



A Summary of

**THE KENYA NATIONAL
BIODIVERSITY STRATEGY
AND ACTION PLAN**

**Ministry of Environment
&
Natural Resources**

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FOREWORD

Kenya's biological resources are fundamental to her national economic prosperity as sources of food, fuel, wood, shelter, employment, and foreign exchange earnings, especially through tourism. The plan to industrialise the 21st century depend to a large extent on national biodiversity resources. Other important benefits of biodiversity, include the maintenance of water cycles, regulation of climate, photosynthetic fixation, protection of soil, storage and cycling of essential nutrients, as well as absorption and breakdown of pollutants.

Kenya's vision to maintaining a clean and healthy environment with abundant biodiversity resources will be achieved through sensitisation and empowerment of communities through participatory management practices and use of environmentally friendly techniques and technologies. Best practices in biodiversity management will be integrated into national development planning. An important consideration in the new management approach is the need to sustainably utilize these resources, while ensuring that benefits from them are used to equitably improve social, cultural and economic well-being of the people. This National Biodiversity Strategy and Action Plan (NBSAP) was developed to facilitate the achievement of the national vision and aspirations. It describes issues that threaten biodiversity and what needs to be done, how it would be done, and the time-frame within which it should be done.

Issues needing action include conservation within protected areas, arid and semi-arid areas, forests, degraded ecosystems, threatened, and alien species, genetically modified organisms, indigenous systems and knowledge. This action plan addresses other fundamental concerns of biodiversity management such as agricultural biodiversity, incentive measures, research and training, public education and awareness, impact assessment, access to genetic resources, institutional capacities and linkages, gender concerns, policy and legislation, poverty, biotechnology and other technologies, information exchange, technical and scientific co-operation, and financial resources.

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ACRONYMS

ASAL	Arid and Semi-Arid Lands
BDM	Biodiversity Data Management
CBD	Convention on Biological Diversity
CBO	Community Based Organizations
CHM	Clearing House Mechanism
COP	Conference of Parties
GEF	Global Environment Facility
GMO	Genetically Modified Organism
IMCE	Inter-Ministerial Committee on Environment
KAM	Kenya Association of Manufacturers
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
KEMFRI	Kenya Marine and Fisheries Research Institute
KWS	Kenya Wildlife Service
MENR	Ministry of Environment and Natural Resources
NBSAP	National Biodiversity Strategy and Action Plan
NCST	National Council for Science and Technology
NEAP	National Environment Action Plan
NES	National Environment Secretariat
NGO	Non-Governmental Organization
NMK	National Museums of Kenya
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme

1. INTRODUCTION

In response to the United Nations General Assembly Resolution No. 2393 (XXIII) of 1971, Kenya joined the world community in the search for a global approach to the protection of the environment by participating in the first United Nations Conference on Human Environment in Stockholm, Sweden, in June 1972. This conference led to the birth of the United Nations Environment Programme (UNEP), now headquartered in Nairobi.

Globally, the value of biodiversity as a key component of the environment was recognized during the build-up to the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. During that occasion, Kenya endorsed and adopted Agenda 21, and also signed the Convention on Biological Diversity (CBD). It ratified the CBD in 1994. The Rio Earth Summit was a global meeting mandated to devise integrated strategies that would halt and reverse the negative impact of human behaviour on the physical environment and promote environmentally sustainable economic development in all countries.

Agenda 21, among other things, specifically calls for the development of national strategies for the conservation of biological diversity and the sustainable use of biological resources. In fact, biodiversity-related activities feature throughout the 40 chapters of the Agenda. Sustainable development is an integrated approach to policy and decision making, in which environmental protection and long term economic growth are seen not only as compatible, but also complementary and mutually dependent.

The Kenya government founded the National Environment Secretariat (NES) in 1974 as the lead environment agency to coordinate and oversee environmental activities in the country. Later on, in 1994, NES founded the Interministerial Committee on Environment (IMCE) which is a multi-sectoral and multi-disciplinary team with membership from the government, private sector, and NGOs. The IMCE is made up of sub-committees and the Biodiversity sub-committee is responsible for the implementation of the (CBD). Since then, the country has witnessed a remarkable

rise in environmental awareness as evidenced by the phenomenal growth of relevant institutional and sectoral activities.

A multi-disciplinary and multisectoral Task Force was established in 1996 to function as a broad-based consultative and advisory group to steer the development of a National Biodiversity Strategy and Action Plan (NBSAP). The Project Planning Team was appointed in 1997 to coordinate and execute the undertaking.

The overall objective of the NBSAP is to address the national and international undertakings elaborated in Article 6 of the Convention. It is a national framework of action for the implementation of the Convention to ensure that the present rate of biodiversity loss is reversed, and that present levels of biological resources are maintained at sustainable levels for posterity.

2. BUILDING CONSENSUS

Approach

Kenya's strategic approach to the process of developing the NBSAP recognized:

- That the country does not have one integrated national strategy and action plan for biodiversity, and indeed this was the *raison d'être* for developing the NBSAP. Rather, we have a number of sectoral strategies and programmes that normally operate independently of one another, while not necessarily addressing or responding to a clearly set list of national priorities. Due to the lack of any nodal national reporting, it is difficult to assess the status and impact of these sectoral strategies.
- That it is important to create a sense of national ownership through the adoption of logical, objective, interactive and participatory methodologies.
- That in order to meet international requirements, it is essential that the process be guided as much as possible, by the principles already established by Agenda 21 and the Convention, and by the various publications and guidelines from the relevant UN and other specialized organizations.

