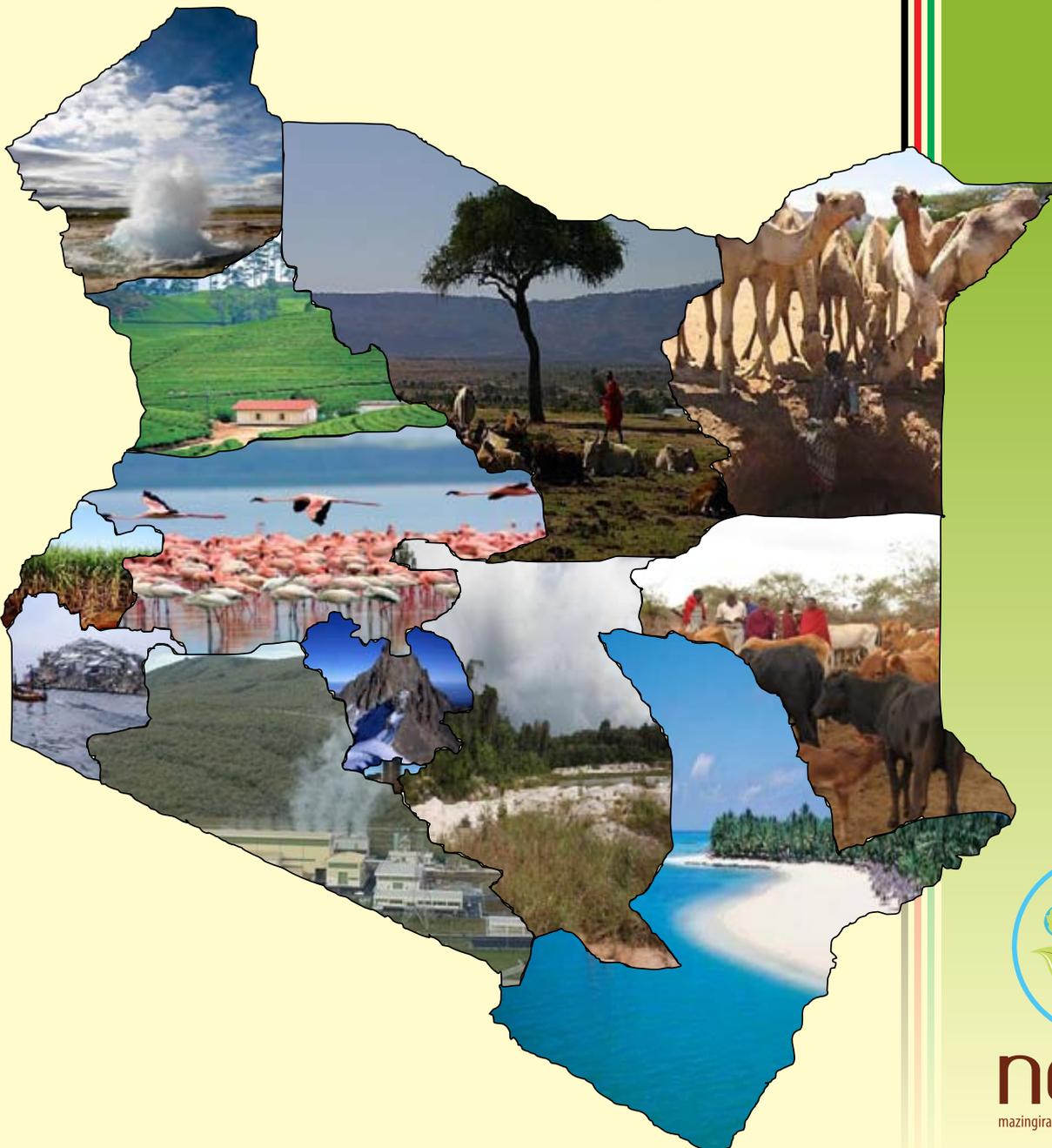




INTEGRATED NATIONAL LANDUSE GUIDELINES

*For a sustained Societal Attributes – Infrastructure,
Environmental Resources and Public Safety*



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LIST OF ACRONYMS

AOA	Airport Operating Area
ASAL	Arid and Semi-Arid Lands assessment
BTS	Base Transmitter Station
CBD	Central Business District
CBO	Community Based Organization
CDF	Constituency Development Fund
CDM	Clean Development Mechanism
CLR	Contaminated Land Register
CP	Cleaner Production
DEAP	District Environment Action Plan
DEC	District Environment Committee
DEO	District Environment Officer
DRSRS	Department of Resource Survey & Remote Sensing
EEZ	Exclusive Economic Zone
EG&S	Environmental Goods and Services
EIA/EA	Environmental Impact Assessment /Environmental Audits
EMCA	Environment Management Coordination Act, 1999
EMF	Electromagnetic Frequency
EMP	Environmental Management Plan
EP&RC	Environmental Planning and Research Coordination
ESA	Environmentally Significant Area
GIS	Geographic Information System.
GoK	Government of Kenya
IAS	Invasive Alien Species
ICNRP	International Commission on Non-Ionizing Radiation Protection
ICT	Information Communication Technology
IKS	Indigenous Knowledge System
INLUG	Integrated National Land Use Guidelines
IPR	Intellectual Property Rights
KFS	Kenya Forest Service
KNCPCKenya	National Cleaner Production Centre
KWS	Kenya Wildlife Service
MDG	Millennium Development Goal
MEMR	Ministry of Environment and Mineral Resources
MEA	Multilateral Environmental Agreement
MPA	Marine Protected Areas
MSR	Mining Safety Regulation
MTP	Mid-Term Plan
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NGO	Non-Governmental Organizations
OS	Open Space
PDE	Provincial Director of Environment
PDP	Part Development Plan
PEC	Provincial Environment Committee
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
SEA	Strategic Environment Assessment
SHEC	Safety Health Environment Committees
SIA	Social Impact Assessment
SMP	Site Management Plan
SOE	State of Environment
UNCCD	United Nations Convection to Combat Desertification
UNHCR	United Nations High Commission for Refugees
WSSD	World Summit for Sustainable Development
WRMA	Water Resources Management Authority

DEFINITION OF TERMS

“Alien Species” means species occurring outside of natural range and dispersal potential (includes both introduced and immigrant).

“Benching” means quarrying in steps

“Carrying Capacity” means the level of use an area can sustain without an unacceptable degree of deterioration of the character and quality of the resource. The carrying capacity of a given area is neither a static measurement nor a defined magic number. It can be affected by a large number of factors, such as seasonality, specific location, activity, infrastructure and services.

“Drainage” means the artificial large-scale removal or exclusion of water from a wetland, which lowers the water table so that it does not rise to the soil surface. This practice radically alters the potential of the wetland and destroys its function as a natural of water flow and storage. It is recognized that in the interest of the other principles listed, some modifications of water may be necessary.

“Environmental Audit” means the Systematic evaluation of activities and processes of an ongoing project to determine how far these activities conform to the Environmental Management Plan of that specific project and sound environmental management practices.

“Environment Impact Assessment” means the systematic examination conducted to determine whether or not an activity or project will have any significant impacts on the environment, provide mitigation for the adverse impacts and optimize the positive impacts.

“Environmental Significant Area (ESA)” means an area of land, under public or private control that provides, contains, or includes productive, rare, or sensitive habitat, ecosystems, or landforms. ESAs have been identified as important worthy of protection based on criteria such as ecological, socio-economic, or historical functions, or other specified functions and features. They are covered under existing laws of Kenya and international conventions to which Kenya is signatory. These include but are not limited to, protected areas, land dedicated as a reserve for environmental purposes, heritage site, natural lands, area supporting a critically endangered or endangered ecological community, a declared RAMSAR site, and an area of high conservation value.

“Invasive Species” means species which is an agent of ecosystem change, especially when threatening biological diversity, usually but not always alien species. These species are native to a particular area or region but have been introduced elsewhere either by accident or intentionally.

“Land Use” means social and economic purposes for which land, including water is managed.

“Optimum Diversity” means maintaining a diversity of traditional uses and perhaps adding new uses where appropriate means that the diversity of fauna and flora is retained in the wetland. This in turn will optimize the harvestable yield and ensure flexibility for later adaptations to changing circumstances.

“Overburden” means soil and/or soft rock above materials to be quarried

“Quarry” means a type of open-pit mine from which rock material and sand are extracted.

“Quarry Pit” means a surface excavation allocated to an operator within a quarry site for extracting building stone, construction aggregate, sand and gravel.

“Quarry Operator” means an individual who has been leased a quarry pit for the purposes of extracting building stone, construction aggregate, sand, and gravel.

“Sustainable use” means the practice of utilization, which will ensure that the production of goods and services derived from that use, are available at the same level in perpetuity. For example, yields from a fishing activity should be set at a level that can be maintained for the foreseeable future i.e. sustainability.

“Strategic Environmental Assessment” means a range of analytical and participatory approaches that aims to integrate environmental consideration into policies, plans and programmes and evaluate the interlink ages with economic and social considerations.

“Wetland” means an area of land that is permanently or occasionally water logged with fresh, saline, brackish, or marine waters, including both natural and man-made areas that support characteristic biota.” This definition includes swamps, marshes, bogs, shallow lakes, ox-bow lakes, dams, river meanders and floodplains, as well as riverbanks, lakeshores and seashore where wetland plants grow. It also includes marine and intertidal wetlands such as deltas, estuaries, mud flats, mangroves, salt marshes, sea grass beds and shallow reefs.

FOREWORD

Land in Kenya is a key factor of production, making its proper management a requirement for sustainable development. The demand for arable land, grazing, forestry, wildlife, tourism and urban development are greater than the land resources available. These demands become more pressing every year with continued population growth. To address the identified key issues in land use management within a development oriented approach poses challenges to all stakeholders and requires integrative solutions across the policy, socio-economic, and environment sectors.

Land has been recognised as a critical resource in our country's socio-economic development and delivery of The Vision 2030 and Millennium Development Goals. It is on this basis that the Kenya's Constitution has provided the necessary legal backing to land ownership and utilization. The constitution also provides the context for the implementation of the National land policy. It further requires fundamental changes in the land sector and a well thought out process to ensure proper land use management.

EMCA, 1999 Section 9 (1) mandates NEMA to exercise general supervision and co-ordination over all matters relating to the environment and to be the principle instrument of the Government in implementation of all policies relating to the environment. NEMA is mandated under section 9 (2) (a) of the Act to co-ordinate the various environmental management activities undertaken by lead agencies to promote integration of Environmental considerations into development policies. Under Section 9(2) (c) and (d) of EMCA,1999 NEMA, in consultation with lead agencies, is tasked with the function of establishing and reviewing land use guidelines and examining land use patterns to determine their impact on the quality and quantity of natural resources. It is also noted that Chapter 3.4 of the National Land Policy has given clear policy principles, vision, strategies, direction and course of action that the government intends to pursue on land use management in Kenya.

The Integrated National Land Use Guidelines (INLUG) outlines land issues which should be taken into account throughout the country in all land use planning. These include requirements on the quality of the living environment, economical and ecological development of community structures, the preservation of natural values and the built heritage, utilization of natural resources and communication networks.

The guidelines are linked to national, regional and international considerations like the regional land use plans, local master plan, Vision 2030, the MDGs among others. The guidelines particularly aim at implementing, in Kenya, international conventions protecting cultural environments and the biological diversity and combating the climate change and desertification.

This publication presents the full text of the INLUG "*For A Sustained Societal Attributes-Infrastructure, Natural / Environmental Resources and Public Safety*". It is envisaged that all the stakeholders (including government agencies, the private sector, the civil society and the general public) will adopt, adhere to and implement these land-use guidelines.

A handwritten signature in black ink, appearing to read 'Ayub Macharia'.

Dr. Ayub Macharia

Ag. Director General

National Environment Management Authority

ACKNOWLEDGEMENTS

The process of preparing these guidelines benefited immensely from the support and guidance of the Technical Working Groups comprising of officers from the lead agencies, government ministries and other collaborating institutions. Many thanks to the INLUG secretariat which was drawn from representatives from the Ministry of Environment and Mineral Resources, the National Environment Management Authority, the Ministry of Agriculture, the Ministry of Lands and the State Law (Attorney General's) Office.

Thanks also go to the participating ministries and lead agencies – the Ministries of Energy; Education; Fisheries; Forestry and Wildlife; Housing; Industrialization; Livestock Development; Local Government; Regional Development; Planning, National Development and Vision 2030; Provincial Administration; Public Health and Sanitation; Roads; Science and Technology; Tourism; Transport and the Ministry of Water and Irrigation. The lead agencies included the Water Resources Management Authority (WARMA), Kenya Forest Service, Kenya Forestry Research Institute (KEFRI), Kenya Agricultural Research Institute (KARI), National Council for Science and Technology, National Museums of Kenya, Kenya Marine and Fisheries Research Institute, Department of Resource Survey & Remote Sensing (DRSRS).

To capture regional diversity and unique regional land use challenges, regional workshops were held across Kenya. The regional workshops would not have been successful without the support of the Provincial Directors of Environment, the District Environmental Officers, the Provincial and District Environmental Committees who undertook all the necessary logistical arrangements – NEMA appreciates their contribution to make the whole exercise a success.

Special acknowledgement to all the NEMA staff who facilitated the process.

Special thanks to the Board of Management of NEMA for financial support and policy direction throughout the process and streamlining the guidelines relevance to the country's development agenda.

It is my hope that the INLUG will provide viable bottom up harmonization strategy, which will inform the enactment, review and/or amendment or repeal of Regulations, Standards and Laws in light of the new constitution of Kenya. I urge the policy makers, lead agencies, experts and individuals from various sectors to make good use of these guidelines in land administration and management.

A handwritten signature in black ink, appearing to read 'F. Kaparo'.

Hon. Francis Ole Kaparo, EGH

Chairman

NEMA Board of Management

EXECUTIVE SUMMARY

Land in Kenya is a key factor of production, making its proper management a requirement for sustainable development. The demand for arable land, grazing, forestry, wildlife, tourism and urban development are greater than the land resources available. These demands become more pressing every year with continued population growth. To address the identified key issues in land use management within a development oriented approach poses challenges to all stakeholders and requires integrative solutions across the policy, socio-economic, and environment sectors.

Recently, the UN Millennium Declaration, the UN Millennium Development Goals and the World Summit for Sustainable Development (WSSD) Implementation Plan recognized the maintained integrity and restoration of land resources as a critical factor in achieving economic and ecological sustainability. To meet these challenges, new and innovative approaches are required.

The quality of the environment is an important national issue with a view to ecological sustainability and the prevention of significant environmental damage. A sanitary, safe and pleasant living environment is of utmost importance to the population, business and industry. This is important in view of future developments and the competitive capacity of the whole country.

EMCA, 1999 section 9 (1) mandates NEMA to exercise general supervision and co-ordination over all matters relating to the environment and to be the principle instrument of Government in the implementation of all policies relating to the environment. The Authority is mandated under section 9 (2) (a) of the Act to co-ordinate the various environmental management activities being undertaken by the lead agencies to promote the integration of Environmental considerations into development policies. Under section 9(2) (c) & (d) NEMA, in consultation with lead agencies, is tasked with the function of establishing and reviewing land use guidelines and examining land use patterns to determine their impact on the quality and quantity of natural resources. It is also noted that Chapter 3.4 of the National Land Policy has given clear policy principles, vision, strategies, direction and course of action that the government intends to pursue on land use management in Kenya.

