levels have impacted negatively on the environment. Poverty is a major cause and consequence of environmental degradation and resources depletion because of lack of alternatives. The poor rely heavily on the environment and natural resources for their livelihoods as in the case of sand harvesting, overfishing etc.
- 2.11.10. **Chemicals Management:** Chemicals are an important contributor to national and county development across all sectors. They form an important input to agriculture, manufacturing, energy, leisure and as ingredients to commonly used materials such as plastics, electronics, refrigerators and air conditioning. They improve the quality of life as medicines, cosmetics, foods, leisure etc. Unfortunately, they can also be dangerous because of their toxic and hazardous nature. Chemicals can be flammable, explosive and carcinogenic directly or through air, water, food and materials. These inherent risks need to be managed at production, use, transport and when it turns to waste disposed in an environmentally sound manner.

### 3. GOAL, OBJECTIVES AND GUIDING PRINCIPLE

3.1. **Goal;** the goal of this Policy is: Better quality of life for present and future generations through sustainable management and use of the environment and natural resources.

3.2. **Objectives ;** The objectives of this Policy are to:

3.2.1. Provide a framework for an integrated approach to planning and sustainable management of Kisumu County's environment and natural resources.

3.2.2. Strengthen the legal and institutional framework for good governance, effective coordination and management of the environment and natural resources.

3.2.3. Ensure sustainable management of the environment and natural resources, such as unique aquatic ecosystems, for the county's economic growth and improved livelihoods.

3.2.4. Promote and support research and capacity development as well as use of innovative environmental management tools such as incentives, disincentives, total economic valuation, indicators of sustainable development, Strategic Environmental Assessments (SEAs), Environmental Impact Assessments (EIAs), Environmental Audits (EA) and Payment for Environmental Services (PES).

3.2.5. Promote and enhance cooperation, collaboration, synergy, partnerships and participation in the protection, conservation, sustainable management of the environment and natural resources.

3.2.6. Ensure inclusion of cross-cutting and emerging issues such as poverty, gender, disability, HIV&AIDS and other diseases in the management of the environment and natural resources.

3.2.7. Promote domestication, coordination and maximization of benefit from Multilateral Environmental Agreements (MEAs).

3.2.8. Integrate the other environmental sectors such as water, energy, forestry, agriculture, land and wildlife

3.3. **Guiding Principles ;** Implementation of this Policy will be guided by the following principles:

3.3.1. **Environmental Right:** Every person in Kenya has a right to a clean and healthy environment and a duty to safeguard and enhance the environment.

3.3.2. **Right to Development:** The right to development will be exercised taking into consideration sustainability, resource efficiency and economic, social, political and environmental needs.

3.3.3. **Ecosystems Approach:** An integrated ecosystems approach to conserving environmental 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 the citizenry.

3.3.4. **Total Economic Value:** The benefits that ecosystems generate will be integrated into the County's accounting system, programs and projects.

- 3.3.5. **Sustainable Resource Use:** Environmental resources will be utilized in a manner that does not compromise the quality and value of the resource or decrease the carrying capacity of supporting ecosystems.
- 3.3.6. **Equity:** The management of the environment and natural resources will ensure inter-generational and intra-generational equity
- 3.3.7. **Public Participation:** A coordinated and participatory approach to environmental protection and management will be enhanced to ensure that the relevant government agencies, county governments, private sector, civil society and communities are involved in planning, implementation and decision-making processes.
- 3.3.8. **Precautionary Principle:** Where there are credible threats of serious or irreversible damage to key environmental resources, lack of full scientific certainty will not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
- 3.3.9. **Polluter Pays Principle:** The polluter and users of environmental and natural resources shall bear the full environmental and social costs of their activities.
- 3.3.10. **International Cooperation:** MEAs and regional instruments will be domesticated and implemented cooperatively for better environmental management of shared resources.
- 3.3.11. **Good Governance:** Rule of law, effective institutions, transparency and accountability, respect for human rights and the meaningful participation of citizens will be integrated in environmental management.
- 3.3.12. **Benefit sharing:** Where benefits will accrue from utilization of biodiversity, these will be shared in order to promote conservation and sustainable use of biodiversity.
- 3.3.13. **Community Empowerment:** Communities will be involved in decision making and empowered in the implementation of such decisions.

#### 4. MANAGEMENT OF ECOSYSTEMS AND SUSTAINABLE USE OF NATURAL RESOURCES

Ecosystems provide a wide range of goods and services. These include provisioning, regulating, cultural and support services. Despite the services they provide, ecosystems are under pressure from human activities. The most critical ecosystems in Kisumu County include forests, freshwaters, wetlands, and hills. Within these ecosystems are key natural and cultural heritage resources which support diverse biodiversity and provide natural capital for economic development and support livelihoods.

##### 4.1. Forest Ecosystems /public parks and open spaces

- 4.1.1. The conservation and sustainable development of forest ecosystems and their associated resources is essential for sustainable poverty reduction and sustainable development. Forest ecosystems are important in conservation of soil, water and biodiversity as well as in moderation of climate. They are the richest terrestrial habitats for biodiversity. Maintaining forest biodiversity safeguards the economic potential of future opportunities for new non-timber products such as food and medicine as well as social sustainability by offering aesthetic, spiritual and recreational settings for people.
- 4.1.2. Kisumu's forest resources are being subjected to overwhelming pressure from competing land uses like agriculture, human settlement and development of infrastructure. In addition, extraction of forest products, illegal logging, cutting trees for fuel wood and charcoal and grazing of livestock have also contributed to the degradation of forests. These competing land uses have adverse environmental effects on long term sustainability of forest ecosystems.
- 4.1.3. Large scale loss of forests could lead to catastrophic and permanent change in the county's ecology with consequent loss of agricultural productivity, industrial potential development, living conditions and aggravated natural disasters such as floods and drought. It would also endanger the county's water supplies, since forests play a significant role in hydrological cycle.
- 4.1.4. Public parks and open spaces play a major role in human wellbeing, aesthetics, and air purification and require special attention.

##### ***Policy Statements***

###### ***The County Government will:***

- a) *Formulate strategies to increase tree cover.*
- b) *Develop and implement a County strategy for rehabilitation and restoration of degraded forest ecosystems and water catchment areas with active community involvement/participation.*
- c) *Support effective implementation of the forestry and other related policies and laws, regulations and guidelines.*
- d) *Develop and implement county standards, principles and criteria of sustainable forest management.*

- e) *Develop and Implement public parks and open spaces management plans/ strategies*
- f) *Encourage development and implementation of appropriate forestry-based investment programs and projects.*
- g) *Develop frameworks to protect sensitive forest ecosystems or those of cultural significance or of recreational value*
- h) *Involve and empower communities in the management of forest ecosystems and trees on farms.*

## 4.2. Freshwater and Wetland Ecosystems

4.2.1. Freshwater resources and wetlands form an important part of the county's natural resources with considerable provisioning, regulatory and supporting services. Their provisioning services include the storage and retention of water for domestic, agricultural and industrial use. Their regulating services include modifying water flows, recharging and discharging groundwater resources and diluting or removing pollutants. Their supporting services are important for soil formation and retention as well as nutrient cycling. These ecosystems also provide habitats for a great number of plant and animal species.