Guiding Principles

In developing this national strategy and action plan for the conservation and sustainable utilization of Kenya's biodiversity, the following principles were constantly relied on as a guide to selecting our options and actions:

- The physical environment (soil, water, air) and the living organisms (plants, animals and microbes) constitute the foundation upon which our

agriculture and food security are based. The conservation and sustainable utilization of biodiversity must therefore go hand in hand with the conservation of these fundamental resources.

- The conservation and sustainable utilization of Kenya's biodiversity is key to improving agricultural productivity and sustainability, thereby contributing to national development, food security, poverty alleviation, and the fair and equitable sharing of benefits arising.
- The single major threat to our biodiversity resources today is genetic erosion, which is mainly brought about by encroachments on natural vegetation for settlement and agriculture. It is vital to anticipate, prevent and attack at source the causes of significant reduction or loss of biodiversity.
- Our biodiversity is best conserved *in-situ*, but we must increase our capacity for *ex-situ* conservation. We are fully conscious of the intrinsic value of our biological diversity and its ecological, social, economic, scientific, educational, cultural and aesthetic importance.
- Conservation goals are best achieved through ecosystem approaches, particularly as managed by local communities who have used traditional methods to sustainably manage ecosystems for generations.
- Sound national policies and legislation, such as the National Biosafety Framework, provide the foundation for successful national programmes in conservation and sustainable utilization of biodiversity.
- The NBSAP is a coherent framework for activities in the field of conservation and sustainable utilization of biodiversity. It should contribute to creating synergies among on-going activities as well as the efficient use of resources. The utmost importance of long-term national commitments to integrated national biodiversity plans and programmes, and for indispensable national, regional and international cooperation, is recognized.
- Utilization of Kenya's biodiversity should be transparent, equitable, and efficient.

National Vision

Kenya's national vision is that there will be a healthy environment providing abundant biodiversity resources and ensuring food security for the people. Our biodiversity resources will be sustainably conserved and utilized by sensitized and empowered communities through participatory management practices, and the application of modern and indigenous technologies. Best practices in biodiversity conservation will be integrated into national development planning, and through good governance, there will be sustainable utilization and equitable sharing of benefits, ensuring improved social, cultural and economic status of the people for posterity.

National Goals

The national goals, as well as the specific objectives, were set by a broad range of stakeholders. In the short term, Kenya will have:

- An enabling policy, legislative and constitutional environment for the conservation and sustainable utilization of biodiversity.
- Informed and empowered communities fully involved in sustainable utilization and conservation of biodiversity.
- Completed surveys, inventories, and documentation of national biodiversity resources.

In the long term, Kenya will have:

- Adopted best practices in biodiversity management and conservation.
- Realized the benefits of sustainable utilization of biodiversity resources, and as a result.
- Improved living standards of the people.

General objectives

The general national objectives are basically the overall objectives of the Convention:

- To conserve Kenya's biodiversity.
- To sustainably use its components.
- To fairly and equitably share the benefits arising from utilization of biodiversity resources among all stakeholders.
- To enhance technical and scientific cooperation nationally and internationally, including the exchange of information, in support of biodiversity conservation.

Specific objectives

Kenya's specific or immediate objectives are :

- To undertake immediate biodiversity assessment measures that are a necessary pre-requisite for the implementation of the national strategy and action plan.
- To act on the decisions of the Conferences of Parties to the Convention.
- To gather, consolidate, and disseminate biodiversity information.
- To create an enabling legal and policy environment for biodiversity conservation.
- To strengthen institutional and community capacity for sustainable conservation of biodiversity, including the safe utilization of biotechnology.
- To conserve agricultural biodiversity through increased support to local communities in the production and sustainable utilization of indigenous and/or traditional species for food and other uses.
- To incorporate biodiversity conservation and sustainable utilization of biodiversity resources into national development planning.
- To alleviate the social, cultural and economic impediments to biodiversity conservation and the sustainable utilization of its resources.

3. STATUS OF KENYA'S BIODIVERSITY

The country's biological resources are diverse, with an estimated 35,000 known species of animals, plants and micro-organisms. As Kenya gears itself towards industrial development, the importance of its biological resources cannot be overemphasized. Whether in the provision of food, industrial inputs, pulpwood, firewood, construction materials, medicines, ecosystem functions, or aesthetics, the conservation and sustainable utilization of biodiversity is a key factor in the country's stated goal of industrializing early in this century. These resources form the basic source of livelihood for the country's population especially in view of the fact that about 80% of the country's population directly or indirectly relies on biodiversity for survival. Further, the developing industrial sectors in the country, ranging from agro-based industries to service industries such as tourism, relies on the same resources.

There is considerable political will to conserve national biodiversity resources, as attested by the government's commitment to fulfilling the provisions of the Convention and other related conventions, treaties and protocols. The baseline investment in sustainable conservation that the country has undertaken in wildlife, forests, agriculture, national waters and other biodiversity resources management is further testimony to this.