The INLUG takes into account the provisions of the New Constitution of Kenya 2010 (specifically Chapter Five – Sections 60 - 72 which deal with “Land and Environment” as well as the various other laws, regulations, policies and guidelines in the different land sectors. Some of the laws that informed the INLUG include the Local Government Act (Cap 265, Laws of Kenya), The Physical Planning Act (No. 6 of 1996 Laws of Kenya), Agriculture Act (Cap. 318, Laws of Kenya), The Forest Act of 2005, The Wildlife Conservation and Management Act, Cap 376 and the Amendment Act No. 16 of 1989 (KWS) as well as the Wildlife (Conservation and Management) (Amendment) Act of 2010, the Water Act (No. 8 of 2002), the Mining Act (Cap. 306, Laws of Kenya) and the Antiquities and Monuments Act (Cap. 215, Laws of Kenya).

The development of the INLUG started with a National Stakeholders workshop; it was during this workshop that participants came up with the different thematic areas. The 2nd National Stakeholders Workshop was held during which the thematic areas were further developed and finalized. Several other workshops were held at the local and regional levels to incorporate the views of the various stakeholders; after these meetings, a draft INLUG document was produced. The draft INLUG was then subjected to regional stakeholders for validation and then a National Validation workshop was organized to give the stakeholders an opportunity to re-examine the proposed land use guidelines, refine the document further and make final inputs.

The development of the INLUG is aimed at the prevention and mitigation of land degradation, addressing land use conflicts and managing both natural and anthropogenic disasters through the promotion of sustainable land management.

The relevance of the INLUG to other National Legislation; implementation of Regional Agreements and International Conventions; Medium Term Plan (MTP) and Vision 2030; and National Environment Action Plans (NEAPs) have also been discussed.

The INLUG have been grouped into the following 14 thematic areas:

1. Guidelines on the Protection of Ground Water, Rivers, Lakes and Wetlands
2. Guidelines on the Protection of Coastal Zones
3. Guidelines on the Management of Environmentally Significant Areas (ESAs)
4. Guidelines on the Protection of Historic and Cultural Resources
5. Guidelines on the Protection of Hilltops, Hill sides, Mountains and Forests
6. Guidelines on the Conservation of Biological Diversity
7. Guidelines on Management of Invasive and Alien Species
8. Guidelines on Energy Management
9. Guidelines on the Preservation of Agricultural and Pastoral Lands
10. Guidelines on Mining and Quarrying
11. Guidelines on Hazards and Disaster Management
12. Guidelines for Zoning Rural Communities and Urban Development
13. Guidelines for the Resettlement of Refugees / Displaced Persons
14. Guidelines on Transport and Information communication Technology (ICT)

The main aim of the INLUG is to ensure that issues of national interest are in harmony with regional and international concerns. The guidelines support a coordinated planning process which facilitate decision making, harmonizes interests and offers economically, socially and environmentally sustainable solutions. This will provide guidance for land use planning and management in Kenya.

The legal implication of the INLUG is to provide viable bottom up harmonization strategy, which will inform the enactment, review and/or amendment or repeal of Regulations, Standards and Laws.

It should be noted that these guidelines are an on-going process and will be supplemented and reviewed as need arises. Changes in land use patterns and their impacts on the quality and quantity of natural resources and the state of the living environment will be monitored through the annual State of Environment (SOE) reports. This will give an indication of land use trends in Kenya and indicate how the goals are implemented and what the effects are.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Kenya has a total land area of 582,647 km². The population of Kenya is 38.6 million people with an annual growth rate of 2.6% according to the 2009 census report (GoK, 2010). About 26% of the population live in the urban areas and growing at the rate of 3.9% every year.

Kenya has seven agro-ecological zones that represent major ecosystems in the country. The land surface area comprises 20% high to medium potential agricultural land and supports 80% of the population. The remaining 80% of land surface area is Arid and Semi Arid Lands (ASALs) which support only 20% of the population. However, it is important to note that the ASALs house 50% of the livestock and 80-90% of wildlife resources in the country (NEAP, 2008).

Land in Kenya is a key factor of production, making its proper management a requirement for sustainable development. The demand for arable land, grazing, forestry, wildlife, tourism and urban development are greater than the land resources available. These demands become more pressing every year with continued population growth. The prevention and mitigation of degradation, land use conflicts and national disasters through the promotion of sustainable land management is a major challenge in this country. To address the identified key issues in land use management within a development oriented approach poses challenges to all stakeholders and requires integrative solutions across the policy, socio-economic, and environment sectors.

The National Environment Management Authority (NEMA) is mandated under section 9(2) (a) of the Environmental Management and Coordination Act, No. 8 of 1999 to coordinate the various environmental management activities being undertaken by the lead agencies to promote the integration of environmental considerations into development policies. Under section 9(2) (c) & (d), of the EMCA Act, 1999 NEMA, in consultation with lead agencies, is tasked with the function of establishing and reviewing land use guidelines and examining land use patterns to determine their impact on the quality and quantity of natural resources.

The INLUG is meant to support and promote the implementation of the general goals laid down in the EMCA,1999; as well as support the implementation of the New Constitution as envisioned in Chapter Five (Sections 60 – 72) on Land and Environment. The INLUG will promote the achievement of the goals defined in other sectoral statutes such as the Local Government Act (Cap 265, Laws of Kenya), The Physical Planning Act (No. 6 of 1996 Laws of Kenya), Agriculture Act (Cap. 318, Laws of Kenya), The Forest Act of 2005, The Wildlife Conservation and Management Act, Cap 376, Laws of Kenya and Amendment Act No. 16 of 1989 (KWS) as well as the Wildlife (Conservation and Management) (Amendment) Act of 2010, the Water Act (No. 8 of 2002), the Mining Act (Cap. 306, Laws of Kenya) and the Antiquities and Monuments Act (Cap. 215, Laws of Kenya). The basic goals are sustainable development and a good living environment. The guidelines also promote the implementation of international conventions and commitments, and to see that land use makes it possible to realize national plans and projects.

It is in this spirit that EMCA, 1999 recognizes the various sectoral land use guidelines developed and issued by the relevant lead agencies. The Integrated National Land Use Guidelines therefore identify gaps, overlaps, sectoral conflicts and examine existing land use patterns and trends and further strive to materialize harmony and build synergies to ensure sustainable land use and natural resource management in Kenya. The Guidelines should be a tool to avoid conflicts and

other environmental degradation problems. The guidelines are also well in line with the overriding principle of the decentralization, that is, the decision-making should take place as near the citizen as possible.

1.2 Key Land Use Challenges and Threats

The main land use challenges and threats in Kenya include:

- Globalization
- Incompatibility and Land use conflict
- Population pressure
- Urbanization
- Poor land use planning
- Climate Change
- Water pollution
- Under utilization of land
- Abandonment of agricultural activities due to inadequate infrastructure
- Uncontrolled subdivision of land
- Overstocking in Rangelands,
- Wetland reclamation
- Encroachment
- Deforestation
- Loss of biodiversity
- Inadequate national and regional planning
- Inadequate urban and pre-urban land-use planning
- Inadequate planning for the informal sector activities
- Conflicting sectoral land use statutes
- Inadequate capacity for planning and management of natural resources
- Influx of refugees
- Hazards and disaster management
- Deterioration of cultural and natural heritage sites
- Management of Trans boundary Resources

1.3 GOAL SETTING

1.3.1 Goal Setting in Relation to EMCA

Further to section 9(2) (c) & (d) of EMCA, 1999 Part V provides for the Protection and Conservation of the Environment highlighting key areas for consideration in the establishment and review of the land use guidelines. These include protection of rivers, lakes and wetlands, protection of traditional interests, protection of hill tops, hill sides, mountain areas and forests, conservation of energy and planting of trees or woodlots, conservation of biological diversity, protection of the coastal zone, protection of environmentally significant areas among others.

The overall goal of the Act is to organize land use to provide prerequisites for a good living environment and for an ecologically, economically, socially and culturally sustainable development. The INLUG render more precise and give added meaning to the general goals and the requirements on the contents of plans as seen from a national viewpoint.

Under section 124 of the EMCA, 1999, where Kenya is a party to regional and international conventions, treaties or agreements concerning the management of the environment, NEMA shall, subject to, the direction and control of the National Environment Council, in consultation

with relevant agencies identify appropriate measures necessary for domestication of such treaty, convention or agreement. The assessment of the international significance rest on cross-border issues affecting land use and regional structures, and on global environmental problems that can be addressed by means of land use decisions.

1.3.2 Goal-Setting in Relation to Other Legislation

Several sectoral statutes also have provisions on Land use guidelines. These include the Local Government Act (Cap 265, Laws of Kenya), The Physical Planning Act (No. 6 of 1996 Laws of Kenya), Agriculture Act (Cap. 318, Laws of Kenya), The Forest Act (2005), The Wildlife Conservation and Management Act, the Water Act (No. 8 of 2002), the Mining Act and the Heritage Act (Monuments and Antiquities Act). In addition to answering other specific needs, these Acts stipulate environmental protection and conservation within the sectors concerned, with several subsidiary legislation prescribing land use standards to control environmental exploitation.

INLUG approach therefore sets more overriding goals for land use planning than what is the case for the specialized sectoral legislations. The integrated approach has strived to harmonize different interests while taking into account functional needs and adapting them to local requirements.

1.3.3 Significance of the Guidelines to International Conventions

Although decision-making on land use is a strictly national activity, it is not only affected by the national goal-setting but also by international conventions. Kenya is a party to several international conventions, and the fulfilment of the obligations under these conventions required certain measures related to land use.

Kenya is signatory, but not limited to, the following: RAMSAR, CBD, UNCCD, UNFCCC, UNCLOS, BASEL, Nairobi conventions among others. For example the INLUG stresses on biological diversity as an integral part of overriding land use planning, covering different types of land use. In urban development, it is important to pay attention to green zones and the sufficiency of varied natural surroundings, to the need for ecological corridors, and to the preservation of sufficiently extensive ecologically significant and coherent natural areas.

1.3.4 The Relations between Guidelines and Vision 2030

Vision 2030 is the country's development blueprint covering the period 2008 - 2030. The Vision is to be implemented in successive five-year Medium Term Plans with the first such plan covering the period 2008-2012. The vision is based on three "pillars" namely; the economic pillar, the social pillar and the political pillar. The Economic pillars details flagship projects for tourism and increasing value in Agriculture, which have a strong bearing to the INLUG.

Environmental sector falls under the social pillar. In the sector, Kenya aims to be a nation living in a clean, secure and sustainable environment by 2030. The goals for 2012 are: (i) to increase forest cover from less than 3% at present to more than 4%; and (ii) to lessen by half all environment-related diseases.

Flagship projects for the environment for 2012 includes: The Water Catchment Management Initiative-rehabilitating the 5 water towers (i.e. Mau escarpment, Mt. Kenya, Aberdare Ranges, Cheranganyi Hills and Mt. Elgon); The Wildlife Corridor and Migratory Routes Initiatives - reclaiming all wildlife corridors and migratory routes; The Solid Waste Management System Initiative - relocation of the Dandora dumpsite and development of solid waste management systems in 5 municipalities and in economic zones; The Plastic Bags Initiative - tightening the regulations to limit production and usage of environmentally-detrimental plastic bags, and The

Land Cover and Land Use Mapping Initiatives-comprehensively mapping all land use patterns in Kenya.

The nature of land use thematic areas is a pointer that INLUG will greatly contribute to the implementation of the Vision 2030 and its successive five-year Medium Term Plans.

1.3.5 INLUG and the National Environment Action Plan

Environmental Action Planning is a tool that aims at enhancing the integration of environment into development planning. The National Environment Action Plan (NEAP) 2009-2013 is the second one in the country and will succeed the first NEAP of 1994.

The document describes the country's environment and natural resources of Land, Water, Biodiversity (forests, wildlife and dry land biodiversity), Wetlands and agriculture including livestock and fisheries. For each resource, major environmental issues, challenges and proposed intervention are identified. Among the proposed interventions are the needs for promotion of appropriate and sustainable land use practices. The Development and Implementation of Land Use Guidelines is a key priority activity in the NEAP 2009-2013 Implementation Matrix.

1.3.6 INLUG and the National Land Policy

The National land policy gives clear policy direction on land use management in Kenya. These include policy responses related to the problems of rapid urbanization, inadequate land use planning, unsustainable production and poor environmental management. The key principles that guided the development of the national land policy included: Land Use Planning Principles, Sustainable Production Principles and Environmental Management Principles. The INLUG development was informed by these principles.

1.4 Principles of INLUG

The INLUG are anchored under the following principles:

- Efficiency (Land use must be economical, so one goal of development planning is to make efficient and productive use of land)
- Equity and acceptability and public participation (Land use must also be socially acceptable. Goals such as food security, employment and re-distribution of land may be undertaken to reduce inequality or alternatively to attack absolute poverty)
- Sustainability (Sustainable land use is that which meets the needs of the present generation while at the same time conserving resources for future generations)
- Conflict Resolution (harmonization of Resource use-conservation and utilization and promotion of compatibility)
- Planning for the unexpected events (Disasters and influx of displaced persons)
- Precautionary principle

1.5 Objectives of INLUG

The objectives of the INLUG are to:

- Resolve land-use conflicts
- Prevent and mitigate land degradation
- Promote sustainable land management
- Manage natural and anthropogenic disasters

CHAPTER TWO

2.0 THE PREPARATION OF THE GUIDELINES

Pursuant to section 9(2) (c) & (d) of EMCA, 1999 the preparation of the INLUG was initiated by NEMA. The process was participatory involving many stakeholders with 31 institutions involved / represented (see Annex 1). During the meetings, fourteen thematic areas were identified.

The stakeholders were organized into four thematic task forces that undertook detailed analysis of the respective thematic areas and prepared preliminary guidelines.

National Stakeholder Consultative Seminars were held for interest groups to voice their views on the subject. Regional Consultative meetings were held to build on the themes and to address unique land use problems in different regions of the country.

National Validation Stakeholder forum was organized for public disclosure. The outcome of the consultative process exhibited broad range of perspectives and opinions from different stakeholders which was used to enrich the document.

2.1 The Nature of the Guidelines

The INLUGs are ecologically based, flexible and aimed to apply to diverse land-use situations. They will inform and shape the laws, regulations, standards and by-laws in the country. They are dynamic and will be reviewed as need arises.

2.2 Grouping of Guidelines

The INLUG have been grouped into the following 14 thematic areas:

1. Guidelines on the Protection of ground water, rivers, lakes and wetlands
2. Guidelines on management of ESAs (their gazettment and/or easement process)
3. Guidelines on Protection of Historic and cultural Resources
4. Guidelines on Protection of Hilltops, Hill sides, mountain and Forests
5. Guidelines on energy management
6. Guidelines on Conservation of Biological Diversity
7. Guidelines on management Invasive Alien Species (IAS)
8. Guidelines on Protection of Coastal zone
9. Zoning guidelines for rural communities and urban Development
10. Guidelines for Refugee settlement and displaced persons (e.g. as a result of floods, famine, landslide etc)
11. Guidelines on preservation of agricultural/pastoralists areas/land
12. Guidelines on Hazards and Disaster Management
13. Guidelines on mining and quarrying
14. Guidelines on Transport and Information communication Technology (ICT)

CHAPTER THREE

3.0 THE LAND USE GUIDELINES

3.1 Guidelines on the Protection of Ground Water, Rivers, Lakes and Wetlands

Challenges and Threats

Water resources in the country are faced with a number of challenges including;

- Pollution loading from point and non point sources, use of agro chemicals and pesticides
- waste dumping
- River diversion
- Trans boundary water resource conflicts
- Water use conflicts
- Siltation in lakes, rivers and dams
- Over abstraction of surface and ground water
- Eucalyptus growing
- Encroachment into wetlands and riparian areas
- Encroachment into the groundwater recharge zones
- Invasive species and
- Oil spills.

