

**THE BIODIVERSITY CONVENTION OF 1992 VIS-A-VIS KENYA'S
ENVIRONMENTAL LEGAL AND POLICY FRAMEWORK:
SPECIFIC REFERENCE TO GENETIC RESOURCES.**

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1. Antiquities and Monuments Act, Chapter 327, Laws of Kenya
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INTRODUCTION

Kenya has always had legislation of some kind which is concerned with the conservation of its environment. From as far back as the pre-colonial period through the colonial and post-period, there have existed various pieces of legislation concerning environmental management and conservation.

Kenya has also been a party and signatory to many conventions and treaties on the conservation of the environment.

The most recent convention signed by Kenya was the Biological Diversity Convention of 1992 which was held in Rio de Janeiro and came into effect in 1993. It comprises forty-two articles and recognises the state as the sole guardian of biodiversity and therefore imposes a responsibility on each state to conserve and sustainably use biological diversity within their national jurisdiction.

Kenya, having signed this convention, thereby agreed to implement the recommendations contained therein. This is by virtue of the fact that once a state becomes a party to a treaty she assumes the obligations and roles that arise therefrom. Such a state does in principle, proclaim that it is in a position and willing to give effect to the provisions of the treaty. A state should therefore assess its own internal capacity to perform the legal obligations of a treaty or to adjust its municipal law and existing administrative machinery to discharge the obligations of a particular treaty. The Convention recommends that its proposals be implemented in each state's legal, institutional and administrative framework.

This study therefore aims at considering whether Kenya has adjusted her policies and laws in light of the recommendations of the Convention and if not, suggestions have been made as to amendments which may be made to various Acts which deal with biodiversity, either wholly or incidentally.

Indigenous people and local communities play a key role in the conservation of genetic resources. Unfortunately, their importance in conservation of biodiversity has not been recognised. Considering that the loss of biodiversity is most immediately and keenly felt by these communities whose livelihood depends directly upon their immediate surrounding environment, it is imperative that any conservation measure, use and/or exploitation of biodiversity does respect the capabilities, roles and rights of local communities. They must be allowed to benefit from and to value their biodiversity.

This paper therefore suggests recommendations which may be undertaken so as to protect and enhance the rights and role of local communities in the conservation of biodiversity. Problems encountered by these communities have also been enumerated and solutions offered for the same.

CHAPTER ONE:

A HISTORICAL BACKGROUND OF ENVIRONMENTAL LAW

Before environment issues became a concern in Kenya, many developments in the area, had taken place the world over, dating from as far back as the 15th century. It is therefore important to trace the development of environmental law from that era.

1.1 THE HISTORICAL EVOLUTION OF INTERNATIONAL ENVIRONMENTAL LAW

The problem concerning the protection of the environment is not new so that beginnings of legislative interventions go back to ancient times. Among the first known are the Theodoric decrees dating from the 15th century regarding the prohibition of the demolition of ancient monuments.

Judging by the statute of the Republic of Dubrovnik, codified in 1272, which regulated the compulsory construction of a public sewerage system and septic and their maintenance, environmental law existed even then. In 1273 was the Edict on the control of use of coal for heating houses in certain parts of London and by the stipulation of British Act of 1388 on the sanitation of the city ditches, rivers and waterways. It is plausible to suppose that similar regulations were being brought during the end of the middle ages all over Europe.¹

The United Nations conference on the Human Environment which met in Stockholm in 1972, marked a watershed in international relations. It legitimized environmental policy as a universal concern among nations, and so created a place for environmental issues on many

national agendas where they had been previously unrecognized. In comparison with other United Nations Conferences, the tangible results of Stockholm have been substantial.

— Significant steps towards international co-operation were made after World War II, with the creation of United Nations Educational Scientific and Cultural Organization (UNESCO), in 1945. Two developments were needed for an international environmental awareness at a national level whereby governments had to be persuaded to treat environmental issues as regular concerns. First, an integrative concept of universal applicability, was needed. The traditional conservation concept could not fully meet this requirement because its focus was seldom enlarged beyond national needs and economic considerations. Its concern historically had been with resources defined by human culture and technology in relation to national interest rather than with conservation of the global environment.

The earlier attempts at international co-operation on behalf of environment issues were shaped more by legal rather than ecological considerations so that when the Swiss government in 1872, proposed that an international regulatory commission to protect migratory birds in Europe take place, it was unsuccessful because other governments had taken conservation initiatives mainly for national economic reasons.

Due to the fact that national legislation was insufficient, international treaties had to be invoked to extend protection across national boundaries. These treaties appear to have been ineffective with the exception of the Fur Seal Convention of 1911. They were however, expressive of the emergence of a new public attitude toward nature and the human environment.

pollution could not be prevented by the geographically concentrated industrial states of Western Europe.

No single nation could protect itself against the fall out from the atmosphere testing of atomic devices, or prevent the chemical contamination or depression of fisheries in the oceans and regional seas.

By mid 1960s, changes in the structure of international co-operation seemed probable first as a result of the growth of worldwide concern with the general state of the environment and second, as a result of international efforts on behalf of the environment.

The United Nations Conference on the Human Environment marked a culmination of efforts to place the protection of the Biosphere on the official agenda of international policy and law. There have also been United Nations resolutions. After the Stockholm conference, the General Assembly has passed about eleven resolutions having to do with the human environment. The United Nations Environment Programme (UNEP) Governing Council has also passed a number of annual decisions and resolutions on the future development of United Nations activities. Such formulations have the functions of stamping authoritative community approval on international environmental policies and actions.