The management of Kenya's biodiversity resources is characterized by some weaknesses. More often than not, people are unable to make informed decisions regarding biodiversity management as they lack adequate information on the non-consumptive values of the resources. While direct use values are well understood, the same may not apply for indirect use values (ecosystem functions, maintaining water cycles,

regulation of climate, photosynthetic fixation of solar energy, production and protection of soil, storage and cycling of essential nutrients, absorption and breakdown of pollutants). Infrastructure is inadequate to enhance better utilization and management of biodiversity. As a result, the tourism sector has declined marginally over the last ten years, although it still remains a key foreign exchange earner. The overall development of local and international markets for biodiversity products has also not been satisfactory.

Limited access to biodiversity data and information is also a weakness, although a considerable volume of biodiversity data is generated by national and regional institutions. Low levels of adoption of new technologies, including biotechnology, have tended to undermine the application of optimal production techniques in the supply of consumptive materials, further aggravating demand for biodiversity products.

The opportunities the country has for improving the people's living conditions using biodiversity resources are many - tourism, promotion and use of high nutrition indigenous foods, application of biotechnology, and the development of medicinal products for health and commercial purposes. The country also possesses a wide diversity of indigenous knowledge, innovations and practices that can be harnessed for sustainable utilization and conservation of biodiversity. Kenya also has opportunities to utilize economic incentives to enhance management of its biodiversity resources. There is potential to enhance international trade associated with local biodiversity products, including patent rights of indigenous technologies of such products as wood carvings and woven baskets, which might be potential income earners for the country.

A lot of plant and animal species are being overexploited for food, medicine, fuel and other commercial purposes, resulting in

widespread genetic erosion. Some rare species outside protected areas are threatened. Other significant threats identified include the adverse effects of poverty and overpopulation, the effects of climate change, insecurity, pollution of aquatic habitats, and unregulated bioprospecting.

The Environmental Management and Coordination Law is the legislative cornerstone of Kenya's efforts to conserve and sustainably utilize its biodiversity. In addition to this all-encompassing legal package are sectoral laws covering the principal sectors in biodiversity. Biodiversity conservation management has many key players, including government departments, research institutions, parastatals, national and international NGOs, local authorities and communities. However, the roles and degree of involvement vary, and are interactive across many thematic sectors.

The Ministry of Environment and Natural Resources (MENR) is presently charged with the responsibility of coordinating all environmental matters in the country. The ministry, through NES, is also designated as the National Focal Point on matters pertaining to the implementation of the Convention as well as for the Global Environment Facility (GEF).

Kenya's current GEF project portfolio consists of one national project (the Tana River Primate National Reserve Project) and two regional projects (the Lake Victoria Environment Management Project and the East African Cross-Border Biodiversity Project). A new GEF regional project proposal is under development to address the sustainable use of biodiversity in the Gregorian Rift Valley Lakes. New national project concept papers on coastal remnant forest biodiversity and forage biodiversity have been forwarded to the national focal point for further action.

4. THE NATIONAL STRATEGY

Since attaining independence, Kenya recognized the importance of conserving her biological resources. The Sessional Paper No.10 of 1965 on African Socialism attests to this concern. In the recent past, national master plans for forestry, water, and tourism have been developed. Likewise, action plans for environment, biodiversity data management, poverty eradication and desertification and drought have been prepared. In addition, Kenya is implementing the Convention, having completed the NEAP, the Country Study and the First National Report to the COP. There are efforts to implement the Global Plan of Action for the conservation and sustainable utilization of plant genetic resources for food and agriculture. Indeed Kenya has ratified most of the international treaties, conventions, agreements and protocols related to environmental protection and the conservation of natural resources. Included here are the Ramsar, Law of the Sea, Framework to Combat Desertification, Conservation of Migratory Species of Wild Animals, the Protection of the World Cultural and Natural Heritage, the Montreal Protocol, and the African Convention on the Conservation of Nature and Natural Resources. All these concerns are geared towards addressing the country's key components of biodiversity conservation.

The national strategy identifies goals and objectives and analyzes the gaps between current reality and the aspirations espoused in the goals and objectives. It presents issues and strategies that need to be undertaken in order to mitigate against the current threats to biodiversity. The strategy addresses each article of the Convention systematically, stating what needs to be done, and how this should be done.

4.1.1 Institutional capacities and linkages

The institutions involved in biodiversity conservation should have adequate facilities for research, information storage, and retrieval. There is need to establish networks between government departments, NGO's, the private sector and other stakeholders for enhanced coordination of biodiversity conservation.

In order to achieve this, the following strategies should be implemented :

- √ Capacity building should target the law enforcement agencies (including the police, judiciary, administration, and other regulatory agencies) in order to enhance and streamline implementation and enforcement of environmental policies and legislation for the protection of biodiversity in particular, and the environment in general.
- √ Provide scientific equipment and related infrastructure to biodiversity institutions to enable them effectively carry out research.
- √ Strengthen institutional systems and capacities for collaboration, and establish linkages and networks to improve coordination, gathering and exchange of information, research and development, and the management of resources.

4.1.2 Gender concerns

The Kenya government does not discriminate on the basis of gender, but in practice, gender imbalances do exist in biodiversity management and in the utilization of national resources. Land is perhaps the country's most important natural resource. Gender inequality is reflected in the women's limited access to land ownership and means of production. Although Kenya's statutory laws do not prevent women from owning land, women still do face numerous difficulties in trying to own land. This is partly because communal property tends to be held in trust by male members of the family.