3.1.1 Guidelines for Rivers and Lakes

The guidelines for rivers and lakes in Kenya are intended to:

- Provide buffer zones of between 2m - 30m width measured from the highest water mark for rivers/ streams depending on the width, water volume, whether permanent or seasonal and the use of that water. Where the highest water mark cannot be determined consider the width of the river on either side to arrive at an appropriate buffer.
- Provide buffer zone of 30m for lakes for purposes of minimizing soil erosion, runoff of pesticides, fertilizers and other non-point sources of contaminants into streams, rivers, lakes, wetlands and marine habitats.
- Establish Water Resource Users Associations (WRUAs) and develop water allocation plans to minimize water use conflicts
- In addition to stream/ river/lake setbacks, utilize erosion control devices, integrated pest management plans, and rehabilitate disturbed areas. Incorporate best management practices to prevent pollution of rivers, streams, wetlands and near shore waters.
- Riparian areas should be identified by the WRUAs
- Management of the riparian areas should be considered once they are identified - specify activities that can be allowed in such areas such as bee keeping and indigenous vegetation through WRUAs and District Environment Committees (DECs) who can come up with by-laws.
- The WRUAs shall incorporate best management practices that prevent pollution of rivers, streams, wetlands, near shore waters, lake setbacks, utilize erosion control devices; integrated pest management plans, and rehabilitate disturbed areas.
- All activities within the riparian area must be reviewed and approved by DECs.
- Water Resources Management Authority (WRMA) to profile and report the physical, chemical and biological characteristics of all the rivers, lakes, wetlands and other

surface water bodies and report as national profiles e.g. the National Rivers Profile, the National Lakes Profiles among others.

- Establish a comprehensive monitoring regime to such lakes, rivers and wetlands and report for compilation on the state of environmental reports.
- WRMA to coordinate the development, adapting, and implementation of management plans that shall rationalize the use of resources and mitigate on the negative impacts on rivers and lakes.
- Profile and report human activities around such lakes, rivers and wetlands, clearly indicating the impact of such activities on the system.
- Develop, adapt and implement management plan that shall rationalize the use of resource and mitigate on the negative impacts.
- WRMA shall be responsible for documentation and this shall be reported to the DEC's and PEC's and any other related sectoral statutory committees in their jurisdiction.
- The DEC's and PEC's shall issue necessary notices and orders in order to stop degradation of such lakes, rivers, wetlands and other surface water bodies.
- Environmental Inspectors and Compliance Officers shall also undertake necessary enforcement actions on such incidences in accordance with EMCA No.8 of 1999, Water Act 2002 and any other relevant legislation.
- Delineate spring riparian reserve as conservation zones and undertake easement process where necessary.
- Preserve the aesthetic and biological values of the rivers and streams as part of open space system. Where possible, provide public access to these open spaces and for recreational purposes.
- Preserve and maintain the rivers, natural streams and drainage ways within the developed areas by designating them as part of the open space system. To the extent possible, limit any modifications to natural gulches and drainage ways, unless they are necessary for flood protection, to preserve water quality and protect aesthetic and biological resources.
- If modifications are necessary, mitigate impacts on biological habitats by using stream-side vegetation, rip-rap boulder lining of stream banks, v-shaped bottom channels to maintain a stream flow during low rainfall periods, and other designs to enhance aeration.
- Integrate planned improvements to the drainage system into the open space system by emphasizing the use of retention basins and recreational access in the design approach.
- Develop monitoring plans for discharge of effluents into the aquatic environment to ensure that standards are met.
- Establish permanent in-stream flow standards for perennial streams. These standards should weigh the benefits of in-stream and non-stream uses of water resources, including the economic impact of restrictions of such uses.
- Encourage inter-agency coordination and public-private partnership in planning and management efforts of these resources.
- Discourage the planting of eucalyptus and invasive species in the water resource areas while giving preference to alternative species such as bamboo among others as envisioned in the "Guidelines on Eucalyptus" developed by the Kenya Forest Service (KFS).
- Carry out Environmental Impact Assessment (EIA) for activities likely to have negative impacts on the river/stream, lake, wetland and ground water. Limit uses in these areas to conservation, compatible recreation such as hiking, fishing, religious and cultural practices and controlled diversion for agricultural purposes.

3.1.2 *Guidelines for Wetlands and Wetlands Resources*

The guidelines for wetlands and wetland resources in Kenya are as follows:

- A wetland shall under no circumstance be drained.
- Bunding of fields to control the water level within the wetland must similarly ensure that the water table does not fall below about 0.5 metres of the soil surface. Users of a wetland must ensure that the overall water balance is maintained so that the surface does not dry out.
- Any change of use of a wetland must allow those beneficial traditional uses to continue without loss or hindrances of any other user. These benefits may include cutting of papyrus, trees, reeds, grass, water supply, fishing and grazing among others.
- Ridging and trenching may be performed within the wetland, allowing the growth of crops requiring drier soils, as long as the water level does not fall below 0.5 metres from the top of the ridges.
- Harvesting macrophytes is a traditional usage, which should always be catered in the planning of multipurpose use of wetlands. The frequency of harvesting one area should not be greater than once in every 15 months, otherwise the rate of growth and the amount, which can be harvested, will decline. Separate areas should be set aside to be harvested in sequence, so that a continuous supply of papyrus can be maintained.
- Clearing of wetland vegetation, for purposes other than domestic use should only be done with the approval of the DEC.
- Under no circumstances should wetland macrophytes like papyrus be burnt as doing so reduces the amount which can be harvested and destroys wetland biodiversity. The practice of annual burning of wetlands should not be allowed.
- To prevent depletion of fish stocks there should be no fishing in breeding sites
- The mesh size of gill nets should not be less than 2 inches (stretch dimension).
- Fish ponds constructed within a wetland should be constructed on the sloping sides of the wetland. The recommended practice is to make use of gravity flow of water from the spring line, which often arises from the soils at the edges of the wetlands. Wastewater from the ponds may be allowed to flow into the wetland. It is unwise to site a fishpond low in a wetland, as seasonal flooding can cause loss of stock and damage to bunding.
- Non indigenous fish species should not be cultured in a wetland without specific permission in writing from the Ministry of Fisheries in consultation with the other relevant agencies.
- Promote and regulate the development of an aquaculture centre and nature reserves around the wetlands that would serve as an attraction for both visitors and residents. It could feature a working aquaculture farm and include educational programs on modern aquaculture techniques and the history of the wetlands. The facility could also include walkways extending into the wetlands for interpretive nature walks.
- Excavation of fish ponds into a wetland must preserve a favourable ratio of surface area to perimeter of vegetation. Individual ponds should not exceed a size of 1000 square metres (0.1 hectares), and there should be sufficient uncleared vegetation separating the ponds for use by other activities.
- Grazing of cattle in wetlands, particularly seasonal wetlands, is permitted but this should be considered as a public amenity to all those who require it, and access must be in consultation with the stakeholders and fencing should not be erected to exclude any user or group of users.

- Notwithstanding the paragraph above, there will be a maximum total number of cattle, which will be able to use the productivity of the wetland sustainably. This number will vary from place to place, and so the DEC in consultation with the cattle owners should advice on the optimum numbers to be kept in any particular wetland.
- Where wetlands are located in protected areas, the cattle owners shall seek permission to access the wetland from the relevant lead agency.
- It must be ensured that all areas upstream and around a wetland are properly managed to prevent wetland degradation. Growth of wetland plants should be allowed at the edges of riverbanks.
- Environmentally significant wetlands should be declared protected areas for the purposes of their protection and develop management plans for their sustainable use incorporating zoning (wise use) principles. Protection can be achieved through fee acquisition, land banking, cooperative agreements with public agencies and private landowners, conservation easements and other strategies.
- The DEC should control all activities in wetlands (e.g. regulating brick making, sand and clay harvesting) requiring that the users form voluntary societies and where necessary be licensed in accordance with the EMCA (Wetland Regulations) of 2009.
- Sensitize opinion leaders' especially political leadership on the importance of conserving the wetlands.
- Efforts should be made to rehabilitate degraded wetlands through exclusivity to allow natural regeneration, enrichment planting and controlled use.
- Efforts should be encouraged to construct wetlands for effluent management.

3.1.3 *Guidelines for Groundwater Management*

The guidelines for groundwater management in Kenya are as follows:

- Regulate the number of pumps, wells and boreholes while monitoring the quantity and quality of water by the relevant lead agency to ensure that abstraction rates do not exceed recharge rates.
- Locate industries and other activities that are likely to cause pollution or changes to groundwater away from ground water areas/sources used for water supply.
- Carry out Hydro-geological mapping of ground water characteristics countrywide and document and report as National ground water aquifer profiles.
- Monitoring of ground water quality and quantity should be undertaken as per the monitoring framework by the lead agency for all the aquifers and should be used to guide issue of allocation, permitting and other uses.
- Ground water shall be pre-treated to meet the water quality standard for domestic, agricultural and industrial uses.
- Control industrial development, settlements and other human activities on known ground water recharge zones in order to control possible ground water pollution and allow recharge.
- Develop mechanisms to allow ground water recharge through damming, artificial ground water recharge and enhancing precipitation infiltration by allowing certain percentage of land free of pavements
- Provide for a buffer zone between the irrigation schemes and ground water sources and natural water bodies.

3.2 **Guidelines on Protection of Coastal Zones**

Challenges and Threats

The challenges facing the coastal zone are diverse and include the following:

- access to beaches

- rapid population growth
- unregulated development along the coastline
- inadequate maritime regulation
- absence of an integrated coastal zone development management policy
- Inadequate supervision of EEZ.
- oil spills
- tsunamis
- seawall construction
- coastal erosion
- accretion
- trawling
- receding and rising of sea water level
- pollution- solid wastes and waste water
- encroachment of deltas and estuaries
- destruction of Mangroves, coral reefs and sea grass
- Low compliance and enforcement of laws and regulations.
- Degradation of heritage sites and unique habitats

3.2.1 Guidelines for Coastal zone areas include the following:

- Preserve rare coastal resources including coastal strand vegetation, sand dunes and archealine pools through establishment of buffer zones around these areas.
- Control human traffic into ecologically sensitive Marine Protected Areas (MPAs) and prepare management plans and ensure they are gazetted under the relevant legislation.
- Regulate and gazette as conservation areas sand dunes known to be water catchment areas and prohibit any form of development and mining of sand.
- Protect near shore coral reef from damaging activities such as soil erosion, non-point source pollution, dredging and alterations to near shore water circulation.
- Develop a comprehensive strategy of managing shoreline erosion and deposition
- Control activities which result in beach loss and encourage development of activities which result in beach preservation or enhancement by developing zoning plans that will limit developments along the shoreline to parks, compatible open space uses and promote the conservation of coastal forests.
- No storey building should be allowed in the front row (sea front), this should be followed by a row of two storeys in the second row in that order and the existing buildings should be restricted to comply with the approved zonation.
- Coastal planning should emphasize compact, high-density development nodes, which should clearly define the capacity to accommodate development expansion and the carrying capacity for the associated recreational activities. This is particularly important in view of the tendency of adjacent, rapidly expanding development nodes to become ribbon development.
- Control Ribbon development where beach front plots are aligned in a continuous row to provide each plot with a sea view, these results in a continuous urban sprawl and which might encroach into scenic attractions and environmentally sensitive areas.
- Open all beach access roads and acquire all public beaches for recreation and socio-economic activities through provision, maintenance and expansion of public beach, access roads to the shoreline and parallel roads along the shoreline especially in areas with high recreational or scenic value where access to popular sandy beaches and surf spot are in demand.

- Public access should generally be no more than 0.8 km apart in undeveloped areas and no more than 0.4 km apart in developed areas.
- Control off-road vehicle use in ecologically sensitive areas such as sea turtle nesting sites and habitats for benthic organisms
- Acquire shoreline properties as opportunities arise or obtain public use easements and maintenance agreements with private landowners especially lands adjacent to existing public parks.
- Observe setbacks and buffer zones for areas abutting the beaches of 60m from the high water mark which should be followed by an appropriate beach road reserve beyond which controlled developments can be allowed. Establish greater shoreline setbacks for new structures in erosion hazard areas, using criteria from the various shoreline studies. New structures should incorporate building styles compatible with coastal hazards such as coastal erosion and tsunamis.
- Maintain and enhance existing views along the beach roads. Avoid visual obstruction such as walls, and clear shrubs and vegetation on vacant state and council-owned properties to maintain views of the ocean from public roadways along the shoreline.
- Preserve and enhance native and other resident fish and aquatic species populations and habitats, including near shore coral reefs and sea grass through active protection and management practices. Efforts to enhance opportunities for commercial and recreational fishing should use management practices and techniques that sustain fish populations and habitat quality.
- Promote best practices in sea-bed mining and exploration as guided by EIA studies.
- Operationalize the implementation of the Oil Spill Contingency Plan.
- Promote the build-up of knowledge base on coastal and marine resources through scientific research, indigenous knowledge and monitoring.
- Develop and implement the early warning system for disaster management (e.g. for tsunami phenomenon) and sensitize the local communities on disaster preparedness and response.
- Incorporate traditional knowledge and practice in the conservation, planning and management of mangrove areas, and other related ecosystems i.e. coral reefs, sea grass beds and other coastal forests.
- Promote mangrove planting for rehabilitation of degraded areas and afforestation for the benefit of the community
- Conserve and maintain deltas and estuaries by designating them as conservation areas
- Promote integrated rivers-deltas-estuaries planning and management to rationalize diversion, damming of rivers and flood control to minimize adverse environmental impacts.
- Provide equitable benefit sharing to local communities commensurate with revenues accrued from the utilization of coastal natural resources in key sectors of tourism, fisheries, mining and ports.
- Diversify coastal tourism destinations in addition to the highly concentrated areas of Malindi, Lamu, Mombasa North Coast, Watamu, and Diani/Ukunda
- Gazette new found lands as public land and designate them for recreation public use and prohibit any construction in the same areas.
- Revoke titles of properties within the riparian land acquired after operationalization of EMCA, archaeological sites and heritage sites.
- Encourage Archaeological Impact Assessment (AIA) to take care of recovery and preservation of archaeological items during the EIA studies.
- Plan for water front facilities for purposes of recreation and tourism within the provisions of all appropriate legal requirements.

- Prohibit the construction of sea walls along the shoreline and demolish the ones already constructed.
- Develop a strategy to stabilize shoreline deposition to secure towns and facilities threatened by deposition.
- Reclamation of mangrove areas and interference of other fragile ecosystems should be prohibited and where necessary an EIA study should be undertaken.
- Construction in the sea should be prohibited and only construction of public jetties , piers, boat yards, berths, docks should be allowed and must be subjected to EIA.
- Review and repeal all the existing acts that are inconsistent with these guidelines and / or touching on the shoreline and legislate a new Act on coastal management.
- Gazette small coastal islands as public lands and as ESAs and where possible allow for controlled public access and ecotourism development.
- Invoke restoration, conservation and easement orders to guide the use of the islands.
- Public beaches should develop beach management plans and provide appropriate waste management and sanitation facilities including search and rescue structures.
- Develop a joint management framework through the East African Community, other regional and international partnerships for the shared trans-boundary water resources and ecosystems.
- Control and regulate salt extraction to stop underground water contamination.
- Subject harbour master plan and other coastal management plans to SEA.