4.2.2. The ecosystems face numerous threats from human population pressure and land use changes. Some of them have been converted for agricultural use, settlements and commercial developments. Other threats include pollution, sedimentation and over-exploitation of wetland resources, introduction of alien species and encroachment of riparian reserves and adverse effects of climate variability. These have caused extensive degradation, reduction in water quality and quantity and loss of freshwater and wetland ecosystem goods and services.

### ***Policy Statements***

*The County Government will:*

- a) *Develop and implement integrated freshwater and wetland resources management strategies and action plans.*
- b) *Promote and institutionalize payment for environmental services schemes to support catchment protection and conservation.*
- c) *With support from partners Promote sustainable use of freshwater and wetland resources and the conservation of river and lake ecosystems through development and implementation of river basin management plans.*
- d) *Develop and implement a County wetlands regulation.*
- e) *Promote livelihood options that are compatible with sustainable use of freshwater and wetland resources*
- f) *With support from partners Develop and implement catchment-based wetland management plans for all Ramsar and non-Ramsar sites through a participatory process.*
- g) *With support from partners ensure rehabilitation and restoration of degraded wetlands, riverbanks and lakeshores and, as appropriate, promote and support establishment of constructed wetlands.*
- h) *Harmonize and coordinate the roles of various regulatory agencies charged with the*

*management of freshwater and wetland ecosystems.*

- i) *Take integrated approaches to prevent pollution of wetlands and control invasive species*
- j) *Involve and empower communities in the management freshwater and wetland ecosystems.*

### 4.3. Hill Ecosystems

4.3.1. Hill ecosystems exist in both low and highlands and are particularly fragile and highly susceptible to erosion and landslides. They are especially important for biodiversity conservation since many harbor unique assemblages of plants and animals, including high levels of endemic species. Examples of hills within the county include Kajulu, Kisian, Got Nyabondo

4.4.2 Hills ecosystems have been subjected to a variety of uses and in the process have been exposed to degradation. The main drivers of Hills ecosystems degradation are deforestation, housing developments, mining, uncontrolled grazing, encroachment and the effects of climate change.

#### ***Policy Statements***

*The County Government will;*

- a) *Generate and strengthen knowledge about the ecology and sustainable management of hill ecosystems.*
- b) *Develop and implement strategies and action plans for sustainable management of hills ecosystems.*
- c) *Promote integrated management of mountainous areas and alternative livelihood opportunities to enhance community participation and empowerment in the conservation and management of hills ecosystems.*
- d) *Adopt appropriate land use planning for sustainable development of hills ecosystems.*
- e) *Involve and empower communities in the management of hills ecosystems.*

### 4.4. Land

4.4.1. Land is a key resource in Kenya and Kisumu County, being the basis of livelihoods for a vast majority and a foundation of economic development. Land resources are finite, fragile and non-renewable and are considered a capital and asset that provides the essential services for development and human well-being. Consequently, the demand and pressure on land is ever increasing. The main driving force leading to pressure on land resources is the increasing of population growth, speculation of land and other factors hence demand for more food and shelter.

4.4.2. The unsustainable use of land in urban and rural areas remains a major challenge to all Kenyans due to the serious impact on the environment. One key challenge has been in the area of zoning and development control. Activities contributing to land degradation include unsuitable agricultural land use, poor soil and water management practices, deforestation and overgrazing. Natural disasters, including droughts, floods and landslides, also contribute to land degradation.

### ***Policy Statements***

*The County Government will;*

- a) Ensure implementation of the Constitution and the National Land Policy in a way that will take into account sustainable conservation and management of the environment and land resources.*
- b) Promote and enhance best practices for optimal and sustainable land use.*
- c) Promote sustainable urban and peri-urban land uses.*
- d) Promote land restoration policies.*
- e) Exercise prudent development and zoning practices*
- f) Promote high-rise building as an efficient land utilization practice.*
- g) Promote research on land use in relation to the built environment.*
- h) Involve and empower communities in land utilization and management.*

#### **4.5. Soils**

4.5.1. Quality fertile soils are a foundation of sustainable agriculture. Soils are also essential in the hydrological cycle. Soil degradation processes of particular concern throughout the country include erosion, compaction and soil fertility depletion. Loss of natural habitats has reduced vegetation cover and exposed soils to extensive wind and soil erosion in many parts of the country.

4.5.2. Soil erosion is a major factor in land degradation and has severe effects on soil functions, such as the soil's ability to act as a buffer and filter for pollutants, its role in the hydrological and nitrogen cycle and its ability to provide habitat and support to biodiversity. Soil erosion also causes increased rates of siltation of dams and rivers and increased risk of flooding in rivers and estuaries. Thus, soil erosion reduces the productivity of land, requiring farmers to apply more and more fertilizers and other chemicals that help check declining productivity. The resultant excessive use of fertilizers and other chemicals contributes to soil degradation and water pollution.

### ***Policy Statements***

*The County Government will:*

- a) Develop and implement a County Soil Conservation Policy.*
- b) Diversify land- based food security practices*
- c) Promote and support eco and organic farming so as to maintain soil fertility*
- d) Ensure the protection of wetlands, riverbanks, hilltops and slopes from unsustainable practices to prevent soil erosion and environmental degradation.*
- e) Promote good soil management practices to avert landslides, mudslides, floods and other disasters that are preventable.*
- f) Involve and empower communities in soil conservation.*

#### 4.6. Minerals; sand, gravel, ballast, oil and gas etc.

4.6.1. The County's mineral potential is yet to be fully exploited due to lack of adequate geological information on deposits occurrence. With countywide coverage of geological surveys and mineral exploration, it is possible to fully exploit the mineral potential. Increased mining activity, including quarrying and harvesting of sand, ballast and gravel may result in environmental degradation unless measures are taken to guide and control operations in the mining sub-sector.

##### ***Policy Statements***

*The County Government will:*

- a) *Undertake assessments to document the mineral potential of the county*
- b) *Ensure formulation and implementation of the mineral resources development and exploitation regulations including sand, gravel, ballast, oil and gas*
- c) *Promote and implement mechanisms/or sustainable harvesting of sand and mining activities.*
- d) *Ensure rehabilitation and restoration of all mining sites including quarries and burrow pits.*
- e) *Encourage equitable exploitation and sound management of mineral resources while ensuring local participation and involvement of indigenous enterprises or investment in mining sector.*

#### 4.7. Biodiversity

4.7.1. Kenya is internationally recognized as a mega-diverse country in terms of richness in biodiversity. This is also evident in Kisumu County. Biodiversity contributes to a wide variety of environmental services, such as regulation of the gaseous composition of the atmosphere, protection of coastal zones, regulation of the hydrological cycle and climate, generation and conservation of fertile soils, dispersal and breakdown of wastes, pollination of many crops and absorption of pollutants. Human health and well-being are directly dependent on biodiversity. Biodiversity also provides genetic resources for food and agriculture and therefore constitutes the biological basis for food security and support for human livelihoods.