The NBSAP proposes the following strategies to overcome the apparent lack of gender equity in biodiversity management:

- √ Develop programmes on gender concerns, focusing on roles, responsibilities and rights in order to overcome imbalances in gender considerations.

- √ Facilitate gender analysis, participation, and affirmative action in biodiversity management through gender-sensitive legislation.
- √ Promote gender awareness and involvement in all biodiversity programmes and projects.
- √ Recognize and support gender aggregation, including youth and their contribution to sustainable resource conservation and use of indigenous systems for conservation of biodiversity.

4.1.3 Policy and legislation

The 1997-2001 National Development Plan recognizes the underlying causes of environmental degradation. It observes that environmental management tools, including laws relating to the management of internationally shared resources, cross-border issues, environmental economics and accounting and environmental impact assessments, have not been adequately developed for effective environmental management.

The previously existing sectoral laws on environment have not been adequately enforced by the authorized institutions due to a wide range of bottlenecks. However, it is expected that the recently enacted Environmental Management and Coordination Law will remove these bottlenecks, and that it will be effectively enforced.

The following strategies should address current pressing issues of biodiversity policy and legislation:

- √ Include the conservation and sustainable utilization of Kenya's biodiversity as one of the pillars of the Constitution of Kenya .
- √ Enact new legislation to specifically address sustainable wildlife management and equitable sharing of benefits for local communities.

- √ Review national land law and policy regimes, particularly with respect to communal land, in order to define the modalities of facilitating equitable access to land ownership by women.
- √ Revise and harmonize existing policies and formulate a wetlands policy which will take into account the rights of riparian owners.
- √ Identify and recognize the rights of farmers.
- √ Enable local communities to acquire ownership and management of their biodiversity resources.
- √ Identify and inventorize public biodiversity goods, and develop and strengthen policies and legislation that protect them.

4.1.4 Poverty alleviation

Kenya's immediate development problems include increasing population accompanied by persistent poverty, whose interaction with the environment has resulted in undesirable consequences .

However, it must be recognized that population and poverty issues are the ultimate causes of biodiversity loss, and can only be meaningfully addressed as national development goals. At the present level, only proximate causes, where human action directly induces biodiversity loss, can be reasonably addressed.

Sustainable livelihoods are built on initiatives that provide the means for survival and prosperity without jeopardising the biodiversity components.

The following strategies are proposed to reduce the widespread poverty and the effects of poverty on biodiversity-dependent communities.

- √ Implement the National Poverty Eradication Programme components that relate to the utilization of biological resources.
- √ Create adequate employment opportunities by diversifying livelihoods, increasing domestic investments and savings to levels sufficient to support the desired rates of economic growth.
- √ Initiate and diversify income generation activities by increasing agricultural production of indigenous/traditional crops, and providing credit access to rural traditional farmers.
- √ Strengthen national programmes involved in population control programmes so that they may achieve sustainable population growth rates.

4.2 Identification and Monitoring

The identification of species and ecosystems in Kenya is incomplete. Similarly, the monitoring of biological components of biodiversity is inadequate. The following strategy should be implemented to improve the situation :

- √ Implement the Biodiversity Data Management (BDM) report.
- √ Strengthen and harmonize the systems for accumulating, processing, storing and retrieving data.
- √ Set up sustainable monitoring plans with clear objectives and identify indicators for assessing progress.

4.3 *In-situ Conservation*

4.3.1 *Within protected areas*

Kenya has designated several areas as important for conservation purposes. These include National Parks, Reserves, Wildlife sanctuaries, National Monuments, Biosphere reserves, World Heritage and Ramsar sites.

The main issues in the management of protected areas include weaknesses in policy and regulatory mechanisms, institutional arrangements to effectively collaborate and network, inadequate financial resources, and declining earnings from the tourism sector. In addition, there are gaps in biodiversity research which require urgent attention. Efforts are also required to involve local communities in wildlife management, and improve marketing strategies for wildlife and related resources. Finally, disaster preparedness mechanisms for the protected areas need to be improved and harmonized. In order to address these issues, the following strategies should be implemented :

- √ Support bottom-up, participatory and consultative processes involving all stakeholders.
- √ Strengthen the capacity of the Kenya Wildlife Service, as well as linkages with other institutions.
- √ Develop and maintain infrastructure in protected and adjacent areas in order to facilitate communication and effective management.
- √ Strengthen the marketing of wildlife tourism while developing modalities of sharing benefits accruing from these activities.
- √ Assist local communities to develop environmentally friendly income generating projects.

- √ Promote and sustain security in protected areas.
- √ Develop and implement a disaster preparedness and early warning system to catastrophes in protected areas.

4.3.2 *Outside protected areas*

It is important to protect sites of high biological diversity outside the protected area system because they may be habitats for unique endemics. Alternatively, they may be reservoirs for species threatened elsewhere, wild relatives of domesticated species, or seasonal habitats and/or staging grounds for migratory species. Buffer zones between protected areas and areas of human settlement are also zones of potential conflicts of interest, particularly with regard to loss of human life, farm crops, and other property. It is therefore important to sustainably conserve biodiversity while safeguarding these other societal interests. In order for this to be achieved, the following strategies should be implemented :

- √ Promote conservation and sustainable utilization of biodiversity outside protected areas, including highland grasslands and palm savannah.
- √ Develop strategies for unprotected areas, and institute conflict resolution mechanisms to deal with potential conflicts of interest.