UNEP's 1989 register of International treaties lists 140 environmental agreements, of which over half have been passed since the 1972 conference which saw the creation of UNEP. Since 1972, UNEP has been very active in the development of International Environment Law, mainly through the Environmental Law and Institutions Unity (ELIU), a special unit assigned to the field.⁷ It has helped to promote regional environmental protection in developing countries.

The Agreement on the Action plan for the environmentally sound management of the Zambezi River system in 1987, is one example of its successful regional activities.

The historical evolution of legal regulations of the environment has been a function of both the nature and magnitude of environmental problems and our understanding of the linkages in the ecosystem and in environmental stresses. According to Doctor Bondi Ogolla, the first manifestation of laws dealing with environmental resources took the form of "use - oriented" legislation concerning such resources as land, water, forests and minerals.⁸

The accelerating pace of exploitation of environmental resources, however, created new risks such as the depletion of non-renewable resources and the irreversible degradation of renewable resources. To cope with these problems, states began to develop 'resource - oriented' legal regulations basically directed at long term management of resources, the maintenance of a safe minimum stock or the attainment of a maximum sustainable yield.⁹ These laws concerned basically the conservation of living resources such as forests, fisheries, wildlife and more recently, genetic resources.

The ultimate concerns of environmental law, are to provide a regulatory framework for those human activities which entail the risk of undermining the vital natural assets that facilitate and support normal economic and social life and to provide objective legal theory to explain and guide the path of law in environmental management.¹⁰

Human beings today live with major economic and social crises which, in summary, originate from:-

a) Air pollution

- b) Destruction of soil and water
- d) Generation of stupendous levels of noise

As a result of these crises, current generations are damaging the natural basis that supports their own welfare and begrudging future generations the benefit of the natural capital from which to make a good life for themselves.

This message is poignantly expressed in Queen Beatrix's christmas message to the Dutch people thus:

"The earth is slowly dying, and the inconceivable- the end of life itself - is actually becoming conceivable. We human beings have become a threat to our own planet."¹¹

The complexity of environmental problems dictates that for any given country, a well designed scheme of environmental management, with clear policy, law, implementation and policing machinery, should be in place.

In the case of Kenya, hardly any policy or law designed for environmental management in broad terms, existed in the early colonial period. At that time, one had to resort to contract and tort as the main branches of law which involved some measure of environmental concern. At that time and to the limited scope of it's efficacy, environmental law was essentially a private law concern as it was not known to the main branches of public law.

1.2 HISTORY OF ENVIRONMENTAL LAW IN KENYA

It has been asserted that the historical evolution of Kenyan Law relating to natural resources in general and genetic resources in particular, was inimical to the rise of a conservation ethic in the country.¹²

The laws on natural resources are still underdeveloped and were especially underdeveloped during the early years of colonialism. But conservation is something that has always been a concern of these laws as will be seen in the full account of development in this area.

The history of environmental law in Kenya shall be looked at in the context of the following eras:-

- a) Colonial era.
- b) Post - colonial era.

1.2.1 COLONIAL ERA

Early colonial law affecting genetic resources emphasized habitat protection almost to the exclusion of exsitu conservation. From the early days of the evolution of Kenya's modern agriculture, there was a preference for imported crops and trees species. The early period of colonialization guaranteed the availability of land for agricultural production. However, land was not useful unless accompanied by suitable genetic resources that could be effectively turned into agricultural yield.

In 1901, the Commissioner of the Protectorate, Sir Charles Elliot, produced a report on the protectorate which identified some of the crops that could be grown on the coastal strip.

These included cinnamon, cocoa, cardamoms, vanilla, sisal and ramie. For Ukamba Highlands, he suggested European fruits, cereals, vegetables, tea, coffee, cotton and tobacco.

In his second report (1902 - 03), Elliot stressed the need to set up a large scale Agriculture Department that would undertake research on the introduction of new varieties in Kenya. It was clear at this time that the ecological conditions were different from those prevailing in Europe and research was required to adapt the crops to the region.

As concerns the protection of forests, the East Africa Forestry Regulations of 1902 were introduced and they declared certain areas of land to be protected forests. These regulations became the 1942 Forest Ordinance, after several amendments. This ordinance was a comprehensive legislative basis for the establishment, control and regulation of forests, forest areas and forests on unalienated government land.

As regards wildlife conservation, the creation of national parks and reserves in Kenya, was influenced by the ideas of Hermann Von Wissmann¹³, the German High Commissioner to East Africa. He suggested that national parks and nature reserves should be created in Kenya and other East African countries in order to turn large tracts of unproductive land into economic use.

During the 1900 London Conference, number of wildlife reserves were established in northern and southern Kenya. However, the management regimes instituted in the reserves did not enhance wildlife conservation.

In 1970, the Game Department was created to enhance the management of wildlife and control hunting activities. The Department was empowered to grant licenses to persons who wanted to do hunting of game in the protected areas.

In 1909, the Game Ordinance created two game reserves, namely the Northern Game reserve and the Southern Game reserve. The East Africa Wild Bird Protection Ordinance of 1903 catered for the protection of all or specified birds in any declared area. Together with the 1909 Game - Ordinance, this statute formed the foundation of future wildlife laws in Kenya.

In 1933, the second International Conference on wildlife conservation took place in London and after it, there was general agreement on the principle of establishing and maintaining national parks or other permanent sanctuaries. To this end, an Ordinance was passed in 1937 to amend and consolidate the law relating to the protection of game animals and birds in the country.