4.7.2. Loss of biodiversity is going on at an unprecedented rate. The most important drivers for biodiversity loss are land degradation, climate change, pollution, unsustainable harvesting of natural resources, unsustainable patterns of consumption and production and introduction of invasive and alien species. Such invasive alien species as *Prosopis juliflora* (Mathenge), *Eichornia crassipes* (water hyacinth), and *Lantana camara* constitute major threats to biodiversity in Kenya.

**Policy Statements**

*The County Government will:*

- a) *Develop and implement the County Biodiversity Strategy and Action Plan (CBSAP)*
- b) *Regulate and encourage sustainable utilization and bio-prospecting of biological resources in accordance with national and international law.*
- c) *Develop mechanisms to ensure that the benefits arising from access to genetic resources, including intellectual property rights, traditional knowledge and technology are shared equitably with communities living in areas where the genetic material originated from.*
- d) *Develop and implement a strategy to contain, control and mitigate alien and invasive species.*
- e) *Build the capacity of communities to participate effectively in biodiversity-related matters*

**4.8. Wildlife Resources**

4.8.1. Wildlife resources contribute directly and indirectly to the local and national economy through employment, revenue generation and wealth creation. The increasing population, growing numbers of refugees, human-wildlife conflicts, widespread pollution, climate change and the transformation of vast wildlife areas into other land-uses threaten the continued existence of wildlife in the county.

4.8.2. Human-wildlife conflict is a growing concern and provides a major challenge to wildlife conservation in Kisumu. Conflicts are prevalent as human population increases, development expands, the global climate change and other human and environmental factors put people and wildlife at greater direct competition for a shrinking resource base especially living space and food. The impacts are often huge. People lose their crops, livestock, property and sometimes their lives. The animals, many of which are threatened or endangered, are often killed in retaliation or to 'prevent' future conflicts. Despite the efforts made to reduce conflicts the losses remain high and some of the conflict mitigation measures that are in place for instance fencing and compensation for losses, demand for increased financial resources.

**Policy Statements**

*The County Government will:*

- a) *With partners' support Protect, conserve and improve the habitats, corridors and dispersal areas of wildlife.*
- b) *Provide incentives for investment in sustainable tourism and wildlife conservation initiatives.*
- c) *Promote the establishment of trans-boundary wildlife conservation areas as a basis for enhancing the conservation of shared wildlife resources and their ecosystems through relevant regional instruments.*
- d) *Encourage and support the establishment of private and community-based conservation areas in order to gain more space for wildlife.*
- e) *Establish coordinating mechanisms for proper wildlife management*
- f) *Maintain all gazette protected areas and reclaim and restore the encroached parks and reserves*

*for enhanced wildlife conservation.*

- g) *Strengthen and support wildlife research and monitoring to generate adequate information for decision making.*
- h) *Protect endangered wildlife species.*
- i) *Involve community participation in conservation activities.*

#### **4.9. Livestock**

4.9.1. Livestock production is the major activity in rural areas and contributes a considerable proportion of the Gross Domestic Product (GDP) and agricultural labor force. Overstocking leads to land degradation. In high potential areas, especially where zero grazing is practiced, the main issue in livestock production is waste management resulting in water pollution. In urban areas, disposal of effluents and dead animals from abattoirs, butcheries and tanneries is a major concern.

##### ***Policy Statements***

*The County Government will:*

- a) *Develop and implement an environment friendly livestock production policy that takes cognizance of livestock mobility and communal management of natural resources.*
- b) *Develop and Enforce regulations on waste management in livestock production industry.*
- c) *Develop and Enforce regulations on livestock movement and disease control through commercially viable production systems.*

#### **4.10. Fisheries**

4.10.1. Fisheries contribute a significant proportion to Kenya's GDP. It also plays an important role in ensuring food security. A large population depends on fisheries both directly and indirectly for livelihood through fishing and linkages to fish processing and trade. The fisheries sector is identified as one with great potential for value addition and provision of rural incomes in the county.

4.10.2. Kisumu County's fishery resources and their ecosystems are deteriorating due to unsustainable fishing practices, habitat destruction, pollution and weak management structures. Other challenges include uncoordinated development approaches, low investment and inadequate aquaculture development, weak linkages between research and management and cross-border conflicts. To reverse this trend and achieve sustainability of fisheries, careful stewardship is required to conserve and protect all aquatic habitats for present and future generations.

### ***Policy Statements***

*The County Government will:*

- a) *Promote sustainable management and utilization of fisheries resources.*
- b) *Strengthen capacity to carry out fisheries monitoring, control and surveillance.*
- c) *Promote sustainable aquaculture development.*
- d) *Promote fish quality, consumption, trade and investment*
- e) *Promote regional cooperation and collaboration on matters fisheries*
- f) *Enhance fisheries information and extension services*
- g) *Strengthen community participation in fisheries resources management, value addition and marketing.*
- h) *Protect fish breeding grounds and implement closed seasons regulations where necessary*

## **5. ENVIRONMENTAL STEWARDSHIP**

Stewardship of the environment refers to a precautionary approach to environmental challenges, promoting greater environmental responsibility and development and diffusion of environmentally friendly technologies. It means taking responsibility for our choices. The responsibility for environmental quality should be shared by all those whose actions affect the environment. Sustainable development requires that at competitive prices, business and industry can supply goods and services that meet societal and individual needs, contribute to improved quality of life and ensure management and efficient use of renewable and non-renewable resources

### **5.1. Natural Capital and Valuation**

- 5.1.1. Natural capital is the extension of the economic notion of capital (manufactured means of production) to goods and services relating to the natural environment. Natural capital is thus the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future. Since the flow of services from ecosystems requires that they function as whole systems, the structure and diversity of the system are important components of natural capital.
- 5.1.2. The challenge is a reliable way to assess the true value of the services that ecosystems provide, that is, what is their worth, what their loss would cost and what can be done about the loss.
- 5.1.3. The policy implication is that their future competitiveness and well-being depend heavily on improving the efficiency of natural resource use. It involves undertaking total economic valuation of county capital which include the review of what is known about the environmental services generated by natural capital, the ways in which humans benefit from those services and the ways in which human activities impact natural capital and change the future flow of services derived from it.

### ***Policy Statements***

*The County Government will:*

- a) *Adopt the national accounting system Developed and applied instruments and methodologies for environmental accounting into the county accounting and planning processes.*
- b) *Document and value natural capital and provide periodic assessments to support*

*County wide accounting and planning.*

- c) *Promote county wide and sustainable use of natural capital to ensure inter-generational equity.*
- d) *Promote existing and develop new incentives for the payment of the ecosystem services as a measure to secure and invest in the natural capital.*
- e) *Develop a monitoring and reporting framework for a range of stakeholders in line with the national framework to monitor their use of natural capital, periodically assess and cost degradation.*
- f) *Enhance Natural Capital Value through enhanced conservation activities and capacity building.*
- g) *Involve and empower communities in periodic assessments of natural capital.*

**5.2. Trade and Environment**

5.2.1 Trade is an important driver of economic growth. The County is committed to local, national, regional and international trade. The trend towards globalization has in part reduced barriers to international trade and investment flows. Unfortunately, it has also brought new environmental challenges to Kenya and Kisumu including dumping of obsolete technologies and e-waste.