4.3.3 *Protection of ecosystems and natural habitats.*

(a) Aquatic and wetland ecosystems.

The major problems associated with Kenya's aquatic and wetland ecosystems include the discharge of high volumes of pollutants into aquatic systems, and the inadequate control and hence unsustainable utilization of aquatic and associated wetland resources such as fisheries, mangroves, papyrus, and coral reefs. Another key problem is the unplanned and uncontrolled diversion of

water resources upstream with no adequate compensation flow downstream to sustain ecological processes.

The following strategies should be implemented.

- √ Reduce the levels of pollutants entering the aquatic systems by sensitizing the industrial sector on the imminent adverse effects and strengthening institutional mechanisms for monitoring and enforcement.
- √ Promote proper utilization of all aquatic resources (marine and fresh water) and the associated wetlands through creating public awareness on sustainable resource use practices.
- √ Restore degraded aquatic habitats and create more protected areas especially in inland ecosystems.
- √ Enhance proper utilization of water resources upstream by enforcing environmental impact assessment studies before any water related development activities are undertaken.

(b) Arid and semi-arid lands (ASAL)

Kenya's land surface area is largely arid or semi-arid, and is characterized by erratic rainfalls, droughts, soil erosion, and a myriad of ecological disasters which are largely climatic and topographical. Nevertheless, ASAL are extremely valuable for their biodiversity resources which include livestock, agricultural crops, wildlife, and valuable wild plants. In order to adequately address the conservation and sustainable utilization of ASAL biodiversity, the following strategies are recommended:

- √ Assess the status of, and inventorize ASAL biodiversity, and

develop appropriate policies for their sustainable utilization and conservation.

- √ Develop well-targeted programmes in research and technology to facilitate conservation and use while safeguarding local intellectual property rights.
- √ Implement the National Water Master Plan as well as the national programmes on drought and desertification.
- √ Review and update the agricultural and livestock production policies and programmes to ensure their sustainability and compatibility with biodiversity conservation.
- √ Improve and maintain security in order to facilitate biodiversity conservation and bioprospecting.

(c) Forests

Forests, which cover only 2.4% of the country's land surface, are currently being lost at an estimated rate of 5,000 ha per annum. The current threats to forests include loss through encroachment by local communities, overexploitation by commercial loggers, and generalized unsustainable harvesting of various biodiversity products. To overcome these problems, the following measures are proposed :

- √ Harmonize and rationalize policies and legislation on forest resources to ensure that forests are sustainably utilized, conserved and protected.
- √ Stop further degazettement and excision of forest land and repeal repugnant legislation that allows natural forest excisions through the Forests Act review process.

- √ Support communities and private land-owners to initiate and implement forest rehabilitation programmes.
- √ Treat forest conservation and economic development as integral aspects of sustainable development.
- √ Estimate the full value of standing forest resources in terms of biodiversity value, watershed protection, influence on climate, cultural and aesthetic value as well as actual genetic value in development planning.
- √ Diversify and optimize energy sources by exploring and promoting alternative energy sources; e.g. solar, biogas, hydro-electric power, wind, agricultural and forest residues, and geothermal sources. Optimize the use of energy by exploring and promoting the use of energy -saving devices, e.g. ceramic lined *jiko* cookers.
- √ Integrate and improve the management of forest resources by regulating access to forests and promoting benefit sharing, promoting the re-use and recycling of forest resources, encouraging the use of forest resources for ecotourism, and drawing up management plans for each forest area.
- √ Enforce the Code of Anti-corruption in the timber industry signed by the Timber Merchants Association and the Sawmillers Association through the Kenya Association of Manufacturers (KAM).
- √ Implement the Kenya Forestry Master Plan.

(d) Other ecosystems

1. Open highland grasslands in high potential areas shelter endemic birds and diverse plants. However, they are being rapidly lost because of conversion

to agriculture. Highland grasslands and palm savanna at the coast are major ecosystems which are not represented in protected areas. The following measures are proposed for their conservation :

- √ Mobilize local communities to set aside and protect areas of highland grassland and palm savanna.
- √ Establish protected areas to cover all threatened ecosystems in Kenya, and establish their rates of degradation.
- √ Increase knowledge and awareness of these habitats among local communities, decision-makers, and the general public.

2. Seasonal wetlands are extraordinarily rich in biodiversity. Yet they are usually overlooked and ignored because of their seasonal nature. The following measures should be taken for their protection:

- √ Enhance knowledge about, and awareness of seasonal wetlands among local communities, decision-makers, and the general public.
- √ Inventory seasonal wetlands in each district.
- √ Take seasonal wetlands into consideration when building roads and other infrastructure.

(e) Rehabilitation of degraded ecosystems and recovery of threatened species.

There are many examples of degraded ecosystems in Kenya, which may be home to endangered, rare, and threatened species. The following strategies are proposed for restoration and rehabilitation:

- √ Identify degraded ecosystems and their rate of degradation, biodiversity hot spots, and threatened species
- √ Develop and implement ecosystem restoration and rehabilitation programmes.
- √ Draw management plans for the degraded ecosystems.
- √ Support communities and private landowners to initiate and implement ecosystem rehabilitation programmes.

(f) Management of alien species and genetically modified organisms

Some introduced species have proliferated and become a threat to indigenous species, for example the water hyacinth and the Nile perch in Lake Victoria.