In 1945, following the Report of the Game Policy Committee appointed in 1938, the Royal National Parks of Kenya Ordinance was established as a legal instrument for creating and ensuring the conservation of wildlife under parks. The establishment of the Ordinance was based on the United States of America (U.S.A) system of preservation of wildlife whereby, through legal procedures, certain areas could be declared protected land for the preservation of wildlife.

In 1946, the first national park in Kenya, the Nairobi Royal Park (now Nairobi National Park) was created and in 1948, Tsavo and Gedi National Parks were created.

When Kenya attained political independence in 1963, it inherited not only the legal and policy regimes, but also the institutional and management systems of the colonial past.

It inherited four national parks and six game reserves that were managed through policing to control the over-exploitation of big species animals.

Thus colonial law on genetic conservation and management was therefore strong on habitat protection and both fauna and flora but had the following omissions:-

- a) There was no legislative arrangement for co-ordination of land use and selection of priorities in respect of what was to be assigned to any given area or locality.
- b) Colonial law failed to develop a legal regime to regulate the utilization of animal genetic resources.
- c) Marine and aquatic activities went completely unregulated.

1.2.2 POST - COLONIAL ERA

The legal regime as far as flora was concerned, remained the Forest Act of 1942.¹⁴ The Agriculture Act¹⁵ was enacted in 1955 and it empowered the relevant minister to take measures to introduce forests on private land. Other institutional innovations of a quasi-legislative character included the creation of the Permanent Presidential Commission on Soil conservation and Afforestation in 1981 and the invocation of direct Presidential powers to confer protection on a specified plant. For example, in 1986 President Daniel Arap Moi declared the Aloe species protected to stop the commercial exploitation of the species.¹⁶

As regards fauna, the legal arrangements existing in 1936 continued unchanged until 1975 when the wildlife {Conservation and Management} Act¹⁷ was passed, repealing the National Parks of Kenya Act and the Wild Animals Protection Act. In 1989, the wildlife (conservation and Management) Act was amended to establish the Kenya Wildlife Service as a parastatal body.

In the field of agricultural development, the Seeds and Plants varieties Act of 1972¹⁸ was enacted. It established a legal framework for the regulation of seed trade and plant weeding. It was intended to confer power to do the following

- a) Regulate transactions in seeds.
- b) Establish an index of names of plant varieties.
- c) Empower the imposition of restriction on the introduction of new varieties
- d) Control the importation of seeds
- e) Authorize measures to prevent injurious cross - pollution and
- f) Provide for the grant of proprietary rights to persons breeding or discovering new varieties.

Thus for the first time, a legal framework for the management of plant genetic resources as opposed to only conserving them was introduced in Kenya.

1.3 BIODIVERSITY CONSERVATION

Scientists define biodiversity at several levels: genetic diversity, the variation between individuals and between populations within a species; species diversity, the different types of

plants, animals and other life forms within a region; and community or ecosystem diversity, the variety of habitat found within an area for example grassland, marsh and woodland.¹⁹

Practical value can be attached to biodiversity at each of these levels. Genetic diversity is important in corn crops for instance, because the unique characteristics of some corn populations leave them resistant to pests.

Species diversity provides us with a host of wild and domestic plant, fish and animal products used for medicines, cosmetics, industrial products fuel and building materials, and food among other things.

Diversity is important in ecosystems partly because of the human services they provide—cycling water, gas, nutrients, and other materials.

Habitat loss is considered to be the biggest threat to biodiversity.²⁰ There are estimates of how much natural vegetation has been converted to human use since Europeans first arrived in South America. The effects of this loss on mammal species diversity is of particular concern. Habitat loss takes several forms: outright loss of areas used by wild species; degradation for example from soil erosion, which deprive native species of food, shelter and breeding areas; and fragmentation, when native species are squeezed onto small patches of undisturbed land surrounded by areas cleared for agriculture and other purposes.

Concerns over the increasing loss of biodiversity have their roots in the 1940s.²⁷ The work of the World Conservation Union (IUCN) helped to raise concerns over the loss of ecosystems and gave the concerns institutional backing. The initiatives of the United Nations in organizing the United Nations Scientific Conference on the conservation and utilization of

Resources in 1949 gave the IUCN concerns and efforts international legitimacy. These concerns were later articulated in the 1970s at the United Nations Conference on the Human Environment and in scientific publications.

The first significant efforts to bring to the centre of the international community the urgency of identifying and instituting long term measures to conserve biodiversity, were made by the World Commission on Environment and Development (WCED) headed by the Prime Minister of Norway, Gro Harlem Brundtland. While it addressed a wide range of environmental issues from climate change to soil erosion, the WCED gave significant attention to issues of biodiversity. The WCED, commonly referred to as the Brundtland Commission, brought to the mainstream of public policy and international politics, issues of biodiversity management that had for some time been confined to scientific discussions.

There are two management-level approaches to biodiversity ^{conservation} conservation: protecting individual species and populations and protecting the habitats they live in. Measures include offering legal protection to individual species, developing management plans targeted at protecting them, and ex situ conservation, that is, protecting animal and plant populations in zoos and seed banks. Ex situ conservation serves both as insurance against the loss of genetic and species diversity in the wild and as a source for occasional release to re-introduce or bolster wild populations.

1.3.3 KENYA'S PARTICIPATION IN INTERNATIONAL TREATIES

As stated by Professor Ojwang, the most obvious mode of state partaking in international law is by being a participant through the various modalities of coming to belong as a member of a particular treaty - signature, ratification, succession, accession, adhesion, acceptance, approval, confirmation and others²². When by any of these procedures, a state becomes a party, it thenceforth assumes obligations which, by duly fulfilling them, it promotes the development and efficiency of international environment law.