3.3 Guidelines on Management of Environmentally Significant Areas (ESAs)

Challenges and Threats

- Inadequate documented information on the existence and location of ESAs
- Degradation of ESAs from anthropogenic activities
- Impact of Climate change on ESAs
- Resource use conflicts
- Land tenure and property rights issues
- Inadequate enforcement on legislations governing ESAs
- Inadequate Conservation and Management efforts
- Inadequate recognition of Indigenous Knowledge (IK) and community efforts in the management of ESAs
- Impact of desertification on ESAs

3.3.1 Guidelines on ESAs

The guidelines for ESAs in Kenya are as follows:

- Identify, inventorize, profile, map and develop management plans for all the ESAs in Kenya under the guidance of DECAs and PECs
- The DECAs and PECs shall make recommendations on the process of management and gazettelement depending on the significance and the level of threat of a particular ESA and shall issue necessary notices and orders in order to stop degradation of ESAs
- Local institutions with legal mandates e.g. DECAs, PECs, FCCs and WRUAs shall be involved in decision-making and management of ESAs. Interagency coordination and public-private partnership in planning and management of these resources shall be encouraged
- Environmental Inspectors and compliance officers shall also undertake necessary enforcement actions on such incidences in accordance with EMCA No.8 of 1999, Water Act 2002 and any other relevant legislation

- Undertake Environment Impact Assessment for development activities which impact on ESAs and promote activities which result in their preservation and enhancement.
- Prepare management plans for ESAs to promote best practices for their conservation and establish adequate buffer zones around ESAs where necessary.
- Preserve the aesthetic and biological values of ESAs. Where possible, provide controlled public access to ESAs particularly recreational and educational purposes.
- Promote co-management of ESAs by creating awareness to the local communities on the significance of ESAs and incorporating Indigenous Knowledge (IK) and practices in their conservation, planning and management.
- Promote the build-up of knowledge base on ESAs through scientific research, documentation of IK and monitoring.
- Provide for access and equitable benefit sharing to local communities commensurate with benefits accrued from ESAs.

3.4 Guidelines on Protection of Historic and Cultural Resources

Background

Land use should contribute to the preservation of Kenya's cultural and built heritage and its diversity.

The guidelines for the protection of historic and cultural resources in Kenya are as follows:

- Identify and protect existing visual landmarks and support the creation of new culturally appropriate landmarks.
- Retain, whenever possible, significant vistas associated with archaeological features.
- Develop mechanisms to allow access and benefits sharing to the local community.
- Respect significant historic resources by applying appropriate management practices that include strong community participation. Such practices may range from total preservation to integration with contemporary uses.
- Determine appropriate preservation methods
- Delineate and map site boundaries and setbacks for gazettement.
- Determine appropriate restrictions on uses and development of adjacent lands.
- Promote cultural practices that enhance protection of cultural sites e.g. Tiriki circumcision sites, Ramogi forest shrine, weeping stone of Kakamega, Kaya forests, Kit Mikaye, among others.
- Undertake inventory and documentation of the cultural and built heritage sites in the country

3.5 Guidelines on Protection of Hilltops, Hillsides, Mountains and Forests

Background

Kenya's land resources include mountains, hills, forests, historic and cultural sites. The Protection therefore, centres on Hilltops, Hill sides, mountains and forests in the various forms of land ownership in Kenya both in protected and unprotected areas to conserve these resources and biodiversity therein. The integrity of these resources has continually been threatened by intense human activities. These resources have been protected under the various land ownership regimes in Kenya.

The main forest ecosystems include moist highland forest, dry forest, tropical rain forest, coastal forest and river line and mangrove forests. It is estimated that forests cover is less than 3.0 % of Kenya's total land surface. They are habitats of important animal and bird species. It is estimated that 40% of large mammals, 30% of birds, 35% of butterflies and over 50% of threatened mammals are in forests. The local communities, particularly in the rural areas depend on forests

for provision of wood, fuel wood and non-wood products for their livelihoods. Forests contribute about 95% of the total rural domestic energy. Currently, demand for wood production stands at 13.7 million cubic meters. By 2012, demand for wood to meet the need of the rapidly growing population will be expected to outstrip the sustainable supply coming from the indigenous forests, plantations and the ASALs (dry lands). Forest products will therefore in future be expected to come from trees grown on farms (GoK, 2007).

On the highland forests are found the five major national water towers. (Mt Kenya, Abedares, Elgon, Mau complex and Cherengany Hills) which are reservoirs for water supply in the country.

Conservation of hills, mountains, and forests in Kenya are faced with numerous challenges, which include management capacity, different ownership regimes, inadequate public awareness, lack of prioritization, natural disasters and inadequate political will. With growing population, there is also increased demand for resource utilization. Inadequate legal and inconsistent policy frameworks pose a challenge in management. Ineffective monitoring and evaluation of these resources have also been a great hindrance to their sustainable management.

The following guidelines will be followed:

- Any form of cultivation on areas of slope of between 12% - 55% must incorporate appropriate soil and water conservation measures as the Agriculture Act, Cap 318 of the laws of Kenya.
- There must be no cultivation at all on slopes beyond 55%, instead there should be afforestation and the protection of existing vegetation.
- Prohibit any form of cultivation on hilltops and hillsides beyond 55%, mountains and forest areas.
- Undertake valuation of non-wood forest produce e.g. herbal products
- Promotion of appropriate species selection for site planting
- Prevent the burning of grass and any other vegetation in areas of intensive agriculture or on steep slopes
- Promote agro forestry and encourage woodlots establishment on farm lands.
- Rehabilitate degraded areas through re-afforestation and enclosure for natural regeneration.
- Develop and improve firebreaks and access roads.
- Undertake an assessment of the carrying capacities of various goods and services before any extraction to ensure sustainable use of Hilltops, Hillsides, mountain and Forests.
- Encourage indigenous forestry on Hilltops, Hillsides, and mountains
- Encourage ecotourism in Hilltops, Hillsides, mountain and forests
- Discourage human settlement on Hilltops, Hillsides, mountain and forests.
- Establish disaster preparedness in forest fires and landslides, mudflows, rock falls, flash floods, volcanic activities, diseases and Pests among others.
- Regulating exploitation of forest products and Services e.g. charcoal, logging, and non-wood products.
- Zone and protect water catchments areas in Hilltops, Hill sides, mountains and Forests.
- Embrace integrated ecosystem management planning.
- Develop access and benefit sharing mechanisms.
- Protect hills, mountains and forests through identification, mapping, inventory, easement and gazettelement.
- Encourage interagency coordination and public-private and community partnerships in planning and management efforts of these resources.

- Ensure at least 10% of land holdings are under trees as per the gazetted “Farm Forestry Rules” of 2009.
- Promote Participatory forest management.
- Repossess hillsides from private owners as per the Local Authority Act

3.6 Guidelines on Conservation of Biological Diversity

Background

Kenya has over time lost some of her well known biodiversity resources mainly due to population increase; habitat destruction, desertification, over exploitation of species and conversion through deforestation and drainage of wetlands for agriculture and settlement. With increasing demands for genetic materials for use in biotechnology by the developed countries, illegal collection of genetic materials has increased

Protected areas in Kenya are estimated to cover 7,194 hectares, or 12.3%, of the total land area which excludes marine and littoral protected areas. Kenya has a 500 km long coastline and the 355 ha of protected area in the marine and littoral zone are considered to be low by world standards. The country is home to over 6,500 plant species, of which more than 260 are endemic. With more than 1,000 bird species and over 350 species of mammals, Kenya ranks second highest among African countries in species richness. The percentage of protected area on land is considered to exceed the ideal of 12% per country in global terms. However, species loss continues and management of protected areas remains a significant challenge.

The wealth of indigenous knowledge on special different uses of plants and animal materials, particularly those with medicinal value is recognised. This knowledge has been used to identify plants and animals with potential to provide ingredients that can be developed into commercial products for their own benefit without any commensurate benefit to the community.

Currently, there is no comprehensive policy on biotechnology and legislative framework to regulate access and exploitation of genetic resources. While collection of genetic materials for industrial purposes is going on, there is no mechanism for monitoring such activities. With increasing demands for genetic materials for use in biotechnology by the developed countries, illegal collection of genetic materials has increased. Kenya has prepared a National Biodiversity Strategy and Action Plan (NBSAP).

In preservation of biodiversity the following guidelines will be followed:

- Identify, delineate and protect existing Key biodiversity areas.
- Encourage Ex-situ and In-situ conservation and monitoring of endemic, rare and endangered species as appropriate.
- Revive and/or establish representative botanical gardens in the regions.
- Develop policies on access to genetic resources, benefit sharing; and intellectual property rights (IPR) as it relates to biodiversity including indigenous knowledge; acquisition, development and use of new technologies, such as biotechnology; integration of biodiversity, including agro-biodiversity.
- Undertake periodic national participatory biodiversity assessment and monitoring.
- Undertake natural resource valuation and incorporate it into the national accounting system.
- Identify map and gazette wildlife migratory corridors and dispersal areas.
- Promote policies on community participation in the preservation of bio-diversity.
- Develop and enforce screening systems to manage import and export of biodiversity materials.

- Develop early warning and surveillance systems on diseases invasion on agro-biodiversity.
- Develop gene banks for endemic species.
- Map and inventorize biodiversity resources.
- Identify species for Commercialization and enhance its production (*Osmum Species*, *Mondia weitei* among others).

3.7 Guidelines on Management of Invasive Alien Species

Background

Some of the common Alien invasive species in Kenya include water hyacinth (*Salvinia molesta*), Striga weed, *Prosopis juliflora*, *Azola species*, *Pistia stratoites*, Nile Perch, Indian house crow, Stem borer, Cyprus aphid among others.

Invasive and alien species pose a threat both locally and globally to the conservation of biodiversity through their proliferation and spread displacing or killing indigenous flora and fauna and affecting ecosystem services. There is an emerging awareness of the negative effects and seriousness of the threat posed both environmentally and economically. At the same time, in some countries invasive perceived to be a threat is in actual fact beneficial to certain communities causing conflicts over efforts meant at controlling them.

However, some invasive species have been found to have some potential benefits to the environment and local community's livelihoods. An example is *prosopis juliflora* in Garissa, Wajir, Mandera and Baringo providing charcoal and materials for house constructions.

3.7.1 The Guidelines on Prevention of Invasive Alien Species

In preservation of invasive alien species the following guidelines will be followed:

- Identify and inventorize invasive alien species in the country.
- Establish appropriate land uses around the natural habitat depending on ecological zones.
- Identify the specific interests and importance of different sectors and communities with respect to invasive alien species, targeting them with relevant information and appropriate interventions.
- Undertake staff training on quarantine, border control and build capacity for effective monitoring and surveillance of invasive alien species.
- Intentional introductions and efforts to identify and prevent unintentional introductions should be based on the precautionary principle.
- Conduct an EIA and risk assessment before intentional introductions of invasive alien species.
- Experimental trials should be conducted as part of the risk assessment process. Such trials should be required for biological control proposals and the appropriate protocols for such trials followed.
- The intentional introduction of invasive alien species should only be considered if no native species is considered suitable for the purposes for which the introduction is being made.
- Where intentional, but unauthorized introductions occur either with illegal intent (smuggling) or through ignorance, then the Government should develop criminal penalties and civil liability for consequent eradication or control costs of unauthorized intentional introductions.
- Accord highest priority for action to islands including isolated ecosystems such as lakes and mountain for prevention initiatives particularly when significant

biodiversity values are at risk and especially vulnerable to biological invasions, either from within a country or from outside.

- Environmental Impact Assessment should be undertaken for large engineering projects, such as canals, tunnels and roads that cross-bio-geographical zones that can lead to the mixing of flora and fauna that were previously separated resulting in the disturbance of the local biological diversity.
- Develop clear legislative, administrative, accountability procedures, and institutional framework for the operational and resource capacities that are required for rapid and effective action in the event that unintentional introductions occur.
- The Local communities of the affected areas should be involved in development and implementation of preventive measures.

3.7.2 Guidelines on Early Detection, Rapid Response and Eradication

- Develop systems for early detection, rapid response and eradication of new introductions of potentially invasive alien species
- Build capacity to take rapid follow-up action to eradicate or contain the situation should be developed.
- Initiate inter-agency collaborations for early detection, response and eradication
- Develop eradication methods that are as specific as possible with the objective of having no long-term effects on non-target species.
- Prioritize local knowledge in designing eradication and control options
- Prioritize the eradication of invasive alien species on islands and other isolated areas that are centres of endemism.
- Develop humane and ethical methods for removing animals consistent with the aim of permanently eliminating the invasive alien species concerned.
- Develop a comprehensive consultation strategy and develop community support for any proposed eradication as an integral part of the project.

3.7.3 Guidelines on Control Strategies

- Prioritize the invasive species problems according to the desired outcomes including the identification of areas of highest value for native biodiversity and those most at risk from invasive alien species.
- Develop a formal country-wide control strategy which is open to public and regularly reviewed.
- Undertake regular monitoring outside the control boundaries to limit and contain the spread of invasive alien species
- Research on and develop an optimum utilization strategy for invasive alien species to enhance economic and social benefits of the same

3.7.4 Guidelines on Choosing Control Methods

- Develop control methods that are socially, culturally and ethically acceptable, efficient, non-polluting, and should not adversely affect native flora and fauna, human health and well-being, domestic animals or crops.
- A multi disciplinary approach in consultation with stakeholders should be encouraged in choice of desired control methods
- Choose specific control methods as opposed to the broad spectral control methods – where chemicals are used as control methods they should be non-persistent and non-accumulative in the food chain.

- Prioritize biological control methods as compared to physical and chemical methods
- Undertake periodic monitoring of the control methods to determine their effects and efficacy.

3.8 Guidelines on Energy Management

Background

The provision of energy services is essential for industrialization, social development and improved quality of life. In addition, affordable energy is essential for eradicating poverty, improving human welfare, and raising living standards. The environment provides natural resources used as raw materials for the energy supply. Activities related to energy production, distribution and consumption are perhaps the largest single category of benign sources of adverse anthropogenic impacts on the environment.

Kenya has overly depended on hydropower and petroleum based energy. With increasing demand, reducing water levels and demand for irrigation agriculture, the hydro energy sector has come under intense pressure. Despite the country's potential in tapping geothermal energy, the sector has not been utilized fully. The country has a wide range of energy sources which, if explored, can satisfy not only the energy needs of the country but the region.

Kenya has a large potential for renewable energy resources and the market for technology based on renewable forms of energy is developing rapidly. The Government recognizes that alternative renewable energy sources hold tremendous potential, especially for reducing heavy dependence on woody biomass.

Fuel wood remains the predominant fuel for cooking in rural areas. Nationwide 68.3% and 13.3% of Kenya's household population utilize firewood and charcoal for cooking respectively thereby exerting enormous pressure on the environment. Over 80% of households in the rural areas use firewood for cooking while paraffin is the leading source of cooking energy used by 44.6% of urban dwellers. Over-reliance on wood fuel affects the environment negatively through felling of trees and is also associated with respiratory complications. Over three quarters of households use paraffin lamps while electricity is used by 15.6% of Kenyans. About 1.6% of Kenyan households use solar energy, and its adoption has been slow due to the high initial installation costs (KNBS, 2007).