Some aspects of biotechnology are potentially risky and may disrupt ecosystems. Kenya's people and biodiversity therefore need protection from imported biotechnology which may be hazardous.

In order to contain the situation, the following strategies should be implemented:

- √ Ensure that there is adequate legislation and enforcement mechanisms to control introductions of alien and genetically modified organisms.
- √ Create public awareness on the dangers of alien species and genetically modified organisms through the public service framework and the national media.
- √ Carry out scientific research, including an inventory of alien species and genetically modified organisms.

(g) Indigenous knowledge, innovations and practices

Kenya has a considerable volume of indigenous systems and knowledge relevant to biodiversity, no doubt as a result of the prevailing ethnic and cultural diversity of the people. However, little of this knowledge has been documented, or integrated into national programmes or institutions. The issue of the protection of indigenous and traditional intellectual property rights is very relevant here, because these communities must not be exposed to exploitation. The following strategy should go a long way in meeting these requirements:

- √ Incorporate and integrate indigenous systems into national development plans and recognize the invaluable relationship of our cultures with biodiversity conservation.
- √ Create and strengthen institutions which study indigenous systems, and provide human and financial resources.
- √ Use existing community institutions to document good approaches and methodologies for conflict resolution, and incorporate them into modern conflict resolution systems.
- √ Develop and implement a legal framework for indigenous intellectual property rights.

4.4 *Ex-situ* Conservation

The value of *ex-situ* facilities such as genebanks, arboreta, botanical gardens aquaria and sites for the breeding of endangered species cannot be overemphasized. Kenya has not developed these facilities to any considerable degree. There is need to expand the existing facilities to facilitate the identification and collection of rare germplasm, threatened and endangered species, as well as the captive breeding of threatened animal species. These should include medicinal, aromatic, pharmaceutical, and other plants providing special products. The strategic action proposed is to expand and diversify *ex-situ* facilities in the country.

4.5 Agricultural Biodiversity

There is some degree of neglect and under utilization of certain food species such as traditional vegetables, grains and indigenous livestock. Furthermore, loss of agrobiodiverse varieties of beans, sorghum, wild fruits and vegetables, and wild relatives of food crops is threatening. In addition, certain crop species that are important at local level, but could attain national importance if given the necessary promotion, appear neglected. These include yams, millets, lablab beans, taro, indigenous varieties of sugarcane, cowpeas, and pigeon peas. Agricultural biodiversity also includes other plant species of special importance to man, such as medicinal species, animal forage species, fibre species, oil producing species, and multipurpose trees such as *Markhamia*, *Melia*, *Grevillea*, *Sesbania*, etc.

Land use patterns and practices are also closely related to the conservation of agricultural biodiversity. Soil erosion, resulting mainly from hillside and dryland cultivation, is one of the major threats particularly when associated with monocultures

In order to rectify these constraints and problems, the following strategies are proposed for implementation:

- √ Conserve agricultural biodiversity by promoting the development and use of neglected and under utilized species through inventorying and improving quality while creating awareness among users.
- √ Restore and re-introduce species and varieties that are already lost by conducting surveys to determine the status of rare or threatened germplasm. Re-introduce and propagate lost species from gene banks and other sources.
- √ Repair, maintain, and expand rural access communication systems by providing sufficient financial resources to open up rural

communications, especially the road system, which is crucial in agricultural marketing and distribution.

- √ Promote farming practices that conserve the ecosystem.

4.6 Sustainable Use of Components of Biological Diversity

The lack of integration of biodiversity management principles into national development planning, from the grassroots to the national level, is a major impediment to the conservation and sustainable utilization of biodiversity. In other words, biodiversity is not valued in economic terms as a key national resource which requires regular monitoring and evaluation. The modalities of equitable sharing of benefits from these resources have not been worked out. The perception that biodiversity resources are public goods has encouraged illegal prospecting for rare and highly valued biodiversity products. The following strategies are proposed to improve the situation:

- √ Strengthen capacity building programmes, including the provision of training in environmental economics, resource accounting and audit, and valuation of biodiversity at tertiary levels.
- √ Develop alternative products, services, and markets including the enhancement of biotechnological research and development.
- √ Compile district biodiversity conservation plans by conducting land-use surveys, resource surveys, conservation activities, and the status of the general infrastructure.
- √ Identify and categorize the benefits from biodiversity, and develop policies, programmes, and modalities for sharing them among stakeholders.
- √ Formulate a national policy on bioprospecting and trade in biodiversity products.

- √ Recognize the vital role of the private sector and effectively involve them in biodiversity conservation programmes.

4.7 Incentive Measures

There is an urgent need to identify and implement economic instruments for the promotion of biodiversity conservation. This is because they can provide an important set of tools (incentives and disincentives) for biodiversity conservation as they can be used to make it more profitable for people to conserve than to degrade biodiversity. The proposed strategies are

- √ Determine the existing use of incentives in the country, identify perverse incentives in the economy, and take the necessary action.
- √ Raise awareness of incentive measures among biodiversity stakeholders.
- √ Undertake pilot applications of incentive measures.

4.8 Research and Training

There is lack of sufficient scientific expertise to undertake state of the art research in several disciplines of relevance to biodiversity conservation. The strategies proposed to improve the current situation are:

- √ Provide high level specialized training in biodiversity at scientific and management levels.
- √ Support and promote research on technology development for sustainable use and management of biodiversity resources.
- √ Assess the existing capacity in research and provide for training at lower levels.