5.2.2 Trade has both direct and indirect effects on the environment and society. Trade-offs between economic gains, environmental impacts and social effects must be made taking into consideration the multilateral trading systems. Trade liberalization within the framework of sustainable development and its contribution to poverty reduction remains a priority concern for the Government.

***Policy Statements***

*The County Government will:*

- a) *Mainstream environmental considerations into the County Trade Policy.*
- b) *Ensure that issues on environment are integrated into trade negotiations and domesticate resulting agreements.*
- c) *Promote and support capacity building in the field of trade and environment.*
- d) *Promote and encourage the adaption, uptake and implementation of national, international environmental law and natural resources stewardship standards.*
- e) *Promote reduction of negative environmental footprints in production and trade practices.*
- f) *Adopt circular economy principles in trade activities*

**5.3. Tourism**

Tourism is a major source of foreign exchange earnings in Kenya and Kisumu County. However, since the 1990s the industry has suffered from decline in per capita spending, average length of stay and hotel occupancy rates. This is as a result of several factors including environmental degradation

and deterioration in the quality of tourism products. Whereas there is growing recognition that tourism does have some negative impacts on the environment, there is need to gather more empirical evidence on the subject. There is also need to have a clear policy direction for mitigating the adverse and enhancing the positive environmental impacts of tourism.

### ***Policy Statements***

*The County Government will:*

- a) *Provide incentives to encourage eco-tourism industry initiatives aimed at protecting the environment.*
- b) *Improve policy implementation and strictly enforce environmental regulation.*
- c) *Set up framework for information exchange and for environmental awareness creation of all stakeholders in the tourism industry within the county.*
- d) *Encourage the promotion of investment in sustainable tourism, including eco-tourism and cultural tourism.*
- e) *Encourage community participation in tourism industry.*

## **5.4. Consumption and Production Patterns**

5.4.1. Changing patterns of consumption and production through integration of environmental considerations in all sectors is a pre-requisite for sustainable development. Most production and consumption practices do not take into account the associated environmental costs. As a result, the benefits provided and accounted for by natural resources appear to be much smaller than actual.

5.4.2. An integrated accounting system will ensure that environmental costs in production systems are considered. Unsustainable consumption and production practices have been growing, resulting in many of today's environmental challenges. Environment-friendly technologies can yield enormous environmental benefits and lay the foundation for a green economy. There is a need to develop and apply methods and tools that serve to promote resource efficiency in consumption and production patterns across sectors.

5.4.3. To achieve a clean and healthy environment, unsustainable patterns of production and consumption should be discouraged, and intensified awareness instituted.

### ***Policy Statements***

*The County Government will:*

- a) *Provide economic incentives for investment in more efficient, clean and environment friendly production technologies across all sectors and associated capacity building.*
- b) *Promote sound environmental management tools.*
- c) *Promote corporate and social responsibility and accountability.*
- d) *Promote public procurement policies that encourage development and diffusion of environmentally sound goods and services.*

- e) *Promote, strengthen, support consumer organizations and create awareness.*
- f) *Create awareness on environmental impact of using non-biodegradable materials such as plastics.*
- g) Promote 3Rs concept of integrated solid waste management rethink, reuse, recycling

## 5.5. Industrialization and the Environment

The structural changes implicit in attaining the growth rates demanded by the economic recovery strategy, Millennium Development Goals (MDGs), Vision 2030, Big 4 agenda and CIPD 2010-2022 means that ways must be found to achieve sustainable industrial development. This calls for an environmentally- friendly industrial development strategy that integrates and promotes cohesion of development and environmental policies and enhances transfer of environmentally sound technologies.

5.5.1. Kenya's Big four agenda, includes food security, affordable housing, universal healthcare, industrialization. Vision 2030 envisages the transformation of the country into a newly industrialized middle-income economy by 2030. Industrial development is identified as key driving force that puts pressure on the environment. Industrialization involves transformation of raw materials into value-added products using technology. These development activities are accompanied by generation of various forms of pollutants and waste into the environment.

5.5.2 The Small and Medium Enterprises (SMEs) have been recognized as the engine to drive industrialization. Besides contributing to economic growth and job opportunities, SMEs and industries also contribute significantly to environmental degradation and pollution due to factors such as the type and age of the technologies in use, shop-floor practices and other specific industry characteristics.

5.5.3 SMEs are the fastest growing part of the Kenyan economy. The manufacturing SMEs consume substantial resources and also produce a significant share of industrial waste. They are prevalent in industrial sectors with relatively high resource and emission intensity thus causing pollution and resource depletion.

### ***Policy Statements***

*The County Government will:*

- a) *Develop and implement environmentally-friendly industrialization policy.*
- b) *Promote the uptake of strategic environmental assessments in relevant county policies and plans*

- c) *Promote and support SMEs and other industries to adopt appropriate environmentally sound technologies through provision of appropriate incentives and disincentives.*
- d) *Develop capacity and promote environmental education and awareness among SMEs.*
- e) *Promote Resource Efficient and Cleaner Production (RECP) technologies, including best available techniques and applications.*

## 5.6. Infrastructural Development and the Environment

Infrastructural development includes, among others, buildings, roads, ports, railways, ICT, pipelines, irrigation systems, airports and electricity transmission. The environmental aspects of such infrastructural developments are distinct and unique such as effects on flora and fauna, social and psychological disruption, vegetation clearance, excavation works and spillages during construction.

### ***Policy Statements***

*The County Government will:*

- a) *Ensure Strategic Environmental Assessment (SEA), Environmental Impact Assessment, Social Impact Assessment and Public participation in the planning and approval of infrastructural projects.*
- b) *Develop and implement County environment and Social management framework to ensure environmentally-friendly county infrastructural development strategy and action plan that comply with all the environmental and social safeguards.*
- c) *Ensure that periodic Environmental Audits are carried out for all infrastructural projects.*

## 5.7. Management of Chemicals

The first conference on chemicals management held in 2006 in Dubai approved the implementation of the Strategic Approach to International Chemicals Management (SAICM). This is a universally acclaimed systematic and coherent framework for managing chemicals at all levels of society. For its implementation, the system requires governments to develop strong governance structures. In Kenya, management of chemicals has been without a guiding policy. In its absence, Kenya is vulnerable to risks and hazards associated with chemicals. The county shall operate in line with the national policy.

***Policy Statements***

*The County Government will:*

- a) *Integrate chemicals management programs into development plans.*
- b) *Implement the international process of the Strategic Approach to International Chemicals Management (SAICM), as per the national guidelines.*
- c) *Develop and implement a chemicals management policy*

**5.8. Human Settlements**

5.8.1. The pattern of human settlements in the country is influenced by natural resource endowments, which include availability, accessibility and control. Kisumu County is still largely rural with a high population growth rate experienced in urban areas that constrains the county's resource base. Rural settlements have environmental problems which are influenced by many factors including population growth, socio-economic status, topography and climate variability. The huge numbers of flood victims has major impacts on the environment and natural resources.

5.8.2. Sustainable human settlement involves creating the conditions under which people in both rural and urban settings can enjoy healthy, productive and well-integrated lifestyles. This should ensure that people live in safe, healthy and dignified conditions with relatively easy access to amenities. However, rapid urbanization caused by population growth and rural-urban migration have hindered the capacity of urban centers to provide housing, infrastructure, services and job opportunities.