It is estimated that Kenya receives 4-6 kW/m²/day of solar energy, on average, which translates into about 1.5 billion tonnes of oil equivalent, making it a major alternative for energy. Environmental issues arising from provision of clean energy are inadequate clean energy supply, inadequate financial resources and technology, pollution control, sustainable natural resource use, enforcement of legislations and promotion of private production and distribution of energy

The national needs for energy supply should be satisfied in a way that promotes both a functional regional structure and our international competitiveness. Land use should satisfy the national needs for energy supply and promote the possibilities of utilizing renewable energy sources.

3.8.1 Guidelines for Energy Management

The following are the guidelines for energy management in Kenya:

- Involve local communities in development of energy projects and energy-saving technologies for acceptability.
- Undertake EIA for all the energy generating projects.
- Promote catchment area conservation and integrated river basin management.

- Map and develop strategic areas suitable for different forms of energy production.
- Develop and provide incentives for clean energy production.
- Promote the adoption of cleaner energy production concepts in all energy production and consumption activities that include Clean Development Mechanisms (CDM) and carbon trading concepts.
- Promote on-farm tree planting taking into account appropriate tree species and sites for wood fuel supply.
- Inventorize and map potential renewable energy sites and promote community based renewable energy projects.
- Promote appropriate energy saving technologies.
- Promote diversification of energy sources (including nuclear power) taking into consideration the necessary precautionary and safety measures.
- Identify and map sites best suited for wind and tidal wave power generation.
- Provide way leaves for long-range gas, power lines and oil lines during land use planning.
- Undertake research to assess economic viability and sustainability for bio-fuels before introduction of the same.

3.8.2 Guidelines to Promote Sustainable Utilization of Rural Energy Sources

The following are the guidelines for the promotion of the utilization of rural energy sources in Kenya:

- Provide economic incentives and technological mechanisms for the use of Liquid Petroleum Gas (LPG), biogas, wind and solar energy
- Promote village hydropower (micro-hydro) production.
- Promote use of energy saving technologies/devices such as the energy saving stoves and fireless cookers
- Promote the use of charcoal kiln as an efficient and comparatively clean mechanism for conversion of wood into charcoal.
- Promote establishment of woodlots using early maturing tree species

3.9 Guidelines on Preservation of Agricultural and Pastoral Lands

Background

Preservation of agricultural areas is essential to maintaining the open space setting and the rural character of the region. Views of open cultivated fields of green (industrial crops, cereals and oil crops) and even ranches significantly contribute to the visual qualities of many parts of the country. To assure the successful development of diversified agriculture in Kenya, it is essential that agricultural lands be protected, dedicated, and committed primarily to agricultural use. In addition to the rural community and agricultural boundaries, guidelines are established to protect agricultural lands from other development. Good and cohesive agricultural fields should be preserved for agricultural production and not be put to any other incompatible land use.

Exceptions to be considered on a case-by-case basis include residential uses if they are permitted under the zoning code, outdoor recreational uses where compatible and appropriate, environmental and educational activities that are resource compatible, institutional uses and environmental compatible earth stations and communications facilities which should prove and be developed and operated to maintain compatibility with agricultural uses.

Current impediments to diversified agriculture use or agricultural industry development should be mitigated, minimized or removed wherever possible. Appropriate incentives for maintaining the long-term availability of important agricultural lands and industry development should be

explored, designed and implemented as high priority action items by relevant lead agencies. Agricultural land should be zoned based on land suitability to promote sustainable production systems and to preserve it for food security.

It is also envisaged that these guidelines will aid in preservation of rangelands so as to ensure proper utilization during both wet and dry seasons.

3.9.1 Guidelines on Agricultural land

The following are the guideline on agricultural land:

- Prohibit land use such as commercial/industrial development and residential subdivision with no bona-fide agricultural activities on important agricultural lands – any other use must have a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.
- Major land use changes, especially the conversion of agricultural land to commercial or residential land, must be approved by all the relevant line ministries and lead agencies.
- Develop and map soil capability profiles for the country in order to carry out different sustainable agricultural activities.
- Discourage conversion of agricultural lands to large-lot residential subdivisions with no agricultural activities – any conversion can only be permitted if they are accessory to agricultural activities.
- Structures on individual sites should be clustered to maximize agricultural production lands and reduce infrastructure costs.
- Establish a Rural Community Boundary to protect agricultural lands. Outside this boundary, land uses will be limited to agricultural pursuits, outdoor recreation and preservation.
- Discourage developing or subdividing of agriculturally designated and zoned lands for residential or other non-agricultural uses.
- Base any subdivision of productive agricultural lands on viable economic units for agricultural production as per different agro ecological zones/regions.
- Crop production should be done depending on adaptation to designated Agro-ecological zones, soil characteristics, recommended agricultural practices and appropriate technologies.
- The minimum land sub division should be based on ability of a given size of land to support a family unit.
- Develop incentives and/or disincentives to discourage sub division of large scale farms and ranches.
- Develop a sustainable land management plan for conservation of land resource base
- Cultivation on the slopes from 0% - 12% contour farming is recommended and to use soil conservation measures; 12% - 55% one is obliged to apply soil conservation measures; and above 55% one should plant perennial/permanent crops (e.g. Napier, grass, tea and bananas and trees).
- Discourage Human settlement on slopes above 55%.
- Discourage cultivation on areas identified and demarcated as riparian – the distance of cultivated land from rivers should be 30m from the highest water-mark during peak of the rainy season. The minimum on both side of the river should be 2m for small rivers and maximum of 30m. Generally the standard should be the same size of the river on both sides of the river, with a minimum of 2m and up to a maximum of 30m.
- Distance of cultivated land from lakes: it should be 30m from highest water mark for all lakes.

- Stony, shallow soils on hilly areas should be used as pasture (controlled) or forest or should have stone terraces.
- Protection of the soil against erosion: plough and plant along the contours, practice crop rotation, apply manure to crops, leave crop residue on the ground and practice terracing.
- Identify, map and gazette wildlife corridors.
- Discourage agricultural activities in wildlife dispersal areas.
- Protection of water bodies from contaminants emanating from agriculture
 - a. minimize soil erosion by applying proper agricultural practices
 - b. minimize use of fertilizers and adopt organic farming to reduce non-point source contaminants
 - c. promote integrated pest management plans,
 - d. protect riparian reserves in all water bodies
 - e. plant vegetation on bare lands
- Prohibit cultivation along highways and railway lines reserves.
- Encourage on farm water harvesting

3.9.2 *Guidelines for Agricultural Support Activities*

To promote cost-effective use of existing infrastructure and prevent urbanization of productive agricultural lands:

- Consolidate agricultural support facilities in designated areas which support crop production, harvesting and sales.
- Ensure agricultural support facilities do not present hazards or nuisance to adjacent uses.
- Ensure that overall development of agricultural support areas relate harmoniously with adjacent commercial, residential or open space areas.
- Provide adequate buffer zones between agricultural support facilities and residential areas.
- Protect important agricultural lands, regardless of existing crop production capabilities, from uses that would undermine or otherwise irreversibly compromise their agricultural potential.

3.9.3 *Guidelines on Urban Agriculture*

The following are the guidelines for urban agriculture in Kenya:

- In a residential area, a maximum of 5% of the land may be covered by Agriculture.
- Regulate urban agriculture by promoting cultivation of short crops which should not be above one meter in height.
- The use of appropriately treated waste water should be encouraged for agricultural purposes and prohibit use of raw waste water for irrigation.
- Caged small animals and birds can be kept based on the local authority's by-laws and other zoning specifications.
- No agricultural practices should be undertaken in the road and railway lines reserves within towns.

3.9.4 *Guidelines on Peri-urban Agriculture*

Peri-urban agriculture should adhere to the following guidelines:

- Agriculture may be practiced at the backyard of the plot
- Agricultural activities should not be practiced on a plot less than 1/8th of an acre

- Peri-urban agriculture should be practiced in single holdings and restricted number and species of animals per land holding
- Establish an adequate waste management system on the plot
- Restrict livestock keeping within closed boundaries of the plot
- Crops should not be above one meter in height as per the bylaws of the local authority
- Encourage the use of appropriately treated waste water for agricultural purposes and prohibit use of raw waste water for irrigation.
- Ban agricultural practices in the road reserves within peri-urban and highways.
- Encourage harvesting and storage of rain water for agriculture
- Prohibit agricultural activities in ecologically fragile/socially sensitive areas e.g. riparian reserves, sewerage lines or ponds, cemeteries, dumping sites, etc.
- Any agricultural activity must have the approval of the local Authority as guided by zoning specifications and by laws.
- Encourage organic farming and integrated pest management practices as opposed to manufactured/chemical fertilizers and chemical pest control
- Optimum use of agro-chemicals should be encouraged

3.9.5 *Guidelines on Floriculture Farming*

Floriculture farming should adhere to the following guidelines:

- Regulate location of the greenhouses as per the by relevant bylaws and regulations.
- Undertake EIA before the activity starts and carry out annual EAs.
- Prohibit water abstraction without a valid license from the relevant authorities.
- Provide for corridors for wildlife and livestock if within wildlife and livestock dispersal areas.
- Preserve and ensure access to cultural and public utility sites.
- Plan for human settlement for workers in flower farms with adequate sanitary facilities and social amenities.
- Establish adequate waste management systems.
- Provide for proper occupational health and safety measures to workers.
- Prohibit use of banned chemicals.

3.9.6 *Guidelines on Plantation Farming/ Estates*

Plantation farming / estates should adhere to the following guidelines:

- Conduct an EIA before establishment of plantations and annual EAs.
- Plan for residential quarters for workers with adequate amenities such as schools, clinics, water and sanitation facilities.
- Provide machinery parking yards and garages.
- Designate site for the processing plant.
- Conserve water courses and wetlands through provision of buffer zones.
- Preserve and ensure access to cultural and public utility sites.
- Provide for proper occupational health and safety measures to workers.
- Prohibit use of banned chemicals.

3.9.7 Guidelines on Irrigation

Irrigation farming should adhere to the following guidelines:

- Encourage use of rain water for irrigation.
- An EIA should be done before an establishment of a large scale irrigation and drainage of swamps
- Undertake a water resources assessment survey and prepare a report.
- Prohibit water abstraction without a valid license.
- Methods of irrigation and technology applied should be compatible with the water source and climatic condition.
- Damming of rivers for irrigation should conform to regulations in the Water Rules 2007.
- Provide sanitary facilities in large irrigation schemes.
- Irrigation farming should be compatible with adjacent land uses.
- Provide a buffer zone of at least 50m from the irrigation schemes and the natural water courses/body into which such irrigation scheme discharges its waters.

3.9.8 Guidelines on Livestock Rearing

The following are land-use guidelines on protection of rangelands (livestock rearing areas)

- Delineating rangelands according to Agro-ecological zones e.g. rainfall, altitude.
- Keep the most appropriate species and breeds for each ecological zone.
- Ensure that stocking levels are within the carrying capacity set for each ecological zone - (Ha/livestock unit).
- Ensure that the siting, distribution and density of water points is done in consultation with relevant stakeholders after doing an EIA.
- Rehabilitate degraded rangelands with appropriate technology e.g. reseedling, soil conservation among others.
- Set aside blocks for seed bulking and pasture conservation.
- Control the use of fire in rangeland management (frequency of burning, intensity).
- Promote harmonious co-existence between livestock and wildlife (e.g. avoid fencing off Migratory corridors and buffer zones).
- Ensure the ranch size is not smaller than the minimum recommended size of a commercially viable ranch for a given ecological zone.
- Encourage rotational grazing (wet season and dry season grazing areas) through regulated grazing procedures developed by grazing committees.
- Ensure siting of livestock handling facilities (markets, holding grounds, dips, routes that animals follow on their way to markets etc) is done in consultation with the local communities and DEC.
- Locate livestock and human water points in consultation with public health officers and the DEC.
- Control human settlements near watering points.
- Develop conflict resolution mechanism by forming natural resource committees and ensure adequate facilitation.
- Develop early warning and disaster management systems.
- Encourage the location of processing facilities in livestock rearing areas.
- Inventorize, map and register community grazing areas.
- Carry out EIA for ranch development.
- Encourage electronic tagging of animals to discourage cattle rustling.

3.10 Guidelines for Mining and Quarrying

Background

Kenya has great potential for mineral resources development and exploitation. Currently, there are more than 200 local and foreign companies and individuals carrying out exploitation and exploration of minerals in Kenya. Mining method is mainly open cast method due to their nature and occurrence of the minerals. Environmental impacts of quarrying and mining activities include; disturbances of flora and fauna, visual squalor, noise pollution, dust and vibrations causing negative human health impacts and destruction of property. In addition, mining operations generally affect the hydrological functions and compete with ecologically protected zones such as national reserves, game parks and gazetted forests.

Quarrying activity is a major industry in Kenya, which supports the local construction industry, creates huge employment opportunities and is a major contributor to the national economy. However, there has been growing public dissatisfaction in the manner in which the activities are being undertaken. The country has witnessed various quarry disasters and complaints associated with quarrying activities which have brought about safety, environmental and socio- economic concerns that need to be addressed.

3.10.1 Guidelines on Quarrying

The guidelines on quarrying could broadly be categorized as follows:

- a. Occupational, Public Safety and Health Guidelines
- b. Environmental Guidelines
- c. Socio-Economic Guidelines

(a) Occupational, Public Safety and Health Guidelines

- Discourage undercutting and tunnelling in quarries and sand mining to avoid damage to property, injury or loss of life.
- Prohibit vertical faces exceeding 2.5 m when quarrying on soil, sand, gravel, soft rock or debris – these shall be worked in terraces/ benches or at a safe angle of slope.
- Hard rock quarry faces to be benched or worked from top to bottom.
- Prohibit loose hanging rocks/material near or on the face of excavation/quarry.
- Ensure all loose rocks/ materials are scaled down before commencement of any quarry operation.
- All quarry faces/cliffs should be securely fenced .The fence should be at least 3 meters from the edge of the cliff using chain link of at least 1.5meters high.
- Warnings signs of appropriate font size and in the appropriate language should be erected in all quarry entries and in areas with high cliffs e.g. 'Danger Quarry Deep Pit' or 'Caution Flying Stone and Debris'.
- All roads to and from quarries to be made safe and accessible and transportation of quarried material to follow a designated route.
- Quarry operators to ensure provision of clean water, sanitation and well equipped first aid kit with trained first aiders
- Provide protective gear for persons working in quarries as provided for in the Public Safety Regulations
- Quarry operators to be trained on safety, health and environmental issues and the quarry site should have a person in charge of safety and ensure establishment of 'Safety, Health and Environment Committees' (SHEC).
- Each quarry site (where blasting is required) should have suitable skilled blaster to carry out safe blasting and acquiring blasting permits.

- All blasting materials /explosives should be acquired and conveyed legally through acquisition of relevant permit(s) from Mines and Geological Department.
- Blasters for informal quarries to acquire blasting materials for immediate (daily) use only, where there is no licensed storage facility (explosives magazine).
- The following safety distances should be maintained in quarry operations:
 - a. For quarrying operations without blasting:
 - 500m to any aerodromes/landing ground
 - 100m to any shopping centre, school and hospital
 - 50m to any house irrespective of consent from the owner
 - 40m to any river edge, road reserve or rail
 - b. For controlled blasting
 - the technical officer to advice on controlled blasting as provided for under subsidiary legislation 78 of Explosives Act and Mining Safety Regulations (MSR) 90 of the Mining Act
- Quarry sites should be designated, mapped and Change-of-User permits effected before the establishment of a new quarry site.
- Where ladders are required, ensure that the ladders are strong, firmly secured and have hand rails/barriers for workers safety.
- Erect adequate barriers to check material rolling down slope.
- Enhance the capacity of the District Disaster Preparedness Committees and local quarry operators on disaster preparedness and response through training and provision of appropriate equipment
- A DEC sub-committee should be established and facilitated to undertake regular quarry inspection within their jurisdiction.