4.9 Public Education and Awareness

To enhance public awareness and involvement in biodiversity conservation, the following strategies are proposed for implementation:

- √ Promote institutional capacities to acquire, process, store and disseminate information on biodiversity through implementing the recommendations of the BDM plan .
- √ Promote public awareness on biodiversity issues countrywide.
- √ Incorporate biodiversity issues in formal education curriculum and support the teaching of biodiversity in all educational institutions.

4.10 Impact Assessment

There are many cases of uncontrolled pollution and toxic waste disposal evident in many parts of the country, especially urban areas. There is also concern over what would happen if such pollution assumed disaster proportions, or spread across international borders, especially in shared resources like Lake Victoria. The following measures are proposed:

- √ Develop adequate policies on pollution and toxic waste disposal and implement them.
- √ Establish regional co-ordination committees to negotiate and formulate guidelines and appropriate operational mechanisms for solving cross-border catastrophes.
- √ Develop disaster preparedness and effective response mechanisms, including trans-boundary arrangements, and implement them.

4.11 Access to Genetic Resources

The Convention encourages Parties to develop controls on access to a country's resources to ensure conservation. Presently, there are only limited measures in place for protecting Kenya's genetic resources. At the same time, there is no mechanism to facilitate equitable sharing of benefits accruing from these resources. The proposed strategic measures are :

- √ Develop and implement policies and legislation to articulate and regulate the rights of access to, and benefit sharing, of national genetic resources.
- √ Strengthen the capacity of Kenyans to carry out bioprospecting activities.

4.12 Access to and Transfer of Biotechnology and Other Technologies.

The use of the genetic resources available in Kenya for biotechnology has tremendous potential which Kenya has not exploited. Only small amounts of materials are necessary for many biotechnological applications. Biotechnology may, therefore be considered a sustainable way of utilizing biological diversity.

The genetic resources used in biotechnology are not available everywhere and therefore, careful consideration must be given to the issue of fair and equitable sharing of benefits.

However, some of the biotechnology uses genetically modified organisms, which are potentially risky and could disrupt ecosystems. For this reason, the National Regulations and Guidelines for Biosafety in Biotechnology for Kenya were launched in February 1998, and shortly thereafter, a National Biosafety Framework was initiated. The major issue in biotechnology is the lack of comprehensive policies on research and development. For the requirements of the Convention, the following strategies are proposed:

- √ Develop national policy and legislation to articulate the modalities of access to and transfer of technology.
- √ Review, update and inventorize both local and foreign technologies available in the country, and make recommendations on the best way forwards.
- √ Review the status of biotechnology development in the country, and develop a comprehensive national policy on biotechnology, and the equitable sharing of its benefits.
- √ Formulate national guidelines, policies and legislation on biosafety, and adhere to national and international biosafety protocols.
- √ Enhance national capacities in biotechnology in priority areas by training and equipping the national institutions carrying out research relevant to biotechnology.

4.13 Exchange of Information

The Convention encourages Parties to exchange information on biodiversity issues regularly. In order to facilitate this, a global focal point for a Clearing House Mechanism (CHM) has been established. For Kenya to benefit from this, there is urgent need to develop a National Clearing House Mechanism, as well as thematic focal points. The lack of such focal points is a big hindrance to the country's information exchange system. The strategic measure proposed is the immediate establishment of a national clearing house mechanism and thematic focal points.

4.14 Technical and Scientific Cooperation

Cooperation in scientific and technical programmes and activities has many benefits, including saving on time and resources and optimizing the use of available facilities. In Kenya, there are no clear guidelines on how this

cooperation can be achieved. Indeed, even among local institutions, cooperation is quite limited. The following strategies are proposed to address this problem:

- √ Develop national guidelines for joint ventures in research, and promote institutional linkages nationally, regionally and internationally.
- √ Strengthen national institutional capacities in order to promote technology transfer.
- √ Promote bilateral, regional, and international cooperation to facilitate the full implementation of policies, strategies and action plans.

4.15 Financial Resources

Substantial investments are required to address the enormous threats and challenges to the conservation of biodiversity in Kenya. The field of biodiversity involves very many stakeholder groups from all sectors of society which must be involved in drawing up plans and availing funds for their subsequent implementation. Government's budget resources are rarely adequate to meet recurrent costs of financing even the key development sectors, and are generally inadequate for biodiversity conservation needs. Donor funding has its limitations and constraints.

The major issue therefore is inadequate financial resources, and the following strategies are proposed to improve the situation:

Mobilize adequate and sustainable funding by increasing budgetary allocations to the relevant ministries, negotiating project support from bilateral, multilateral and other international donors.

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- √ Mobilize financial support from the private sector and other stakeholders.
 - √ Empower the IMCE Sub-committee on biodiversity to establish a national biodiversity trust fund by encouraging voluntary donations from well-wishers and negotiating levies on corporate users of biodiversity resources.

5. THE ACTION PLAN

The action plan identifies specific policy objectives and actions to be carried out over a period of time that should result in enhanced conservation and sustainable utilization of biodiversity.

In the short term, the action plan attempts to translate and put the strategy into action. In Kenya's case, the action plan addresses the achievement of specific objectives within the next 5 years.