Kenya has either signed or become party to twenty five environmental treaties. The ones concerned with biodiversity conservation are:-

1. International Convention for the Regulation of Whaling (adopted at Washington on 2nd December, 1946). Kenya's party status in this convention entered into force on 2nd December, 1981.
2. Convention on Wetlands of International Importance especially on Water Fowl Habitat (adopted at Ramsar on 2nd February, 1971). Kenya acceded to this Convention on June 5th, 1990 and it has already secured the listing of Lake Nakuru National Park, a renowned bird sanctuary, on the "List of Wetlands of International Importance". (in accordance with Article 2(1) of the Convention.

Kenya has been active on Wetlands conservation for some time and is currently Africa's representative (with Tunisia) on the standing committee of the Ramsar Convention.

3. Convention on International Trade in Endangered Speiceis of Wild Fauna and Flora [CITES] (adopted at Washington on March 3rd, 1973).

Kenya's party status entered into force on March 13, 1979.

4. Protocol concerning protected areas and wild fauna and flora in the Eastern African Region (adopted at Nairobi on June 21, 1985).

The protocol provides for the protection of threatened and endangered species of fauna and flora and the important natural habitats in the East African region. Kenya which is the depository, acceded to it on September 11, 1990.

5. Convention on Biological Diversity (adopted at Nairobi on May 22, 1992).

The object of this highly important global convention, is to conserve biological diversity to promote the sustainable use of its components and to encourage equitable sharing in the benefits arising from the utilisation of genetic resources.

Kenya signed the convention during the Rio de Janeiro "Earth Summit" on June 11, 1992. It is to be hoped that she will become a party to it.

However, Kenya has not become a party to some treaties which are expected to form the basis of Kenya's national environmental obligations. For example, the convention on the Conservation of Migratory Species of Wild Animals (adopted at Bonn on June 23, 1979). It's object is to protect those species of wild animals that migrate across or outside national boundaries.

In conclusion, it can therefore be said that environmental management became a concern from an early point in history. It existed in the colonial era in Kenya but at

the time, it was more of an incidental rather than real concern for the conservation of

the environment. It was actually in the 1970s that the real concern became an issue of

national importance in Kenya.

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CHAPTER TWO:

KENYA'S POLICY AND LEGAL FRAMEWORK AS REGARDS THE CONSERVATION OF GENETIC RESOURCES

2.1 The Importance of Genetic Resources

The importance of genetic resources stems from three considerations, namely:-

- (a) Plant and animal species are a source of many of the basic necessities of human life including food, energy, industrial chemicals and medicines. These resources have to continue being in existence if they are to be useful.
- (b) With modern developments in biotechnology, wild genetic resources are constantly needed in breeding programmes to improve agricultural field and ensure resistance against disease and adverse climatic conditions.
- (c) Balance of ecosystems is dependent on the continued availability in the right locations and quantities, of the various plant and animal species.⁷

As a result of the afore-mentioned, it goes without saying that genetic resources need to be conserved for the purposes of sustainable development.² This is why measures have been taken to ensure the conservation of the same. Kenya's policy and legal measures, as far as environmental management in general, and biodiversity conservation in particular, is concerned, are not contained in one body of policy document or statute of law. They are found

in various national development plans, sessional papers, official economic survey papers and various pieces of Acts of Parliament.

This Chapter proposes to look at the policy and legal measures that have been put to use so as to ensure that biodiversity conservation takes place. Whether or not the aims of the measures have been fulfilled, is a question which shall be addressed in a later chapter.

2.2 POLICY MEASURES

Sessional Paper Number 10 of 1965, African Socialism and its Application to Planning in Kenya emphasized the need to institute and implement policies for promoting environmental management in general and biodiversity conservation in particular. The paper provided thus:-

“The heritage of future generations depends on the adoption and implementation of policies designed to conserve natural resources and create the physical environment in which progress can be enjoyed. The thoughtless destruction of forests, vegetation, wildlife and productive land threatens our future and must be brought under control”³.

The paper however, did not provide specific technological approaches for undertaking environmental management though it provided the first policy expression of the post-colonial regimes recognition of the role of biodiversity, in economic growth.

The Development Plan 1974 - 1978 recognized that the country's long term economic progress depends on environmental management. The Plan was the first to contain a specific section on environmental management, and it was launched two years after the Stockholm Conference on the Human Environment and therefore raised some of the environmental concerns derived from the Conference. Though it recognized the lack of a coherent institutional system for implementing environmental policies, this policy document also fails to clearly articulate the role of technological change in environmental management.

The 1979 - 1989 Development Plan provided a more elaborate approach to environmental issues. It attempted to integrate environmental concerns in all the programme activities it suggested. The plan stated that "[e]nvironmental considerations must come to pervade development decisions taken at every level from family to the Government". It also emphasized that wildlife conservation should be enhanced in order to promote tourism. However, it failed to provide specific technological approaches for environmental management in general and biodiversity conservation in particular.