(b) Environmental Guidelines

- Undertake an EIA before quarrying starts.
- Adherence to the Noise and Excessive Vibrations Regulations, 2009.
- Carry out exploration for aggregates such as ballast, sand and murram and map out the deposits. The areas should also be physically planned and appropriate land use assigned and Environmental Management Plan (EMP) for the whole area prepared.
- Establish at least 10 meters buffer zone between the quarry and the 30 meter riparian reserve of the river, wetland and water catchment areas. (i.e. 40 meters buffer zone between the quarry and the edge of the river, wetland and water catchment area)
- Quarrying activities within the forested land should be restricted to forestland devoid of trees with the aim of reclamation for re-vegetation in accordance with Section 42 of the Forest Act 2005.
- Siting of quarries should be in harmony with other land uses and Provide for defined buffer zone between quarries and other land uses. The following safety distances should be maintained in quarry operations:
 - a. For quarry operations without blasting:
 - 500m to any aerodromes/landing ground
 - 100m to any shopping centre, school and hospital.
 - 50m to any house irrespective of consent from the owner
 - 40m to any river, road reserve or rail.
 - b. Quarry operations with controlled blasting
 - the technical officer (inspector of mines/explosives) to advice accordingly as provided for under Subsidiary Legislation 78 of Explosives Act and MSR 90 of the Mining Act
- Landowner should establish quarry pit rehabilitation and/or after use plan to be approved by the District Environment Committee as prescribed in the audit check

list. The after use plan should identify suitable alternative land uses for the disused pits e.g.

- land restoration for agriculture
 - land restoration for recreation
 - land restoration for forestry and apiary (bee keeping)
 - exploitation for aquaculture
 - exploitation of the pits as water reservoir
 - and if suitable exploitation for sanitary land filling
- Phasing or “blocking” of the quarry site for progressive quarrying operations and therefore progressive restoration and/or reclamation should be practiced. Quarries shall be restored within twelve (12) months of depletion of the quarry and the District Environment Committee or an appointed agent shall issue a clearance letter confirming satisfaction with the restoration efforts.
 - The use of PPEs is recommended for both manual and mechanized operations while watering of materials during crushing should be mandatory for mechanized operations.

(c) Socio-Economic Guidelines

- Form site based quarrying Community based Organizations.
- Abide by the Rules and Regulations of their Organizations.
- Encourage benefit sharing with the communities.
- Prohibit child labour in the quarries as stipulated the Children Act 2008.
- Prohibit consumption of alcohol or drugs in the quarries.
- Awareness creation on HIV/Aids and Channel the Aids Control funds through the District Aids Committees.
- Encourage operators/workers to take advantage of credit facilities to educate their children and venture into other income generating activities.
- Improve infrastructure (e.g. roads) network to the quarries

3.10.2 Guidelines on Mining

(a) Guidelines on Exploration of Minerals

In regional land use planning, usable bedrock resources, their consumption and long-term needs should be taken into account. The areas for excavation should be indicated on the basis of an assessment of the natural landscape values, water and bed rock.

The following are the guidelines for exploration of minerals in Kenya:

- Undertake an EIA before any mining procedure starts.
- Maximum area of exploration should not exceed the recommended size by law
- Maximum duration of exploration should not exceed the period specified by law
- In case of trenching and pitting, rehabilitation should be done as recommended in EIA/EA Action plan.
- Time must be indicated as to when rehabilitation starts after exploration ends.

(b) Guidelines on Mining (Exploitation)

The following are the guidelines for exploitation of minerals in Kenya:

- Undertake an EIA before mining starts with clear EMP, SIA and adequate compensation mechanisms for the local communities
- The Mode of mining should be based on type of mineral, safety, existing land uses, ecological sensitivity etc

- Appropriate technology must be used to increase efficiency, control dust, noise and vibration to acceptable levels
- Toxic by-products should be properly managed so as to avoid adverse environmental impacts
- Wastes should be disposed in designated disposal sites
- Sanitary facilities should be provided in mining sites
- Transport of mining products should follow designated roads
- Encourage benefit sharing with the communities.
- Maximum duration of Mining should not exceed the maximum recommended period by law (proposed Mining Bill 2008).
- Disused mines should be rehabilitated according to EIA/EA/EMP where applicable or as per restoration provisions under EMCA, 1999.

(c) Guidelines on Artisanal (small-scale) Mining

The following are the guidelines for artisanal mining in Kenya:

- Intensive small-scale mining should be done in designated areas.
- The Government should facilitate EIA in the designated areas and provide disaster vulnerability profiles for mining sites
- Persons engaged in small scale mining should be encouraged to operate as organized groups and vetted to ascertain capacity to mine i.e. skills, equipment and finances among others
- Disused mines should be rehabilitated according to EIA/EA/EMP where applicable or as per restoration provisions under EMCA, 1999.

(d) Guidelines on Commercial Brick Making

The following are the guidelines for commercial brick-making in Kenya:

- Undertake an EIA and annual audits for large-scale commercial brick making.
- Clay harvesting should not be carried out in road Reserves, near dwelling places, and other environmentally sensitive areas. However, it can be done in wetlands provided it is done sustainably in consultation with DEC
- The depth of clay harvesting pits should be determined by the underlying geology, existing land uses and ecological conditions.
- Blocking of clay harvesting sites: clay sites be divided into blocks so that rehabilitation can be done after harvesting each block. The sizes of blocks be determined by the sensitivity of the environment
- Degraded areas should be rehabilitated as recommended in EIA/EA/EMP or as per restoration provisions of EMCA, 1999.

(e) Guidelines on Sand Harvesting

Guidelines on sand harvesting have already been developed by the National Environment Management Authority (NEMA).

Please refer to the “National Sand Harvesting Guidelines, 2008”.

The guidelines provide procedures to streamline the activity countrywide with a view of making it a sustainable industry that supports economic development for enhanced livelihood while safeguarding the environment.

(f) Guidelines on Red Soil Harvesting

The following are the guidelines for red soil harvesting.

- Degraded areas should be rehabilitated as recommended in EIA/EA/EMP or as per restoration provisions of EMCA, 1999.
- Prohibit loose hanging material near or on the face of excavation/quarry
- Red soil harvesting should not be carried out in road Reserves, near dwelling places, and other environmentally sensitive areas.
- Prohibit vertical faces exceeding 2.5 m when quarrying on red soil these shall be worked in terraces/ benches or at a safe angle of slope

3.11 Guidelines on Hazards and Disaster Management

Background

People and environment face threats to their life and livelihood from natural and human related hazards. Natural hazards include drought, floods, earthquakes, volcanic eruptions, landslides, cyclones, and storms among others. Disasters occur when these natural hazards interact with vulnerable people, property, and livelihoods causing varying damage depending on the level of vulnerability of the individual, group, property or livelihoods. In Kenya disaster impacts have become an impediment to sustainable development and a number of regions have suffered devastating effects of disasters. The most common disasters in the country are weather related natural phenomena such as floods, droughts, landslides and lightning.

In addition anthropogenic factors causing land degradation; deforestation of catchment areas, poor agricultural practices, inappropriate land use systems, changing living conditions, among others are established to be contributing to increased impacts from the various natural hazards.

In the recent past these hazards have increased in number, frequency and complexity. The level of destruction has also become more severe with more deaths of people and animals, loss of livelihoods, destruction of infrastructure and environmental degradation among other effects resulting in losses of varying magnitudes.

It is therefore important that guidelines are developed to minimize impacts by avoiding construction in disasters prone areas and controlling land use on steep slopes and other risk prone areas.

3.11.1 Guidelines for Flood-Prone Areas

The following are the guidelines for flood-prone in Kenya:

- Identify and map flood prone areas
- Carry out afforestation, tree-planting, water and soil conservation in catchment areas and along water courses
- Discourage human settlement in flood-prone plains
- Create a buffer zone between the flood plain and human settlement as a contingency measure to ensure safety of the local community
- Control the flow of water along water courses using appropriate technology through Construction of flood control structures such as dykes and dams
- Undertake an EIA for proposed construction of dykes and dams
- Involve the local communities in the construction of water-flow control structures
- Encourage the planting of water-logged tolerant crops (e.g. rice, arrow roots) in flood plains
- Develop a flood early warning system

3.11.2 Guidelines for Landslide-Prone Areas

The following are the guidelines for landslides-prone in Kenya:

- Identify and map landslide prone areas
- Discourage human settlement in landslides-prone areas
- Intensify soil and water conservation measures in already settled landslide prone areas
- Siting of infrastructure in land slide prone areas should be determined by slope, soil characteristics and vegetation cover

3.11.3 Guidelines on Fire Management

The following are the guidelines for fire management in Kenya:

- Designate and develop fire breaks in fire prone habitats/areas such as forests, ranches, squatter land and slums etc
- All urban areas should have an adequate number of well equipped fire stations
- Build and strengthen the capacity of responders (fire fighters) and conduct regular drills
- All commercial and institutional buildings must have operational and clearly labelled emergency exit routes and ensure regular inspections of the buildings
- Provide adequate access roads and hydrants for fire fighting in urban settlement
- All commercial and institutional buildings to have working automatic smoke sensors which are regularly maintained.

3.11.4 Guidelines on the Management of Contaminated Land

There is need for restoration of polluted land areas which must be investigated prior to plan implementation. Contaminated land is a complex issue. While contaminated sites raise health and environmental concerns, there are often significant economic, legal and planning implications, which require resolution.

The general guidelines will ensure that the communities are assured that information on potential land contamination is readily available and that clear processes are in place, which prevent inappropriate land uses on impacted land.

- Prevent contamination through compliance and enforcement of license conditions to ensure that land contamination is minimized.
- NEMA in collaboration with other relevant Authorities will maintain Contaminated Land Registers (CLR) and make them accessible to the public
- Investigate the site and recommend on remedial measures incorporating Health Risk Assessment and Environmental Risk Assessment. NEMA and other relevant authorities to undertake evaluation of the site investigation and remedial reports.
- Develop and approve Site Management Plans (SMP) to provide guidance on the management of health and environmental harm.

3.12 Guidelines for Zoning Rural Communities and Urban Developments

Background

Contemporary communities oriented toward meeting the needs of their residents often offer a network of amenities to facilitate and enhance individual, family, and community life. At their best, they may offer parks and landscaped public open spaces, churches, community centres, and other places for social and civic functions, residences or other facilities for persons with special needs, and safe, pleasant bicycle and pedestrian connections that link homes and important destinations. These guidelines take this opportunity to cite the need in each community for appropriate elements, which aid and enhance the overall quality of life of the Community.

The long-term cumulative impact of incremental intensification in existing built-up neighbourhoods through infill and home expansion could adversely affect the character of existing neighbourhoods, in the absence of effective residential lot and subdivision design and development standards that distinguish rural from urban development.

Challenges of Unplanned Development

Haphazard/unplanned rural and urban development has led to the following adverse effects in Kenya:

- Incompatibility e.g. the absence of zoning plans, non compliance with zoning regulations, piece-meal change of use and/or extension of use
- Encroachment into forest reserves, wetlands and water catchment areas e.g. Mau forest, Mt Elgon among others
- Expansion of towns into forests, wildlife designated and dispersal areas e.g. Kaputei and Athi River
- Encroachment into the setback zones (road reserves, riparian reserves, way leaves)
- Expansion of residential settlements into potentially agricultural land
- Over-fragmentation of rural land to unproductive sizes
- Haphazard development of tourist facilities around the protected national parks and national reserves
- Contamination of the aquatic (ground water and rivers) environment by human activities due to the lack of sanitation facilities e.g. the informal settlements like Kibera slums and Industrial Area in Nairobi

3.12.1 Guidelines for Rural/Regional Area

(a) Guidelines on the Zoning of Rural / Regional Areas

The following are the guidelines for zoning of rural / regional areas in Kenya:

- In the settlement schemes, land demarcation for productive and conservation use (agriculture, factories, forestry, conservation area, livestock) shall be between 65-75% of total land size.
- Individual parcels of land should restrict settlement to 25% of the total land size and provide 10% of the total land for planting of trees and woodlots.
- Promote compact development i.e. consolidating settlements into designated areas then provide the population with social amenities (like health facilities, social halls, playgrounds, charcoal kilns and schools) to enable the release of land for agricultural development in the rural areas.
- Zone out conservations areas, set aside land for cemeteries, protect environmentally significant areas and provide for social amenities and recreational areas.
- Promote rural character by restricting buildings to 1-2 stories only, construction of houses should not encroach into to the sidewalk edge and emphasize features like pedestrian walkways.
- Promote decentralization of development (e.g. of industries, social amenities and infrastructure) to upcoming urban centres to manage the rural-urban migration, decongest the cities and consequently control the urban sprawl.
- Develop and enforce regional plans for the whole country which should be reviewed periodically in line with the national population census.
- Provide buffer zones (maintained as greenways/spaces) between different zones e.g. game parks and residential or other settlement zones; roads and settlement; water catchment areas and settlement; water catchment areas and agriculture.
- Provide signage and other forms of orientation to help direct the public through the area's major facilities such as administrative units, hospitals, schools, churches, hospitality facilities.

- Provide maps showing social services and attractions in the locality.
- Provide access road and social amenities to the community; e.g. a primary school for every 5,000 persons and a secondary school for every 25,000 persons.

(b) Guidelines on Land Sub-Division (Minimum Acreage)

The following are the guidelines for land sub-division in Kenya:

- Introduce economic incentives and disincentives to promote land consolidation and deter land fragmentation.
- Prescribe minimum land size beyond which no title deed is issued
- Create awareness within the communities on the importance of land consolidation. For example providing awareness on the need to ownership of land in the form of shares instead of sub-dividing the parcel into unproductive/uneconomic sizes.
- Provide clear criteria for selection of Land Control Boards members incorporating relevant professionals to come up with a clear subdivision scheme for guidance purposes. Such professional should include (but not limited to) environmentalists, economists, agriculturalists, Physical planners and surveyors.
- Entrench land livestock carrying capacity per parcel of land/habitat patch size

3.12.2 *Guidelines for Zoning of Urban Area*

(a) Guidelines on Zoning of Urban Areas

Zoning specification should be developed, taking into consideration the different user types e.g. residential zones and densities, commercial zones and industrial zones. Zoning should also take into consideration the need for social amenities, conservation zones and environmentally significant areas.

The following are the guidelines for zoning of urban areas in Kenya:

- Zoning should take note of the prevailing meteorological conditions(e.g. wind direction) and existing ESA in the locality
- Enhance inspection and monitoring to ensure compliance with the zoning specifications
- Provide designated locations for establishment of public utilities, social amenities such as kiosks, carwash (using appropriate water saving technologies), garages, public toilets and smoking areas taking into considerations the inter-relationships between various land use types.
- In land use planning, buffer zone of sufficient distances should be left between functions that cause undesirable health effects or accident risk on the one hand and impact-sensitive activities on the other. Industries that cause a risk for major catastrophes and the transport routes for dangerous substances, as well chemicals rail-yards should be placed sufficiently far away from residential areas, areas for communal functions and sensitive natural areas.
- Provide buffer zones between different zones e.g. industrial, game parks and residential or other settlement zones.
- Restrict development of new residential areas in noise-sensitive zones.
- Take proper abatement measures to mitigate noise in established residential areas
- Set aside land for facilities for persons with special needs
- Restrict settlements and development in protected areas reserves and way leaves.
- Provide for the classification of urban areas, e.g. metropolis, cities, municipalities, townships as guided by comprehensive regional plans, zoning specifications and land-use codes.