***Policy Statements***

*The County Government will:*

- a) *Integrate demographic issues into environmental management and natural resources conservation.*
- b) *Develop and implement an Integrated Housing Policy and Housing Master Plan that takes into account environmental considerations.*
- c) *Develop and enforce integrated land use planning at all levels.*
- d) *Develop and promote a policy on eco-settlement centers including informal settlements.*
- e) *Mainstream environmental considerations in the temporary holding sites for displaced people policy and legislation.*

**5.9. Energy Use, Efficiency and Conservation**

5.9.1. Energy is essential for socio-economic development. Deliberate efforts have been made by the Government to provide power to remote areas in Kenya in order to spur development and improve livelihoods. The main sources of the country's power production are hydropower,

petroleum and geothermal. Kisumu County has one geothermal power station in Sondu Miriu. It is projected that the country's energy requirements will substantially increase. The country's energy policies must ensure a robust and efficient energy system that is secure and sufficient. In order to facilitate industrial competitiveness and economic growth, the energy system should focus more on diversifying energy development. It is worthy of note that a significant proportion of Kisumu residents rely on woody biomass for cooking; the latter has the twin effect of acceleration deforestation and frustrating the County's environmental targets considering the role trees play in the environment. Some few segments still rely on kerosene for cooking and lighting resulting in both environmental pollution and health risks.

### ***Policy Statements***

*The County Government will:*

- a) *Develop and promote an integrated county strategy for generation and sustainable utilization of renewable energy.*
- b) *Promote adaptation of the cleaner production concept in all energy production and consumption activities.*
- c) *Promote investments in clean energy*
- d) *Develop a system for energy management graduation for domestic, low and high industry consumers*
- e) *Create public awareness with respect to clean energy and energy efficient technologies*
- f) *Facilitate public access to clean and affordable energy sources*

### **5.10. Climate Change**

5.10.1. Kisumu County is susceptible to climate-related events such as droughts and floods which pose a serious threat to the socio-economic development of the county. Kisumu's existing vulnerability to climate impacts results from a wide range of factors including ecosystems degradation, agricultural activities and industrial undertakings.

5.10.2. Scientists across the globe have stated that warming of the climate system is unequivocal and that it is largely spurred by human activities releasing greenhouse gases (GHG) into the atmosphere. For Kenya and Kisumu, climate change poses many serious and potentially damaging effects on humans and the environment in the coming decades. Increased vulnerability to climate change and projected incremental changes associated with air and sea temperature, precipitation and sea level rise, together with changes in the frequency and severity of extreme events will have profound social, economic and ecological implications.

5.10.3. The effects of climate change have the potential to disrupt Kisumu's strides in agricultural production, forestry, water supply, health systems and overall human development.

- 5.10.4. Climate-resilient, low carbon development is a national priority for Kenya and Kisumu because it will enhance resilience and build capacity to adapt to additional environmental stresses. By pursuing a green economy path and minimizing her carbon footprint, the county will be better placed to deliver the constitutional right to a clean and healthy environment while minimizing the country's contribution to global climate change initiatives in line with the Paris Agreement and Kenya's intended Nationally Determined Contributions.
- 5.10.5. Measures to address existing climate variability and achieve national development goals should not be at the expense of preparing for future climate change. Measures to address climate change through mitigation and adaptation actions should not compromise the ability of today's generation to achieve people-centered sustainable development.

### ***Policy Statements***

*The County Government will:*

- a) *Develop and implement a comprehensive County Climate Change Policy.*
- b) *Strengthen capacity for county level institutions to support national climate resilience, low carbon development through integrating climate change into implementation strategies.*
- c) *Develop and implement awareness raising strategies and capacity development on the opportunities for adaptation and mitigation measures as per the national climate change action plan and response strategy.*
- d) *Strengthen and enhance early warning and response systems for climate and disaster risk reduction.*
- e) *Enhance the adaptive capacities of marginalized groups*
- f) *Build and strengthen research capacity on climate change and related environmental issues.*
- g) *Put in place a climate financing mechanism that will help the county take advantage of new and emerging climate change funds and also include innovative ways to fund climate change actions domestically through committing a percentage of the annual county development budget to climate related interventions.*
- h) *Upscale the role of private sector in combating climate change*
- i) *Involve and empower communities in mitigating and adapting to climate change.*

### **5.11. Emergency Preparedness and Disaster Management**

- 5.11.1. Kisumu County has continued to face a rising degree of vulnerability to disaster risk. A risk is the probability of a hazard turning into a disaster with households or communities being affected in such a manner that their lives and livelihoods are seriously disrupted beyond their capacity to cope or withstand using their own resources, with the result that the affected

populations suffer serious widespread human, material, economic or environmental losses. Communities are predisposed to disasters by a combination of factors such as poverty, aridity, settlement in areas prone to disasters or areas with poor infrastructure and services such as the informal urban settlements or even living in poorly constructed buildings.

5.11.2 Kisumu's capacity to respond to emergencies and incidents is inadequate. This is despite recurrent occurrences of incidents such as markets fires and accidents in households, trading centers, informal settlements, factories and during storage and transportation of chemical products. The public is increasingly concerned about inadequacies in county capacities for disaster management for emergencies and resultant risks and hazards. There is therefore need to build capacity for emergency preparedness, response and mitigation of impacts to human health and the environment.

5.11.3 These factors, coupled with naturally occurring hazards such as droughts, floods, and epidemic outbreaks as well as those propelled by climate change phenomena, pose extremely high and increasing disaster risks to the society. Although Kisumu's economy and by extension its population could be classified as highly vulnerable to natural and man-made disaster risks, the country does not have a comprehensive disaster management framework and strategies guided by appropriate policy and legislative provisions.

### ***Policy Statements***

*The County Government will:*

- a) *Establish an institutional, policy and legal framework to effectively manage disaster risk and disasters in general.*
- b) *Ensure strategies for early warning and awareness on disasters are in place.*
- c) *Collaborate with local, national and international institutions on emergency and disaster response in controlling, responding and mitigation of emergencies occurring in the county.*
- d) *Involve and empower communities in disaster risk management and reduction.*
- e) *Develop a county risk- mapping framework*

### **5.12. Gender, Vulnerability and Environment**

5.12.1. Gender plays an important role in the management of the environment. Different social groups and demographics are impacted differently by environmental challenges. They also play unique roles in managing the environment given their unique capabilities, experiences and knowledge relating to the environment. Access to and ownership of natural resources should be enhanced for all gender, people living with disabilities, marginalized and minority groups.