Sessional Paper Number 3 of 1976 provided national policy for wildlife conservation and management. Its major objective was to promote measures "to preserve in a reasonably natural state examples of the main types of habitat which are found in Kenya for aesthetic scientific and cultural purposes"⁴. The paper stressed that the country would invest techno-economic resources in the conservation and management of wildlife resources through the establishment of more national parks and reserves where necessary.

which established policy measures to guide national development to the next century, provided little space to issues of environmental management in general and biodiversity conservation in particular⁵. This was because the paper was prepared at a time when the country had just gone through major economic problems. It did however, recognize the fact that some of the economic policies it proposes, would result in development activities that would have impacts on the ecological base and would result in the degradation of biodiversity. It therefore stated that "proper management of water catchments and soil conservation would be more urgent concerns

The 1989 - 1993 Development Plan recognized technology as a crucial factor for environmental management. The Plan has a specific chapter dealing with environmental issues⁷. It recognizes that environmental degradation and the consequent loss of biodiversity will erode prospects for economic growth and development. In order to deal with the problems of environmental degradation and loss of biodiversity, the plan proposes a number of measures. They include:-

- (a) Undertaking extensive agroforestry and reforestation programmes and the establishment of forest estates using improved germplasm and,
- (b) Reforestation of over-cut areas with indigenous species⁸.

In order to ensure the conservation of fishery and marine resources, the plan states that the Government will among other measures, institute and enforce strict regulations against over-fishing and over-exploitation of marine resources.

The Plan further addresses wildlife conservation measures. It provides that the following measures should be taken to enhance conservation:-

- (a) Increased control of poaching through the deployment of more better trained and properly equipped anti-poaching units.
- (b) Conducting scientific research in order to promote conservation and management of wildlife.
- (c) Translocation of certain species from threatened dispersal areas to parks and reserves in order to enhance their conservation and,
- (d) Undertaking special protection of endangered wildlife species such as the rhino and elephant.

The plan however fails to provide for the training in specific scientific and technological research areas for conservation. On the whole, it does make a significant step in recognizing specific areas of biodiversity conservation.

2.3 Presidential Decrees

These are actually policy measures which have a legal effect because they are pronounced by the President. They came into being as a result of the inability of the current legislation to offer effective protection for conservation of genetic resources.

Two examples are:-

- (i) In 1971, the late President Jomo Kenyatta declared about 390 km² of land in the Amboseli area as exclusively for wildlife conservation.
- (ii) In 1986, President Moi declared the Aloe species protected, so as to stop its commercial exploitation. The Aloe has in the recent past been a target for scientific enquiry because of its medicinal properties.

The Presidential declaration shows clearly that there is a need for legislation to protect the country's genetic resources¹⁰. Although it is useful, conservation by decree is not morally accomplished by the necessary institutional arrangements to ensure that plants are protected. Moreover, such decisions tend to protect specific plants instead of dealing with the broad area of genetic diversity.

LEGAL MEASURES

The law can play a very central role in the conservation and management of genetic resources. This is because it is an especially suited science for this role because it is tailor-made to organize and co-ordinate social, economic and biological phenomena and processes to achieve set goals and objectives. Through the mechanism of the law, protection, monitoring and control of genetic resources may be exercised, as well as the proper management of the process of utilization and development of genetic resources.

Although a large body of law exists to protect the natural resources of Kenya, very little of it is applied. In a study made of water some years ago, the World Health Organization (W.H.O.) commented:-

"The study reveals that most of the problems arise from a poor level of implementation and enforcement of the law rather than any serious deficiencies in it. In fact, formal enforcement is practically unknown and this study did not reveal a single prosecution under the relevant laws in the past decade".

Under the Laws of Kenya, there is, not any one composite or specific legislation on the environment, that is, an environmental law. However, different Acts of Parliament touch on environmental issues and these shall be looked at under the following headings¹¹:-

Crop genetic resources

Animal genetic resources

Forest genetic resources

Aquatic genetic resources

A Crop Genetic Resources

These are protected by the Agriculture Act¹², Plant Protection Act¹³, Grass Fires Act¹⁴, Wildlife [Conservation and Management] Act¹⁵ and the Seeds and Plants Varieties Act¹⁶.

The Agriculture Act is the principle land use statute and it covers soil conservation and Agricultural land use in general. Although it does not specifically provide for the conservation of crop genetic resources, by providing for the conservation of the soil on which crops are grown, it indirectly confers protection on such crops.

Part IV of the Act, which is entitled "The Preservation of Soil and its Fertility" vests extensive powers in the Minister responsible for agriculture. The Minister may, after consultation with the Central Agricultural Board, make rules prohibiting, regulating or controlling the clearing of vegetation. Furthermore, the Minister may make rules requiring, regulating or controlling the afforestation or re-afforestation of land, protection of slope catchment areas or the drainage of land including the repair of natural or artificial infrastructure; removal of any vegetation which has been planted in contravention of orders, supervision of unoccupied land and prohibiting agricultural activities, including depasturing of stocks¹⁷.

The Minister may also empower local authorities to make by-laws for purposes of preservation of soil fertility and prevention of soil erosion. This he may do, subject to consultation with the Minister responsible for Local Government and the Director of Agriculture¹⁸.

The Agriculture (Basic Land Usage) Rules issued in 1965, prohibit certain land use practices likely to enhance soil erosion. It prohibits cutting down or destroying vegetation or depasturing of livestock on any land where the slope is 35 per cent, except if the activity is done within the conditions sanctioned by an agricultural officer. An authorized agricultural officer, may in writing, prohibit the cultivation, cutting down or destruction of vegetation on any land of which the slope exceeds 20 per cent. The Rules stipulate strict regulation on the cultivation of any land whose slope is between 12 per cent and 35 per cent when the soil is not properly protected from erosion.