ACTION	By Who	By When
1. Strengthen institutional and community capacities and linkages.	Government of Kenya, KWS, NGOs, CBOs	2005
2. Promote gender equity in biodiversity management.	"	2003
3. Strengthen and harmonize national policies and legislation for the effective conservation and sustainable utilization of biodiversity.	"	2003
4. Take measures to reduce the impacts of poverty on biodiversity.	Government of Kenya Private sector NGOs CBOs	2005
5. Strengthen national capacity for monitoring and evaluation of biodiversity.	Government of Kenya KWS, NMK, NGOs, Universities	2000
6. Strengthen and maintain high standards of management and conservation in the protected area system, especially the wildlife sector.	Government of Kenya, KWS, Private sector, NGOs, CBOs, Universities.	2000
7. Protect aquatic ecosystems from pollution and other threats.	Government of Kenya, Private Sector, NMK, KWS, NGOs.	2000

ACTION	By Who	By When
8. Protect and promote sustainable development activities in arid and semi-arid lands.	Government of Kenya, KARI, Universities, KWS, CBOs.	2002
9. Promote the conservation and sustainable utilization of forests.	Government of Kenya, KEFRI, Universities, Private sector, NGOs, CBOs	2002
10. Rehabilitate degraded ecosystems and restore threatened species.	Government of Kenya, KWS, NMK, Universities, NGOs.	2003
11. Formulate national guidelines and regulations with respect to alien, invasive, and genetically modified organisms; biotechnology and biosafety.	Government of Kenya, KARI, NCST, Universities.	2002
12. Support and promote the utilization of indigenous knowledge, innovations and practices.	Government of Kenya, NGOs, CBOs.	2002
13. Strengthen national <i>ex-situ</i> conservation facilities.	KARI, NMK, Universities.	2005
14. Promote the sustainable utilization of the components of biodiversity.	Government of Kenya, Private sector, Universities, KWS, NMK, NGOs, CBOs	2005
15. Provide incentives to promote biodiversity conservation.	Government of Kenya, NGOs, CBOs.	2002

ACTION	By Who	By When
16. Strengthen the national capacity for research and training, technical and scientific cooperation, and biotechnology.	Government of Kenya, KARI, Universities, NMK, KWS, NCST.	2003
17. Strengthen national programmes for public education, awareness and exchange of information.	Government of Kenya, Universities, NGOs, CBOs.	2000
18. Strengthen pollution control measures and conduct impact assessments.	Government of Kenya, Private sector.	2000
19. Facilitate access to genetic resources and transfer of technology.	Government of Kenya, KWS, NMK, Universities, NCST.	2000
20. Strengthen the conservation and sustainable utilization of agricultural biodiversity for food and agriculture.	Government of Kenya, NMK, KWS, Universities, Private sector, NGOs, CBOs.	2005
21 Act on the decisions of the Conferences of Parties		
21.1 Address issues on alien species and develop relevant country-driven projects as elaborated in Decision VI/1	Universities, KARI, KEMFRI, NGOs, Government of Kenya.	2000

ACTION	By Who	By When
21.2 Develop country-driven projects to implement the Global Taxonomy Initiative (Decision III/10 and Annex I).	NMK, Universities	2001
21.3 Develop and implement the National Clearing House Mechanism (Decision IV/2).	Government of Kenya	2000
21.4 Explore options and modalities for access and benefit sharing mechanisms in the national context (Decision IV/8).	Government of Kenya, NCST, NMK, Universities, NGOs.	2001
21.5 Institute appropriate measures, including ways and means, to assess environmental impacts and minimize their adverse effects on biodiversity (Decision IV/10).	Government of Kenya, Universities.	2000
21.6 Design and implement economically and socially sound incentive measures for the conservation and sustainable use of biodiversity (Decision IV/10).	Government of Kenya, NGOs.	2000

ACTION	By Who	By When
21.7 Analyze and report nationally as appropriate the content and national obligations implied in Decision III/11.	Government of Kenya.	2000
21.8 Identify, assess, and report back to the COP the relevant on-going activities and existing instruments at the national level, choosing among the thematic areas in the indicative list in Annex 2 of the COP IV report.	Government of Kenya	2000
21.9 Identify and report to the COP issues and priorities in agricultural biodiversity that need to be addressed at the national level.	Government of Kenya	2000
21.10 Make tourism and related activities compatible with the conservation and sustainable use of biodiversity (Decision IV/15).	Government of Kenya, Private sector, KWS.	2000
21.11 Implement the work programme elements for forest biodiversity as elaborated in Decision IV/7.	Government of Kenya, Universities, KWS, NMK.	2001

ACTION	By Who	By When
21.12 Implement the work programme elements for the biodiversity of inland water ecosystems as elaborated in Decision IV/4.	Government of Kenya, KWS, NMK, Universities, KEMFRI.	2000
21.13 Implement the work programme elements for the biodiversity of marine and coastal biodiversity as elaborated in Decision IV/5.	KEMFRI, KWS, NMK, Universities.	2002
21.14 Implement the Global Plan of Action of the FAO for food and agriculture.	Government of Kenya, KARI, Universities, NMK.	2005
21.15 Implement Decision III/20 on issues related to biosafety, including the National Biosafety Framework.	Government of Kenya, NCST, Universities.	2003
21.16 Consider and address specific issues on the conservation and sustainable use of agricultural biodiversity raised in Decisions III/11 and IV/6.	Government of Kenya, KARI, Universities, Private sector.	2002

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