- Promote measures to prevent proliferation of slums through adherence to housing standard, the provision of low cost quality houses and slum upgrading projects.
- Provide access to fire-fighting equipments and services through enforcement of fire drills and exits in both commercial and residential buildings, and provision of a sub-fire stations with at least one fire engine and at least 30 staff members for a population of between 50,000 – 100,000
- Review of local and regional development plans should be undertaken after a period of 10 years before which no piece-meal change of user/review should take place.

(b) Guidelines for Utility Corridors and Greenways

Utility corridors and greenways are required so as to provide for a distribution system throughout the country. Where located in settlement areas, these corridors may provide for greenways that can serve as pedestrian or bicycle routes, if issues of safety, liability, and maintenance can be adequately addressed.

The following are the guidelines for the utility corridors and greenways in Kenya:

- Provide sufficient easement width for the major trunk lines and transmission lines for utility systems, when their alignment is not within a road right-of-way, to permit the growth of trees within the easement.
- When overhead transmission lines are located within or adjacent to a road right-of-way, there should be sufficient width to permit the growth of trees adjacent to the transmission line, consistent with the applicable operations, maintenance, and safety requirements.
- Permit the use of utility easements for pedestrian and bicycle routes.
- Encourage coordination between utility companies, landowners, local authorities and the local community to ensure that safety, liability and maintenance issues are adequately addressed.
- Encourage the use of appropriate vegetation and/or ornamental trees to minimize the frequent need for vegetation control.
- Power lines are important to the national energy supply and should be indicated in regional land use plans.
- Restrict human activity within power line corridors.

(c) Guidelines for Scenic Resources and Scenic Views

The following are the guidelines for scenic resources and scenic views:

- Evaluate the impact of land use proposals on the visual quality of the landscape, including view plane and open space considerations.
- Ban roadside hawking and encourage landscaping along the roads, preservation of monuments and the building designs that enhance the scenic beauty of a town and give it a unique characteristic
- Whenever possible, relocate or place underground overhead utility lines and poles that significantly obstruct public views.
- Regulate the proliferation of bill boards and roadside advertising screens to reduce obstruction, the negative visual effects and enhance road safety.
- Prohibit placement of billboards on overhead foot bridges to enhance pedestrians' security and avoid obstruction to motorists.
- Encourage interagency and private sector participation and cooperation in the creation, maintenance and enhancement of scenic views and visual resources.
- Development on front row plots along the ocean and lakes should be of limited storied level to ensure that no obstruction occurs to the development on subsequent rows.

(d) Guidelines for Parks and Recreation Areas

The following are the guidelines for parks and recreation areas:

- For new residential development, provide land for open space and recreation purposes and/or circulation space by ensuring that 10% of land is surrendered during subdivision to provide the open space.
- The 10% of open space provided during land subdivision should be demarcated and title deed produced and held in trust by the government.
- Provide adequate public parking and related support facilities (such as rest rooms, showers and security arrangements among others)
- Incorporate natural features and use landscape materials that are indigenous to the area, where feasible, into the design of recreation areas.
- Provide pedestrian and bicycle pathways from surrounding streets to parks, to facilitate convenient access into the parks.
- Identify carrying capacity limitations of recreational resources and implement policies to regulate and mitigate impacts to these resources
- Land use planning should provide for extensive and attractive recreational areas across the municipalities. The recreational areas should form cohesive entities so that there is a network of green zones combining them.

(e) Guidelines for Urban Renewal

The following are the guidelines for urban renewal:

- Enhance the efficiency of all buildings through provision of efficient management systems i.e. efficient use of water, energy, parking space, security, waste management and lighting among others as well as provision for persons with special needs.
- Promote high-rise buildings as opposed to horizontal growth to save on available space
- Preserve buildings of historical /national heritage importance
- Undertake road widening/redesigning programmes to ease and discourage traffic congestion and encourage pedestrian and non-motorized oriented/friendly towns.
- Decentralize ministry headquarters from Nairobi to other towns to reduce congestion, ease infrastructural pressure and encourage growth of other urban centres.

(f) Guidelines on Land Recovery by the Government

The following are the guidelines on land recovered by the government:

- Establish measures to ensure that the lease conditions in government title deeds are reviewed upon their expiry time as stipulated in the Lands Act or the new constitution
- Enforce the compulsory acquisition procedures of land meant for public utilities (e.g. cemeteries, sanitary landfills, waste transfer sites, public toilets etc.)
- Recover illegally acquired public land
- Introduce economic disincentives to discourage holding of land for speculation purposes.

(g) Guidelines on Managing Population Density

The following are the guidelines for managing population density:

- Define and control occupancy i.e. number of persons per building (density per unit)
- Promote family planning through awareness creation
- Project and routinely monitor infrastructural development viz-a-viz the urban population growth for proper planning purposes.

- The regional land use plan and the local master plan should be justified by means of a prognosis of the future population development.
- Provide alternatives for long-term population development in regional planning, both in urban centres and in rural areas.

(h) Guidelines on Agricultural, Industrial and Domestic Waste Management

The following are the guidelines for agricultural, industrial and domestic waste management:

- Agricultural, industrial and domestic waste/effluent treatment should be designed to avert pollution of lakes and other water bodies, ensure the enforcement of the same.
- Promote domestic and industrial waste segregation at source and encourage a 6-R oriented society of waste management, i.e. Refuse, Reduction, Return, Refill, Reuse, and Recycle – this is the 6-R!
- Each waste generator should provide appropriate receptors for waste collection and segregation.
- Promote and enforce the provision for the design and construction of adequate waste water handling facility for a proposed development.
- Manufacturers and/or appointed agents should provide waste management solutions for their products.
- Waste collection points, transfer site and disposal site (landfill or incinerator) should be well designated and properly functioning.
- Waste disposal sites should be secured and manned to discourage scavenging and exposure to hazardous chemicals.
- Provide adequate buffer zone between waste disposal sites and the surrounding communities
- Restrict transportation of wastes to designated routes to ensure that the health and safety of the surrounding communities is not compromised.
- Provide for the disposal of electronic wastes by incorporating a resource recovery and assigning disposal responsibility to company of manufacture as per the Basel convention
- Waste treatment works should be located so that the bulk of all waste generated is well managed and may be utilized or treated in purposeful way.
- Provide and safeguard a sufficient supply of good quality water for population centres.
- Ensure proper handling of nuclear / radioactive wastes

(i) Guidelines on Establishment and Installation of Military Camps

In land use planning, the needs of the national defence and the guarding of the borders should be taken into account, and sufficient areas should be allocated to garrisons, shooting and training areas, storage functions/facilities and other prerequisites for the functioning of the national defence and the guarding of the borders. At the same time, the requirements of other community structures, the quality of the environment and the environmental values should be taken into account.

The following are the guidelines for the establishment and installation of military camps:

- The training areas should be marked and/or demarcated as military land and appropriate signage/warning notices erected.
- Create environmental awareness in the military.
- Undertake EIA for any proposed military installation and subsequent EA.
- Provision for effective decommissioning of military operation areas

- Ensure that the military installations are not located in environmentally sensitive areas e.g. wetlands, parks, forests, conservation areas and human settlements among others.
- Ensure that military operations provide appropriate infrastructure services to support and minimize potential negative impacts to the region.
- Ensure that there is complete isolation of military camps from civilians by establishing a safeguarding area (buffer zone) between the military camps and civilian settlement.
- Consider relocating permanent military camps and training areas in appropriate areas

3.13 Guidelines on Resettlement of Refugees / Displaced Persons

Background

Kenya, like most African countries, hosts refugees fleeing from civil conflicts and prosecution. Kenya is a signatory to the 1951 United Nations Convention relating to the Status of Refugees as well as the 1969 OAU Convention Governing Specific Aspects of Refugees problems.

In November 2006, Kenya passed its own national refugee law called the Refugee Act 2006, which guides all the actors – the Department of Refugee Affairs (DRA), the Police, the immigration Department, other government departments, NGO's, Civil Society Organizations, UN agencies and refugees on how to handle refugee matters in Kenya.

Section 16 (2) of the Refugee Act 2006 gives powers to the Minister of State for immigration to select some places in Kenya to be transit centres to serve as temporary accommodation to asylum seekers or set up refugee camps in consultation with the local communities. The Act also provides that the government and other humanitarian organizations work together to provide food, shelter, medical assistance and other basic needs in these camps and transit centres.

On environmental matters, it is the responsibility of the Commissioner of refugees through the Refugee Camp Officer to make sure that the camps are managed in a way that protects the environment, the welfare of the refugees, the host communities and promote peaceful co-existence between the refugees and the host communities.

Kenya has also been experiencing situation of internally displaced persons as a result of environmental disasters (such as earthquakes, landslides, floods and droughts), fire outbreaks, insecurity and political instability.

The following are the guidelines on the resettlement of refugees and other displaced persons:

- Undertake EIA for establishment of proposed refugee camps and undertake EAs.
- Ensure the provision of designated areas for refugee settlement. Such areas should not be in ESAs and should be accessible to food supplies, water supplies, shelter, medical assistance and other cost-effective basic needs. Regional camps should be designated.
- Provision for emergency response plans for refugee/displaced persons.
- Provision for environment officer to be in charge of environmental issue within the refugee camps
- Ensure that the refugees are settled/accommodated in areas where there are social amenities (schools, hospitals and places of worship) and basic amenities (water, shelter, security, and food).
- Determine the camp carrying capacity for each single camp and duration of time for which refugees are accommodated there.

- Provision for renewable sources of energy in camps and ensure total supply of fuel wood and shelter materials for the refugees by the UNHCR or GOK.
- Ensure the protection of interests of the existing communities, avert conflicts with them, and where necessary provide a buffer zone between the refugee camp and the local/indigenous settlement.
- Refugee camps should not be located less than 50 km from the nearest international border as per the UN Convention on refugees of 1951 for their safety.
- Ensure that area of the refugee camp is marked by a ring road or a live fence to control unauthorized expansion
- Set aside public lands in all counties to temporarily cater for any unlikely event that might result in displaced persons.

3.14 Guidelines on Transport and Information Communication Technology (ICT)

Background

The national needs for communication networks should be satisfied in a way that promotes both a functional regional structure and our international competitiveness. The guidelines particularly refer to the main road network, the national rail network, and harbours and airports of national significance. A main challenge is to develop these as part of an integral traffic system.

Traffic systems are to be planned and developed as entities encompassing different modes of traffic and serving both settlement and business and industry. Particular attention should be paid to reducing the need for traffic and transport, and to improving traffic safety and the prerequisites for environmentally beneficial modes of traffic.

The issue of siting and installation of Base Transmitter Station (BTS) begun following the increase in public complaints on their installation in their neighbourhoods. One of the concerns was the perceived adverse effects of electromagnetic radiation emitted from such communication facilities on human health. Even though there are no conclusive studies that suggest that electromagnetic radiations from these facilities are either harmful or safe, the public seems to have adopted a “better safe than sorry approach” which to some of them implies that no communication mast should be deployed in their immediate neighbourhoods.

In response to the foregoing, the following guidelines were prepared to inform the rollout of communication network infrastructure in Kenya to ensure that commercial, environmental and consumer concerns are addressed in a sustainable way.

3.14.1 Guidelines for the Provision of Transport Systems

The following are the guidelines for the provision of transport systems:

- Ensure the provision of pedestrian paths, bicycle paths, motorbike lanes and public transport lanes in road construction and planning – with consideration for persons with special needs e.g. physically challenged.
- Road construction shall ensure that the construction of designated bus lanes/ taxi lanes coincide with the siting of pedestrian drop-off and pick-up points.
- The local authority shall ensure the introduction of multi-storey parking lots and encourage parking lots outside the CBD.
- Provide subways for inter urban connections and improved mass transit systems within both the urban areas and connecting urban centres.
- Ensure traffic separation by minimizing the intersection of road and rail networks in order to reduce accidents and install barriers as necessary.

- Dual carriage ways should be constructed to include barrier walls dividing dual carriage ways to avoid on coming bright light obstruction
- Provide time-frames during which private vehicles are NOT allowed within the Central Business District (CBD).
- Provide for the location and enforcement of designated pedestrian drop off and pick-up points for public transport.
- Provide by-passes for all towns to decongest towns
- Ensure the protection of road and railway reserves
- Control the encroachment of human activities along the by-passes and major roads.
- Undertake appropriate landscaping and tree planting scheme to enhance greenways and scenic views.
- Ensure the installation and regular maintenance of roadways, street trees, signage, street furniture and street lighting
- Provide for sanitary facilities within given intervals for long distance public service transportation in the form of “designated truck stops” – with consideration for persons with special needs.
- Provide waste baskets within public transport services.
- Ensure road alignments avoid hilly and mountainous areas and where necessary provide for road tunnels through hills and/or climbing lanes where the alignment has to run along a hilly terrain.
- Marking of the roads should be done concurrently with the road construction to enhance road safety.
- Provide for the designs and carrying capacities of vessels used for public services on land, air and water within the country for both passengers and cargo.
- Ensure the provision and access of maps of the cities and towns of a particular region/rural area showing attractions, location and contacts of emergency services (e.g. fire brigade, ambulance, police stations among others)
- Ensure that petroleum products are only transported to depots by pipeline and rail and limit their re-transportation to retail stations by road in small and controlled quantities whilst observing safety procedures.
- Promote the use of low sulphur and unleaded fuels to reduce air pollution.
- Promote the growth and use of bio-fuels as alternatives to fossil fuels.
- Land use planning should safeguard the continuity of the existing nationally important rail lines, roads, ports, harbours and waterways
- Land use should promote cooperation between different modes of traffic and public transport by reserving sufficient areas for the development and functioning of good traffic terminals and passenger travel centres functioning as crossroads.

3.14.2 Guidelines on the Siting and Installation of Base Transmitter Stations (BTS)

The following are the guidelines for the siting and installation of BTS:

- Undertake EIA for every site they propose to install BTS to provide counter measures to site specific adverse impacts associated with the installation.
- Ensure complete disclosure of risk-assessment data by the regulatory Authority to ensure that users of new technologies have access and are informed on their impacts. The Regulatory Authorities together with the service providers should undertake risk management and communication of the same to the public.
- Participate, as appropriate, with other Stakeholders in developing and implementing the Strategic Environmental Assessment (SEA) to guide on wider network coverage and the associated cumulative impacts.

- Develop clear standards and procedures on the subject of aesthetics. Camouflage is not a blanket requirement; whether or not to camouflage communication infrastructure depends on the ecosystem. Special consideration should be given to areas of sensitivity e.g. sites of national heritage (under the National Museums and Heritage Act, 2006 and as published in the Kenya Gazette from time to time); national parks and other sensitive eco-systems.
- Establish Electro-Magnetic Frequency (EMF) exposure levels of all communication equipment within their control and bring them into compliance with the relevant national standards and/or adhere to International Commission on Non-Ionizing Radiation Protection (ICNRP) guidelines, including the EMF exposure standards specified therein, in the absence of an appropriate Kenya Standard on EMF exposure.
- Provide and Publish clear, transparent and accountable criteria and cross industry agreement for site infrastructural sharing and co-location.
- Develop, publish and adhere to a clear enforcement criteria and dispute resolution mechanism through; the development of standard supporting documentation for all environmental and planning submissions to the relevant government authorities and provision of resources to respond to complaints and enquiries about radio base stations and other telecommunication equipment.
- Communication routes should primarily be developed on the basis of the existing main traffic routes and networks.