Protection of local plants against diseases and pests is provided by the Plant Protection Act which was introduced in 1937. It is described as an Act of Parliament to make better provision for the prevention of the introduction and spread of disease destructive to plants. It provides for the protection of local plants against those pests or diseases whose effects are deemed by the Minister responsible, to be difficult to control or eradicate. The Minister may make rules for the prevention or spread of pests for example, methods of planting, clearing, cultivating and harvesting to be adopted, and precautions or measures to be taken by any person for the purpose of preventing or controlling attacks by, or spread of, any pest or disease¹⁹.

The penalty for wilful introduction of pests or disease is a fine not exceeding Kshs 2,000/= or imprisonment for a term not exceeding six months²⁰. The Minister also has power to control the importation or exploitation of articles likely to spread pests or diseases²¹.

The Grass Fires Act, which was introduced in 1942, requires that permission be granted by the authorities, before anyone can burn vegetation, which is not his or her property²². The Director of Agriculture has power to prohibit the burning of vegetation²³. However, this law lays more emphasis on property rather than on resource conservation.

The Wildlife (Conservation and Management) Act also protects plant life.

Three separate provisions of the Act are relevant:-

- (a) The Director of Wildlife Service is empowered to reserve or set aside any portion of a park, reserve or sanctuary as a breeding place for animals or as nurseries for vegetation.²⁴

(b) The Minister may declare any area adjacent to a National Park, National Reserve or Local Sanctuary to be a protected area if this is necessary for ensuring the security of the animal or vegetable life in the park, reserve or sanctuary or for preserving the habitat or ecology thereof.²⁵

(c) It is an offence to injure or set fire to any vegetation in a wildlife conservation area and, knowingly introduce any animal or vegetation into a wildlife conservation area.²⁶

The Seeds and Plant Varieties Act which was enacted in 1972, establishes a legal framework for the regulation of seed trade and plant weeding. It was intended to confer power to do the following:-

- a) Regulate transactions in seeds.
- b) Establish an index of names of plant varieties.
- c) Empower the imposition of restriction on the introduction of new varieties.
- d) Control the importation of seeds.
- e) Authorize measures to prevent injurious cross-pollination, and
- f) Provide for the grant of proprietary rights to persons breeding or discovering new varieties.

Thus for the first time, a legal framework for the management of plant genetic resources, as opposed to only conserving them, was introduced in Kenya.

There do however exist certain sections of the current legislation which may lead to loss of genetic resources whose value is still unknown. For example, the S-capital of Noxious weeds Act²⁷ which was introduced in 1945, to protect agricultural crops from weeds. It is

presumed that a plant shall only be declared to be a weed after it has been studied and proven so²⁸. No provisions are made to assess other potential benefits of such plants.

B Animal Genetic Resources

Up to 1976, Kenya's wildlife legislation had its basis in two main enactments namely:-

- a) The Royal National Parks of Kenya Ordinance 1945.
- b) The Wild Animals Protection Ordinance 1951.

When the country attained Independence, both texts were converted into Acts. Wildlife law was brought under one and the same series of provisions by the Wildlife (Conservation and Management) Act of 13 February 1976. The Act has received several amendments notably by the Wildlife (Conservation and Management) [Revocation of Dealers' Licenses] Act, 1978²⁹. The latest amendment was in 1990. Since it was adopted only 3 years after the Convention on International Trade in Endangered Species of Wild Fauna and Flora [CITES], Kenya deliberately built into it the key provisions of the Convention.

The Act caters for the protection of nature reserves. The Director of Wildlife Management may set aside a section of a national park for use as a breeding place for animals or as nurseries for vegetation³⁰. Section 15 (D) provides for the protection of animals and vegetation in areas adjacent to national parks, national reserves or local sanctuaries. This has significant implications for genetic resources since it can be used to protect areas that do not fall under the strict jurisdiction of the wildlife and forest legislation.

The Minister also has power to declare any area of land to be a wildlife conservation area. The declaration is intended to protect wild animals in their natural habitat. Combined with broad powers to control and regulate hunting³¹, these provisions are intended to guarantee fauna survival in their natural habitat.

FOREST GENETIC RESOURCES

Forest resources are important in Kenya for the supply of timber and fuelwood that they provide as well as the indirect benefits that they confer. The latter include the protection of major water catchment areas and the provision of natural forest products³².

Forests act as windbreaks reducing the impact of heavy tropical rains on the soil surface with their canopy and holding the soil particles together with their rooting network³³.

The Forests Act³⁴ is one of the major laws in Kenya which deal with genetic resources. It was introduced in 1942 so as to consolidate the various pieces of legislation and regulations governing the use of forest resources. The Act's jurisdiction covers Central Forests, forests and forest areas in the Nairobi area and on unalienated government land.

The Minister may from time to time declare unalienated Government land to be a forest area³⁵. He can thereafter vary the borders or declare that an area has ceased to be a forest within the meaning of the Act.

The Minister also has power to declare a forest area of a Central forest or any part thereof, to be a nature reserve for the purpose of preserving the constituent natural amenities and its flora and fauna³⁶. The Minister can also revoke the protection. The law prohibits the

cutting, taking, injuring, grazing and removal of forest produce or the disturbance of flora without the permission of the Chief Conservator of Forests. Such permission is restricted to conservation of the natural flora and amenities of the reserve³⁷. This is a significant provision because it does not allow commercial utilization of any forest products. Hunting and fishing are also prohibited in the reserves except where considered necessary to kill any species for resource management³⁸.

Any person who is found with forest products is required to prove that the product is not a forest product, that is, he is presumed guilty until he can prove that he is innocent. A forest officer empowered by the Minister and with the consent of the Director may, if he is satisfied that a person has violated this Act, "accept from that person a sum of money by way of compensation for the offence together with the forest produce if any, in respect of which the offence has been committed". Out of the amount so collected must be of comparable value to the damage or simply a flat amount of Kshs 200/= for each offence.