### ***Policy Statements***

*The County Government will:*

- a) *Provide incentives to attract the under-represented gender and other vulnerable groups into environmental management careers, occupations and programs.*
- b) *Mainstream gender and equity in all sustainable development policies*

## **6. ENVIRONMENTAL QUALITY AND HEALTH**

6.1. The constitution of Kenya in its preamble takes cognizance of the fact that the people of Kenya are respectful of the environment, which is our heritage, and affirms our determination to sustain it for the benefit of future generations; Article 42 of the same constitution states that every person in Kenya has a right to a clean and healthy environment; Articles 69- 71 outline the state's obligation with respect to the environment including *inter alia* sustainable use; the desired tree cover; intellectual property; public participation; protection of genetic resources; environmental impact assessment/ environmental audits/ environmental monitoring; enforcement of environmental rights; agreements relating to natural resources and legislation relating to the environment. Life depends on a clean and healthy environment. This vast web of interwoven life systems is often threatened by the atmospheric presence of harmful substances as well as ionizing agents. Air pollution, waste, radiation and noise require special attention. In terms of environmental health, the most pressing problems are those associated with air and water pollution, water supply and sanitation, waste management, chemical and food safety. These directly cause diseases such as malaria, cholera, typhoid and host of other diseases. The ill- health effects of harmful environmental exposures may be acute. Often along time may elapse between the initial exposure and the appearance of an adverse health effect.

### ***Policy Statements***

*The County Government will:*

- a) *Promote Environmental Health Impact Analysis (EHIA) as a component of EIA for all development projects.*
- b) *Enhance the provision of occupational health and safety services.*
- c) *Establish a cooperative approach to environmental compliance for county industrial players*
- d) *Promote capacity building in the field of health impact analysis*
- e) *Ensure compliance with all environmental quality standards*

### **6.2. Air Quality**

6.2.1. Air pollution is a leading cause of respiratory diseases such as chronic obstructive pulmonary disease (COPD), lung cancer, pulmonary heart disease and bronchitis. The effects of outdoor air pollution are compounded by those of indoor air pollution. Most households use charcoal

and firewood for domestic cooking. Indoor air pollution affects both urban and rural populations.

### ***Policy Statements***

*The County Government will:*

- a) *Ensure compliance with air quality standards by all sectors and strengthen monitoring and enforcement capacities.*
- b) *Promote efficient non-motorized, non-polluting and efficient infrastructure for mass transport system.*

### **6.3. Water and Sanitation**

6.3.1. Water supply and sanitation in Kisumu is characterized by low levels of access, particularly in urban informal settlements and in rural areas, as well as poor service quality standards in the form of intermittent water supply. Wastewater and lack of basic sanitation facilities continue to undermine efforts to reduce extreme poverty and disease in the county. Seasonal and regional water scarcity exacerbates the difficulty to improve water supply. These challenges persist despite the water sector undergoing considerable reforms over the years.

6.2.2 In addition, sewerage systems and wastewater treatment plants experience inadequate operation and maintenance and low connection rate to sewers. Mixing industrial effluent and domestic sewage in mixed sewer system often causes poor performance in pond treatment systems. Cases of pollution by wastewater emptying into storm drains, soak-ways and cesspits designed for kitchen waste are common. Access to clean drinking water and basic sanitation facilities could transform the lives of millions of citizens, prevent thousands of deaths and free up hours each day for women and children to engage in other productive activities. It goes without saying that limited access to potable water and proper sanitation is a cross-cutting challenge that impacts almost all other sectors of the economy.

### ***Policy Statements***

*The County Government will:*

1. *Improve the management and conservation of water supply sources.*
2. *Promote technologies for efficient and safe water use, especially in respect to wastewater use and recycling.*
3. *Upgrade the sewerage system*
4. *Enhance access to potable water*
5. *Provide incentives for private sector investment and development of appropriate water and sanitation technologies and infrastructure for waste management.*

#### 6.4. Solid Waste Management

6.4.1. Inefficient production processes, low durability of goods and unsustainable consumption and production patterns lead to excessive waste generation. Despite efforts to encourage re-use, recycling and recovery, the amount of solid waste generated remains high and appears to be on the increase. Other categories of wastes that require special consideration is electronic waste, military wastes, pamper sanitary waste and medical wastes. It is rather odd that as the levels of affluence increase in the county the flip side is an increase in solid waste generation and poor mindsets towards responsible management of the same.

##### ***Policy Statements***

*The County Government will:*

1. *Develop an integrated solid waste management strategy for the county with special focus on each sub-county, urban areas, market centers and specific action plans for each unique sector of generation e.g. household, hotels, bars and restaurants, industries etc.*
2. *Develop laws, regulations and guidelines to regulate the waste sector*
3. *Promote the use of economic incentives to manage waste.*
4. *Promote public private partnership in the sector*
5. *Promote establishment of facilities and incentives for cleaner production, waste recovery, recycling and re-use.*
6. *Undertake public awareness programs in the area of solid waste management*
7. *Identify, acquire and license waste transfer stations, waste processing and disposal facilities.*
8. *Establish appropriate waste disposal facilities including waste to energy*
9. *Promote waste reuse, recycling and recovery recycling initiatives*
10. *Establish a waste recycling center for all recovered waste including electronic waste*
11. *Enforce the 'polluter-pays' principle on companies generating waste*
12. *Involve communities, CSOs, Academia and private sector in SWM*

#### 6.5. Radiation

6.5.1. Nuclear energy, X-rays, radioactive wastes, mining and use of equipment with ionizing agents can release harmful radiation into the environment. Different types of radiation vary in their ability to affect health. Ionizing radiation can cause cancer and other negative health effects such as teratogenic and genetic mutations.

##### ***Policy Statements***

*The County Government will:*

- a) *Maintain an inventory of sources, types and quantities of radioactive materials, periodically monitor status and trends and enhance protection measures.*
- b) *Strengthen capacities for handling and management of radio-active waste and ionizing agents.*

## 6.6. Toxic and Hazardous Substances

6.6.1. Toxic and hazardous substances are widely used in Kenya particularly in the agricultural and industrial sectors. Exposure to these substances is likely to produce chronic rather than acute effects. Like many other countries in Africa, Kenya is vulnerable to illegal dumping of obsolete and banned toxic and hazardous substances and is implementing various international chemicals instruments through existing laws and policies.

### ***Policy Statements***

*The County Government will:*

- a) *Develop a County policy on toxic and hazardous substances in line with the national policy*
- b) *Establish appropriate toxic and hazardous substances and disposal facilities.*
- c) *Collaborate with the international community in curbing dumping of obsolete or banned toxic and hazardous substances and enforce the relevant MEAs.*
- d) *Draw and implement an action plan for replacement of asbestos roofing within the county*

## 6.7. Noise and Vibrations

6.7.1. Exposure to high levels of noise can result in significant adverse health impacts. The most important is loss of hearing caused by repeated exposure to high noise levels. Noise can result in hearing impairment and quite loud noise significantly interfere with communication. Commercial transportation and social activities within or close to residential areas also form an important category that include both noise from the activities themselves such as discos and that of associated machinery.

### ***Policy Statements***

*The County Government will:*

- a) *Develop a county strategy on noise pollution.*
- b) *Strengthen capacity and infrastructure to monitor, enforce and regulate noise pollution.*

## 6.8. HIV/AIDS and the Environment

6.8.1. Despite gains in life expectancy, the HIV&AIDS pandemic has had far reaching impacts on all sectors of the economy due to loss of lives or absence from work due to prolonged ailment periods. The pandemic has therefore, caused a shortage of both skilled and unskilled labor thereby undermining environmental protection activities. The increased burden due to the cost of treatment results in reduced investment in the sector as more resources are devoted to healthcare. Factors in the environment could also exacerbate the conditions of HIV/ AIDS patients.