3.14.3 Land use Planning Guidelines for Airports and Airstrips

Major airports have become key nodes in global production and enterprise systems offering them speed, agility, and connectivity. They are also powerful engines of local economic development, attracting aviation-linked businesses of all types to their environs. These include, among others, time-sensitive manufacturing and distribution; hotel, entertainment, retail, convention, trade and exhibition complexes; and office buildings that house air-travel intensive executives and professionals. More and more aviation-oriented businesses are being drawn to the airports and along transportation corridors radiating from them, with the resultant emergence of a new urban form the Aerotropolis.

Planning for land uses around airports has been and continues to be one of the most challenging aspects of airport planning. Therefore, to ensure sustainability, the Kenya Civil Aviation Authority (KCAA) and the local council must discourage development and/or land uses nearby that are considered incompatible with the environmental consequences of aviation activity and ensure that airports development will be more economically efficient, aesthetically pleasing and socially and environmentally sustainable.

The following are the guidelines for airports and airstrips:

- Establish a sufficient buffer zone to control human developments around airports.
- Clearly define the noise level threshold for an Airport Operating Area (AOA) boundary, within which no noise-sensitive land uses could be developed. The airports should be protected by a buffer zone that allows noise sensitive development “with restrictions” between the “no noise-sensitive development” area close to the airport and the “built without restriction” area.
- Where an airport is already surrounded by residential or other noise sensitive land-uses, prevent any further increases in incompatible land use while putting measures in place to ensure that previous incompatible land uses are made compatible.
- Where a new airport is planned in a less urbanized environment, establish appropriate measures to preserve the balance between the integrity of the airport and the quality of the life of the surrounding community.

- Establish a cooperative relationship with the nearby communities and airstrip/airport management.
- Cluster development, rather than strip development, should be encouraged along airport transportation corridors with sufficient green space between clusters.

CHAPTER FOUR

4.0 ENVIRONMENTAL AND OTHER IMPACTS OF THE GUIDELINES

The preparation of Integrated National Land Use Guidelines has been made on the basis of sufficient investigation and assessment of their environmental and other effects. The assessment provided information on the environmental, economic and social effects of the guidelines so as to provide background information for the preparation, decision-making on, and implementation of these guidelines.

The assessment describes the consequences of the implementation of the Integrated National Land Use Guidelines. It also included an assessment of situations where only a few of the numerous guidelines pertaining to the same issues are implemented. Several of the forecast inconveniences are, in fact, caused by the implementation of one guideline, while another guideline pertaining to the same issue is only implemented partially, or not at all. As the guidelines are very broad, the assessment is qualitative and general. The presentation of the main outcome of the assessment is given according to the various dimensions of the effects.

4.1 Impacts on the Regional and Community Structure

Many of the guidelines, when implemented, will improve the prerequisites for development both in developing and stagnating centres and areas: the centres form networks, supra-regional development zones arise, national communication networks grow, the interaction between rural and urban areas increases, community structures become more cohesive, and with the improvement of the quality of living environment and recreational areas, the attractiveness of areas increases.

Many of the guidelines contribute to more cohesive community structures in urban settlements and villages, and particularly in growing urban regions. With increasing cohesion, the community structures function better and more economically. Improved communication networks may, however, contribute to splitting up the community structure.

Support to villages and other rural centres may improve developments in surrounding areas with dispersed settlement.

4.2 Impacts on Transportation and Community Services

The guidelines have an impact on traffic, particularly starting off the use of private cars in urban areas and the commuting areas of town, enhance cohesion of the community structure and support light traffic and public transportation. Similarly, the improvement of the main traffic routes may stimulate this trend as well. However, if the implementation of these guidelines increases the population in urban areas and villages, it may again, at the local level, increase traffic volumes.

The increased cohesion of the community structure, the infill building close to public transport routes, the cooperation between various modes of traffic and the development of traffic crossroads support public transport, especially in growth areas. The guidelines will therefore improve prerequisites for walking and cycling.

The guidelines will also promote the development of existing communication networks. Community services will be safer and economic with proper land use reservations, protection of ground water areas, and increased utilization of the modern networks and other technical service

systems. A more cohesive community structure will reduce the need to build new community service networks.

In some situations, the guidelines while promoting the quality of the environment and the recreational opportunities may impede the development of communication networks and community services.

4.3 Impacts on Natural Resources and Ecological Conditions

Many of the guidelines promote a better-planned and sustainable use of the natural resources. Especially the guidelines pertaining to a more cohesive community structure will help reduce the consumption of natural resources and diminish emissions and discharges, especially the emission of green house gases. On the other hand, insofar as the guidelines increase economic growth and traffic, the guidelines also contribute to more energy consumption and emissions. With a more cohesive community structure, traffic emissions will be concentrated to smaller areas, which may, again, heighten locally the harmful consequences of the emissions.

The guidelines promote the preservation of valuable natural resources, extensive cohesive areas in their natural state, and biological diversity, especially in areas outside the settlements. It also promotes the creation and preservation of open space, green wastes, parks and recreation facilities.

As building is concentrated to existing settlements and as the recreational use of natural areas as well as tourism are channelled to specific areas and routes, this will diminish harmful environmental impacts in other natural areas. Correspondingly, harmful environmental impacts may increase in the green areas of dense settlements, on recreation and tourist routes, and in centres and their neighbourhoods.

4.4 Impacts on the Landscape, Town Image and Cultural Heritage

The Integrated National Land Use Guidelines will contribute to the preservation of the landscape and, particularly, the national cultural heritage, and to its being considered in land use planning. In settlements which are still being developed, and where the landscape is split up, the effects of greater cohesion will probably be positive. The negative effects that dispersed building outside settlements has on the landscape and cultural heritage will diminish.

On the other hand, a greater cohesion brought about by more infill development in areas, which are characterized by open cultural landscape, and historical sites may, again, be negative.

4.5 Impacts on People and Communities

As a result of greater cohesion, the prerequisites for service production and the availability of services will be improved in residential areas near major centres, and in smaller centres and villages. A greater cohesion may lead to urbanized housing, and, particularly in urban regions, to an increase in blocks of flats. Many of the guidelines support public commuter transport in dense population centres. When implemented, the guidelines may lead to increased migration from areas of dispersed settlements to centres and villages where building is concentrated.

Many guidelines support outdoor recreation both on the basis of individual's right and through organized recreation and tourist services.

The guidelines support the careful consideration of factors harmful to human health and of risks as well as the prevention and mitigation of damages to health.

The guidelines promote an improvement of the quality and pleasantness of the environment, the opportunities to outdoor recreation, and light traffic thereby promoting pedestrian and or non-motorised oriented society and thus contributing to better physical and psychic health.

4.6 Impacts on the Economy and Business Industry

When implemented, many of the guidelines promote economic growth, provide better prerequisites for business and industry, and promote employment. This is particularly true on the guidelines promoting urban and village centres development, networking of centres, and the formation of development zones, the reservation of areas for business and industry, and the development of communication networks.

Insofar as the guidelines support a good environment and better opportunities for recreation, they increase the attractiveness of the areas. The care and management of a natural and cultural environment improves the preconditions for recreational and tourist entrepreneurship.

A greater cohesion of the communities will improve the prerequisites and economic success for service enterprises, along with infill development. The guidelines will strengthen the status of centres as places of business and, possibly increase the conditions for local businesses. If the settlements in rural area continue, and if urban population increasingly engages in tourism, there will be greater opportunities for building services in the rural areas. If the guidelines render the establishment of new major commercial centres more difficult, the prerequisites of trade in the form of large units may, in some cases, deteriorate.

Despite the fact that the guidelines contribute to better preconditions for developing business and industry, as well as more employment, they indirectly support the state economy and the local economy. A greater cohesion in the community will have positive effects on the local economy, by increasing the use of present infrastructure systems and services and reducing the need for new investments. Likewise, as existing structures provide the primary support, there is less need to invest in, for example, new communication networks.

The development of centres and networks of recreation areas require public expenditure. The consideration for environmental viewpoint in building may also entail costs. On the other hand, it is also cheaper to maintain than to repair them afterwards.

4.7 Impacts on Planning and Decision-Making

The guideline supports a coordinated planning process which facilitates decision-making, harmonization of interests and economically, socially and environmentally sustainable solutions as envisaged by the Vision 2030 and the Medium Term Plans (MTPs).

The guidelines will contribute to the implementation of international agreements and commitments.

The workload may increase, especially in the local authorities and the regional councils, and this may create a need for increased resources or a reorganization of existing ones. The need for cooperation between regional councils themselves, between regional councils and municipalities, between those responsible for land use planning, business and industry and the citizens may increase. There will be an increased need for cooperation between government authorities.

4.8 Mitigating Adverse Consequences and Follow-Up of the Impacts

Many of the adverse effects mentioned result from a guideline being implemented; whereas parallel guideline influencing the same issue is not implemented or is implemented partially.

The adverse consequences of implementation of the guidelines may be alleviated by means of concrete land use arrangements. Such measures may be supported and brought out by means of advice and training to those responsible for implementation of these guidelines.

CHAPTER FIVE

5.0 LEGAL IMPLICATIONS OF THE GUIDELINES

Section 9(2) (c) & (d) of EMCA, 1999 stipulates the legal requirements for NEMA, in consultation with lead agencies, to establish and review land use guidelines and examine land use patterns to determine their impact on the quality and quantity of natural resources.

The implication is that Government authorities must consider national land use guidelines, promote their implementation and assess the impact of their actions on land use.

On the basis of the effects pertaining to guiding land use and its planning, the Integrated National Land Use Guidelines would provide viable bottom up harmonization strategy, which will inform the enactment, review and/or amendment or repeal of Regulations, standards and Laws.

CHAPTER SIX

6.0 IMPLEMENTATION AND FOLLOW-UP OF THE GUIDELINES

6.1 Land Use Planning

The implementation of the Integrated National Land Use Guidelines will be promoted by means of land use planning and the means available to government authorities. In planning at the regional and municipal level, the guidelines will be made concrete while taking into consideration the specific features of different areas and while coordinating the national guidelines with the regional and local goals.

Bearing in mind the character of the guidelines, the functioning of the land use planning system and the effective coordination and guidance by NEMA and Ministry of Environment and Mineral Resources (ME&MR), it is purposeful to render the guidelines more precise at the regional level by formulating them as land use planning principles and area reservations. They will then, through the guiding effect of the regional land use plan, influence local land use planning.

It is natural to render the guidelines more concrete at the regional and local level because in addition to land use planning, the regional and local authorities are responsible for regional and local development issues respectively. As a rule, INLUG will permeate into land use planning at the local level through the guiding effect of the regional land use plan. Some of the guidelines, by their nature, cannot be dealt with at the regional level. There are situations therefore where the guidelines will be taken into account directly in the local level planning.

The importance of the local master plans is heightened when the INLUG and the regional land use plan are made concrete at the local level. The local master plan gives general indications of land use and harmonizes other functions within the area of the municipality. The local master plan is a major development instrument for local land use, and it is closely related to strategic planning and other development work at the local level.

In guiding land use planning, NEMA and ME&MR should consult with other lead agencies and provide expert assistance so as to ensure and to promote the consideration of the Integrated National Land Use Guidelines and their implementation. NEMA and ME&MR are expected to play a leading role in guiding land use planning at the national level; they should coordinate the regional and local authorities in order to ensure that the guidelines are taken into account in regional and local land use planning respectively. The Provincial and District Environment Committees are responsible for guiding land use at the regional and local levels within their respective jurisdiction.

6.2 Activities of the Government Authorities

Plans, which are important with a view to regional structure and land use, are prepared, and related decisions made, by different government authorities. INLUG are intended to harmonize the goals and needs relating to land use and to formulate a common understanding within the different sectors of government administration.

Government authorities should look for solutions which promote the implementation of these guidelines. On the other hand, government authorities should refrain from such measures which make guideline implementation more difficult. The authorities should thus assess the effects of their activities as regards the Integrated National Land Use Guidelines. This assessment is

important, especially in preparation of major plans and programmes in different sectors of the administration.

The promotion of the guidelines calls for a new work culture and increasing cooperation between NEMA, ME&MR and government authorities. NEMA and ME&MR shall ensure continual discussions with relevant government authorities/agencies on the implementation of the INLUG.

6.3 Follow-Up of the Implementation

As a contribution to the operationalization of EMCA, 1999, it is important that there is a follow-up on the implementation of the INLUG.

The NEMA and ME&MR are charged with following the implementation of the INLUG in connection with land use planning. NEMA and ME&MR should work closely with the regional authorities and the lead agencies (especially the Ministries of Lands and Local Governments) to ensure that the spirit of INLUG is incorporated in the regional and local land use plans, and the joint master plans. The Provincial and District Environment Offices will further supervise, in their respective areas of jurisdiction the integration of INLUG into the local land use planning.

NEMA is engaged in the preparation and issuance of an annual report on the State of Environment (SOE) in Kenya. Changes in land use patterns and their impact on the quality and quantity of the natural resources and the state of the living environment will be monitored through the State of Environment (SoE) reports. This will give indications of land use trends in Kenya and indicate how the goals are implemented, and what the effects are.

INLUG will be reviewed as need arises. On the basis of these assessments, NEMA will, when necessary, coordinate the revision and modification of the guidelines to incorporate emerging issues, knowledge and realities. In addition, the need for revision of the INLUG will be assessed on the ground of problems possibly encountered in their implementation.

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ANNEXES

Annex 1: INLUG Preparation Team

INTEGRATED NATIONAL LANDUSE GUIDELINES (INLUG) PREPARATION TEAM

INLUG Secretariat

1. National Environment Management Authority
2. Ministry of Environment and Mineral Resources
3. Ministry of Agriculture
4. Ministry of Lands
5. State Law Office-Attorney General Office

Collaborating Institutions

1. Ministry of State for Provincial Administration
2. Ministry of Energy
3. Ministry of Industrialization
4. Ministry of Fisheries
5. Ministry of Local Government
6. Ministry of Regional Development
7. Ministry of Planning and National Development
8. Ministry of Public Health and Sanitation
9. Ministry of Roads
10. Ministry of Housing
11. Ministry of Tourism
12. Ministry of Forestry and Wildlife
13. Ministry of Water and Irrigation
14. Mines and Geological Department
15. Water Resources Management Authority
16. Kenya Forest Service
17. Kenya Forestry Research Institute
18. Kenya Agricultural Research Institute
19. Ministry of Livestock Development
20. Ministry of Education
21. Ministry of Science and Technology
22. National Council for Science and Technology
23. Ministry of Transport
24. Kenya Wildlife Service
25. National Museums of Kenya
26. Kenya Marine and Fisheries Research Institute
27. Department of Resource Survey & Remote sensing
28. Provincial Environment Committees
29. District Environment Committees

Other Stakeholders

1. Universities
2. ICRAF
3. ACTS
4. Kenya Forest Network
5. WWF



nema

mazingira yetu | uhai wetu | wajibu wetu

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