D AQUATIC GENETIC RESOURCES

Although they are of considerable importance to Kenya, they have been less emphasized in government development and conservation policy than forestry, agriculture and wildlife. The coastal resources are of value in terms of tourism, fisheries and as depositories of a rich marine biodiversity particularly along the coral reef which is second only to the Great Barrier Reef as an international biological resource.

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Inland water resources are concentrated in Lakes Victoria, Turkana, Baringo, Naivasha, Jipe, Elmentaita, Bogoria and Magadi. The resources are important for inland fisheries as habitat for birds and as sources of water supply for the surrounding communities.

The environmental damage that is being done to these resources is through unregulated effluent being dumped into the water bodies through soil erosion for some lakes, over-fishing and inappropriate fishing practices and land drainage and introduction of mariculture in some wetlands.

Fisheries resources fall into two categories - Marine and Inland⁴⁰. The purpose of the Fisheries Act⁴¹ is to provide for the development, management, exploitation, utilization and conservation of fisheries and for connected purposes. The Principal Implementing Officer under the Act is the Director of Fisheries, who covers both the marine and inland fisheries. He is empowered by the Act to implement measures appropriate for the proper management of fisheries including inter alia, seasonal fishing requirements, zones or ecological areas where fishing is prohibited.

All persons engaged in fishing, except those fishing for consumption, are required to be registered under the Act. In every case, the general fishing license shall apply to specific species of fish, types of gear, method of fishing etc. Those who fish in violation of the licensing requirement are guilty of an offence and liable to a fine not exceeding Kshs 20,000/= or in default, to a prison term of 2 years, or both.

Use of explosives, poisonous or noxious substances or electric shock for purposes of killing, stunning or disabling fish is strictly prohibited by the Act. Violators are liable to a fine not exceeding Kshs 20,000/= or to imprisonment for a term not exceeding one year, or both.

The Maritime Zones Act of 1989⁴² sets out a pre-requisite to the rational conservation and management of the Kenyan marine resources and the environment by prescribing the limits of national jurisdiction. Further, the law empowers the Minister to make regulations for inter alia, the protection of the marine environment and regulation of exploration and exploitation of marine resources.

The Wildlife [Conservation and Management] Act is applicable to the marine environment via its provision that the Minister may declare a given area to be a marine park. Such areas distinguished for their colourful and exotic species of flora and fauna, fall under the jurisdiction of the Kenya Wildlife Service.

So far, marine national parks have been declared at Malindi-Watamu in the North Coast, Kisite and Mpunguti, off Shimoni and Vanga in South Coast, and South Island National Park and Central Island National Park in Lake Turkana. Unauthorized hunting in these parks is prohibited. Violators are liable to a fine not less than Kshs 5,000/= and not more than Kshs 20,000/= and/or imprisonment for a period of not less than 6 months and not more than 3 years with or without corporal punishment.

Protection of genetic resources can also be evoked, although albeit indirectly, under the Antiquities and Monuments Act⁴³, which was introduced in 1983. This is because the Act states that the declaration of a monument would include "a specified site on which a buried

monument or object of archaeological or paleontological interest exists or is believed to exist and a specified area of land adjoining it which is in his opinion, required for maintenance thereof... such a declaration would therefore limit access to the area for development, agriculture and livestock.

No attempt has so far been made, to protect genetic resources under this Act. It would be of interest to strengthen this Act to cover plants, animals and microorganisms of national importance. This would fit into the portfolio of the Office of the Vice-President which now reflects the need to preserve the country's heritage.

There also exist other statutes which are important for the conservation of biodiversity. For example, the Chief's Authority Act⁴⁴ vests extensive powers in administrative officers. Chiefs may issue orders to be obeyed by persons resident in, or for the time being within their jurisdiction. The powers include inter alia, the control of cutting trees for timber, the prohibition of wasteful destruction of trees and the control of grassfires. Moreover, the Minister responsible for administration may, under different circumstances and in writing, authorize a chief to order people within the respective jurisdiction, to perform work in connection with the conservation of natural resources.

The Water Act⁴⁵, provides the legal basis for managing wetlands and resources. Through it, biodiversity under wetlands can be conserved. It empowers the relevant Minister powers to declare specific wetland areas that are threatened by human activities; protected catchment areas for purposes of sustaining the ecosystems⁴⁶.

In conclusion, it can be said that although there do exist various Acts of Parliament which either indirectly, directly, incidentally or by any other means, conserve biodiversity, there is need for a single environmental law to be enacted which shall have the conservation of biodiversity as one of its principle aims. Such an Act should also incorporate the recommendations of the 1992 Biodiversity Convention especially as regards the conservation of genetic resources which are being depleted at an alarming rate.