***Policy Statements***

*The County Government will:*

- a) *Ensure that strategies against HIV & AIDS is integrated in environmental protection programs, projects and activities.*
- b) *Develop HIV and aids workplace policy*

**6.9. Environmental Diseases**

6.9.1. Illnesses and conditions caused by factors in the environment are collectively referred to as environmental diseases. Pesticides, chemicals, radiation, air pollution and water pollution are some of the manmade hazards that contribute to human illnesses. The likelihood of an individual developing a specific disease depends on the hazards present in their particular environment and their genetic susceptibility to a specific hazard. For example, X-ray technicians are at risk of radiation-induced illnesses whereas stone and coal miners are prone to lung diseases caused by inhalation of dust. Proper use of safeguards can prevent these and other environmental diseases

6.9.2. Providing public health services to deal with environmental hazards require a broad and fully integrated approach using tools ranging from regulation to health promotion, including strong public awareness and educational activities.

***Policy Statements***

*The County Government will:*

1. *Enact measures to protect the public against hazards from the natural environment, including climate-related health impacts and controlling vectors and organisms that can carry or transmit diseases to humans.*
2. *Ensure compliance to set environmental quality standards*
3. *Ensure safe water for all through prevention and minimization of health risks related to water source, drinking water, recreational water, wastewater and water reuse.*
4. *Maintain and build crucial environmental public health infrastructure and capacity to prepare for and respond to, and mitigate the effects of national, accidental and natural events.*
5. *Promote continued research into evolving scientific methods such as bio- monitoring and their interplay with the environment and human health.*
6. *Undertake public awareness so citizens are better equipped to protect themselves from environmental diseases*

## 7. RESEARCH, EDUCATION AND MONITORING

Scientific research technology and innovation are central to sound environmental management. High quality data generated from environmental research and monitoring improves the country's information base for decision making on environmental issues.

### 7.1. Scientific Research and Information Management

7.1.1 Information is the foundation of sustainable development and is fundamental to successful planning and decision making. Satellite and other remote sensing technologies can improve capabilities of capturing environmental status and trends. In addition, satellite imagery, geographic information systems (GIS) and aerial photography have greatly expanded opportunities for data integration and analysis, modelling and map production. There is need for enhanced environmental research, training and dissemination of environmental management tools in Kenya.

#### ***Policy Statements***

*The County Government will:*

1. *Develop a data and information management policy on environmental and biological resources.*
2. *Enhance integration of traditional knowledge in environmental planning and management.*
3. *Develop a County Environmental Information Management System (CEIMS).*
4. *Support research and development programs and projects that transfer knowledge and technologies for environmental management and sustainable development.*
5. *Publish county environmental targets and county state of environment reports*

### 7.2. Education, Communication and Awareness

Environmental education, both formal and informal, is vital to changing people's attitudes to/and care for the environment. This education is important to increase awareness, improve extension services, sensitize people on environmental issues and build institutional capacities.

Education system. Communication of environmental information to all stakeholders is still a challenge. Public awareness empowers the public to develop a strong sense of responsibility on environmental issues. This removes the notion that action on environment only involves the county government but facilitates action at individual and local levels.

***Policy Statements***

*The County Government will:*

- 1. Develop a Strategy on Environmental Education and Public Awareness.*
- 2. Develop and disseminate Environmental Education packs for targeted stakeholder groups*
- 3. Document, disseminate and encourage the use of indigenous knowledge in environmental protection and conservation.*
- 5. Establish and strengthen environmental resource centers at all levels.*
- 6. Develop and implement Education for Sustainable Development (ESD) strategies.*
- 7. Encourage observance of environmental days and other engagement platforms including clean ups; green schools; and awards/recognition schemes for environmental champions*

**8. ENVIRONMENTAL GOVERNANCE**

Functioning governance structures, legal and policy instruments as well as institutional capacity for judicious implementation and enforcement are a prerequisite for effective environmental governance. Several policies governing the environmental sector need to be harmonized for smooth implementation at the county level bearing in mind the stipulations of the constitution and other governance instruments.

***Policy Statements***

*The County Government will:*

- 1. Develop a county bill and attendant regulations to domesticate EMCA 1999*
- 2. Develop guidelines and standards to ease implementation of the county environment bill*
- 3. Establish mechanisms to work with state and non- state actors in matters environment*
- 4. Develop a collaborative framework for county, regional and national environmental institutions*

## 8.1. Institutional Arrangements

8.2.1 The multi-faceted nature of the environment and the need to integrate environmental considerations in all development planning and activities calls for cooperation and consultation among responsible government agencies and stakeholders at all levels. It is particularly important to recognize the existing institutional mechanisms and consider ways and means by which coordination and cooperation can be enhanced between the many institutions whose mandates relate to the environment.

8.2.2 The National Environment Management Authority (NEMA) is the national regulatory agency coordinating with the devolved entities. There are other MDAs operating in the environment space including the Water Resources Authority, the Water Towers Agency, Kenya Wildlife Service, Kenya Forest Service and others. Local communities and private sector enterprises also have a contribution to make in environmental management

### ***Policy Statements***

*The County Government will:*

- 1. Strengthen the Directorate of Environment in the State Department responsible for environment to support the Executive Member in his/her oversight role in environmental policy formulation, coordination of intervention activities and to monitor the implementation in relation to other sectoral policies.*
- 2. Establish coordinating frameworks and arrangements for partnerships with both County and national government institutions*
- 3. Streamline and strengthen the capacity of environmental institutions at the county levels so as to make them more effective and participatory.*

## 8.2. Human Resources Development and Capacity Building

Weak enforcement of environmental law is attributed to inadequate technical capacities, monitoring infrastructure and inadequate trained staff in enforcement institutions. Building a cadre of professionals in environment and natural resource management is an investment for the future that requires immediate and long-term approaches. Whereas short term training and targeted courses are important for skills and managerial development, the long-term training in specific areas enhances specialization.

Kisumu County will need to fast track this activity as it underpins the success or otherwise of this policy and the attendant Acts and other envisaged interventions. Due to the complex and evolving nature of environmental issues there is need for long term planning for this undertaking.

**Policy Statements**

*The County Government will:*

1. Undertake a capacity- needs assessment with a view to implement this policy
2. Support and promote the development of expertise in government agencies, the private sector and civil society organizations in various areas of environmental management through targeted short- and long-term courses and awareness creation.
3. Develop a wide range of training opportunities and modules in the *field* of environment for different levels taking into account gender equity, emerging environmental issues and devolved institutions.
4. Enhance and promote networking between centers of excellence in environmental management at the national, regional and international levels.

**8.3. Partnerships and Stakeholder Involvement**

Partnerships by their very nature, represent a sustained commitment to move forward together to reach a higher common objective. To ensure an inclusive partnership and stakeholder involvement in decision-making, ways must be found to (a) ensure wide representation from across the private sector and civil society organizations and (b) ensure that as many community voices as possible are heard. This is because private sector, civil society actors and communities play a central role in environmental conservation and management.

8.4.2 The non-state actors have the advantage of being more independent of political pressures than government agencies. Thus, they are well positioned to play an important leading role in agenda setting and policy development processes.

**Policy Statements**

*The County Government will:*

1. Develop and implement a Strategy on Partnerships and Stakeholder Involvement to enhance environmental management.
2. Promote investments in environmental efforts and programs by providing appropriate *fiscal* and economic incentives.
3. Develop and implement mechanisms for conflict resolution and management in the conservation of environment and natural resources.

**8.4. Funding Mechanisms**

Sound environmental protection and management require sustainable financing mechanisms. The government's budget is the single largest source of funding for protection and conservation of the environment and natural resources. However, the current allocation to environment and natural resources is inadequate. As

such, there is an urgent need to complement government funding by harnessing additional funding from multilateral funding mechanisms, development partners, private sector and civil society organizations.

### ***Policy Statements***

*The County Government will:*

1. *Provide adequate resources for environmental protection and management through annual budgetary allocation.*
2. *Promote participation of individuals, public and private partnership through fiscal incentives and voluntary agreements pegged on environmental performance indicators.*
3. *Broaden the revenue and funding base to ensure financial sustainability of environmental management institutions.*

## **8.5. Regional and International Cooperation**

Effective management of shared environmental resources requires regional and international cooperation in line with the ecosystems approach. Significant benefits could be realized, and effectiveness increased through regional and international cooperation. Kenya is a party to a number of multilateral and regional environmental agreements. These agreements are important in providing a framework for conservation of shared resources between partner states. It is important to note that the county is already a member of the Lake Region Development Block which already has an economic blueprint

### ***Policy Statements***

*The County Government will:*

1. Establish and strengthen coordination mechanisms to ensure consistent negotiations, implementation and reporting of the MEAs and regional agreements.
2. Actively support and pursue the aspirations of the Lake Region Economic Block
3. Leverage the expertise and resources resident in regional initiatives such as the Nile Basin Initiative and the Lake Victoria Environment Management Program

## **9. IMPLEMENTATION STRATEGIES AND ACTIONS**

The main responsibility for following up the Kisumu County Environment Policy goals and objectives and ensuring their realization rests with the County Government, department of WIENR. The proposed implementation strategies and actions presuppose active participation of stakeholders at all levels. In this regard, a number of strategic actions will guide the implementation of this Policy.

## 9.1. Integration of Environmental Concerns in all Policy, Planning and Development Processes

- 9.1.1. Integration of environmental considerations in all county and relevant sectoral policies, planning and development processes is critical if this Policy is to achieve its goals and objectives. In order to operationalize these, the responsible department (currently Department of WIENR) has to take the leadership role in ensuring that all county and all sectoral policy planning and development processes mainstream environmental considerations.
- 9.1.2. Five years strategic plans and County Environment action plans will be developed to guide policy implementation process.
- 9.1.3. County State of Environment Report will be released periodically.

### ***Policy Statements***

*The County Government will:*

- a) *Promote the subjecting of county policies and plans to Strategic Environmental Assessments (SEA).*
- b) *Promote uptake of environmental assessments and audits.*
  
- a) *Establish and implement Kisumu County Environmental and Social management framework to ensure institutional compliance to environmental and social safeguards in all the annual development plans implementation.*

## 9.2. Clarifying Roles and Responsibilities

- 9.2.1. Implementation of this Policy involves many different groups including Government agencies at local, national and regional levels, private sector, civil society organizations, local communities and the public. A key element is defining the roles and responsibilities of the various groups.

### ***Policy Statements***

*The County Government will:*

- b) *Strengthen the capacity of the Directorates of Environment under the County department of Water Irrigation Environment and Natural Resources to play the oversight role of monitoring the implementation of the County Environment Policy.*
- c) *Develop and implement delegation instruments to provide a framework for cooperative and collaborative management between NEMA and the lead agencies, through the County Environment Committee.*
- d) *Strengthen the capacity of environmental institutions at the county levels so as to make them more effective in ensuring compliance.*

- e) *Strengthen government capacity to assess, negotiate and monitor investments, contracts, leases and concessions used for sustainable resources management.*
- f) *Strengthening capacity in the area of environmental economics that includes natural resources accounting, development of incentives and disincentives, indicators for sustainable development and valuation of environmental goods and services.*
- g) *Strengthen the capacity on SEA and ESIA processes and subject all sector policies, plans and programs to SEA.*

### 9.3. Environmental Compliance

9.3.1. Compliance is critical to achieving sustainable development. Voluntary compliance with environmental requirements reduces costs of enforcement and monitoring. Compliance strategies involve both actions to promote and enforce legal requirements.

9.3.2. Enforcement is important in order to create a conducive environment in which the stakeholders will have clear incentives to make use of the opportunities and resources provided. ***Policy Statements***

*The County Government will:*

- a) *Design and implement a County Environmental Compliance and Enforcement Program.*
- b) *Enhance public-private partnerships in environmental management.*
- c) *Provide economic incentives for establishments that adopt environmentally friendly technologies.*
- d) *Promote alternative conflict resolution mechanisms.*
- e) *Establish and Strengthen the Kisumu County Public Environment Complaints Committee and devolve its functions to the sub-counties.*
- f) *Strengthen the county environmental courts.*

## 10. GLOSSARY

"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.

"Bio-piracy" refers to the expropriation of biological resources without fair compensation or sharing of benefits.

"Bio-prospecting" refers to the exploration of biodiversity for commercially valuable genetic and biochemical resources and research.

"Catchment area" refers to the area drained by a river or body of water. "Community" refers to a clearly defined group of users, which may, but need not be, a clan or ethnic community. These groups of users hold a set of clearly defined rights and obligations.

"Conservation" means the protection, maintenance, rehabilitation, restoration and enhancement of the environment for sustainable use.

"Ecosystem" means a dynamic complex of plant, animal, micro-organism communities and their non-living environment interacting as a functional unit.

"Environmental Impact Assessment" means a systematic examination conducted to determine whether or not a program, activity or project will have any adverse impacts on the environment.

"Genetic resources" means genetic material of actual or potential value. "Land use" means activities carried out on a given piece of land.

"Invasive and alien species" means a species that is not an indigenous species, or an indigenous species translocated to a place outside its natural distribution range in nature.

"Multilateral Environmental Agreements (MEAs)" means international legal instruments for the regulation of activities affecting the environment particularly wildlife resources to which Kenya is a Party.

"Payment for Environmental 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.

"Protected area" means an area declared to be a protected area under the applicable law.

"Species" means a population of individual organisms capable of mating with one another and producing fertile offspring in a natural setting and that share common and specialized characteristics from others.

"Stakeholder" refers to an individual or group having a vested interest in environment and natural resources.

"Strategic Environmental Assessment" refers to a range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programs and evaluate the inter-linkages with economic and social considerations.

"Sustainable use" means present use of natural resources, which does not compromise the ability to use the same by future generations or degrade the carrying capacity of ecosystems and habitats.

"Wetlands" means areas of marsh, fen, peat land, or water, whether natural or artificial, permanent or temporary, static or flowing, fresh, brackish, salt, including areas of marine water the depth of which at low tide does not exceed six meters. It also incorporates riparian and coastal zones adjacent to the wetlands.

"Wildlife" means any wild and indigenous animal, plant, micro-organism, or parts thereof within their constituent habitat or ecosystem on land or in water as well as species that have been introduced into or established in Kenya.