FOOTNOTES

1. Okoth - Owino, A 'Law and Genetic Resources in Kenya', University of Nairobi, Law Journal, Issue No. 2 of 1995 p. 147
2. Concept of meeting the needs of the present generation, without compromising the ability of future generations to meet their own needs.
3. Republic of Kenya (1965) Sessional Paper No. 10 of 1965, African Socialism and its Application to Kenya, Government Printer, Nairobi, p. 39
4. Republic of Kenya (1976) Sessional Paper no. 3 of 1976, Policy on Wildlife Management in Kenya, Government Printer, Nairobi
5. Republic of Kenya (1986) Sessional Paper No. 1 of 1986, Economic management for Renewal Growth, Government Printer, Nairobi.
6. Ibid p. 54
7. Republic of Kenya Development Plan 1989 - 1993, Government Printer, Nairobi Pp 169 - 191
8. Ibid p 180
9. Ibid p 183
10. Previous attempts to use decrees include a declaration by the President making it illegal to cut down trees.
11. The Classification is adopted from Muchiru, S; Conservation Species and Genetic Resources: An NGO Action Guide (Nairobi, 1985, The Environment Liason Centre) p. 10

12. Chapter 318, Laws of Kenya
13. Chapter 324, Laws of Kenya
14. Chapter 327, Laws of Kenya
15. Chapter 379, Laws of Kenya
16. Chapter 326, Laws of Kenya
17. Section 184, Cap 318
18. Section 48(3) Ibid.
19. Section 3, Cap 324, Laws of Kenya
20. Section 7 (1), Ibid
21. Section 8 (1) Ibid
22. Section 3 (1) Chapter 327, Laws of Kenya
23. Section 5 Ibid
24. Section 9 (2) Chapter 379, Laws of Kenya
25. Section 15 (1) Ibid
26. Section 13 (2) Ibid
27. Chapter 325, Laws of Kenya.
28. Section 6 (1) Ibid
29. Suassay, C. 'Legislation on Wildlife and Protected Areas in Africa' Food Agricultural
Organization of the United Nations, Rome, 1984
30. Section 9 (2) Chapter 379, Laws of Kenya
31. Part IV Ibid

32. The Costs, Benefits and Unmet Needs of Biological Diversity Conservation in Kenya, prepared by the National Biodiversity Unit (National Museums of Kenya) and Metro Economic Limited, January 1992 p. 87
33. Ibid p. 88
34. Chapter 385, Laws of Kenya
35. Section 4 Ibid
36. Section 6 (2) Ibid
37. Section b (2) Ibid
38. Section 6 (3) Ibid
39. Section 13 Ibid
40. Okidi, C. O. Review of the Policy Framework and Legal and Institutional Arrangements for the management of the environment and Natural Resources in Kenya, p. 80
41. Fisheries Act Number 5 of 1989
42. Maritime Zones Act Number 6 of 1989
43. Chapter 315, Laws of Kenya
44. Chapter 128, Laws of Kenya
45. Chapter 372, Laws of Kenya
46. Section 14 Ibid.

CHAPTER THREE:

THE ROLE OF INDIGENOUS COMMUNITIES IN THE CONSERVATION OF BIODIVERSITY

Indigenous knowledge is a knowledge base that local communities have developed over time. Its role in the conservation and utilization of biological diversity is immense. It includes knowledge of food and medicinal plants, animal movements, cyclical climate patterns and others¹.

Different cultures have lived with and sustained themselves from and conserved and managed biodiversity, with respect for nature. Understanding cultures and indigenous knowledge may therefore offer the needed options for future biodiversity conservation and development. Yet too often, local communities have not been consulted or involved in development or conservation projects and programmes.

Conservation of biodiversity outside protected areas depends on the goodwill of the local communities. With increased pressures on land and resources, communities need to be sensitized to the importance of maintaining resource sustainability. This can only be done through dialogue and finding alternative solutions to their resource needs².

Although communities are usually depicted to be the cause of habitat destruction, protected areas have had negative impacts on those who are marginalised, having lost access to land and natural resources. Finding acceptable alternatives can therefore only be possible with their full participation in problem solving and decision making.

Moraga-Rojel is the opinion that biodiversity is tied to the socioeconomic structures of most of the local communities in different countries of the world³. The intimate link between traditional socio-economic systems and biodiversity is largely pronounced in the various economic activities, rites and rituals undertaken by the local communities. Traditional socio-economic activities of the communities are to a large measure, dependent on the availability of a wide range of plant and animal biological resources. The loss of biodiversity therefore means the erosion of the cultural and economic bases on which the local communities' life depend.

3.1 THE ROLE OF INDIGENOUS COMMUNITIES ON THE INTERNATIONAL SCENE

The role of indigenous communities shall be looked at from two aspects namely:-

- a) Indigenous knowledge of fauna
- b) Indigenous knowledge of flora

A INDIGENOUS KNOWLEDGE OF FAUNA

African herders maintain genetically diverse stock and vary the composition of their herds to match local environmental characteristics. Such knowledge among pastoralists helps them adapt to their environment in ways that enhance long-term conservation⁴. Seasonal and frequent daily movements of herds between pasturages helps prevent over-use of a single area's biomass. Herd diversification, that is, cattle, goats, sheep, donkeys and others, ensure

the presence of both browsers and grazers and reduces the probability that single disease will wipe out an entire herd.

African pastoralists have also developed sophisticated techniques to maintain stock health. In Nigeria, one survey identified some 92 herbs and plants used in ethnovet medicine. These pastoralists' indigenous technique of vaccinating through the nose of proved superior to early Northern commercial vaccines administered in the tails, as the latter vaccinations often resulted in necrosis and loss of the tail⁵.

Livestock reproduction is manipulated by some groups. In the Sahel, Tuareg knowledge of the timing of the sheep reproductive cycle and its relationship to that of the seasonal cycle gives them considerable control over stock breeding. The Tuareg are able to selectively use penile sheaths on rams to ensure that lambs are not born at the end of the dry season when the nutritional status of the ewes is very poor⁶.

Game resource use with clear biodiversity conservation implications can be identified in various forest zones. Some hunters/farmers in Zaire conserve forest resources by forbidding hunting during the dry season to "let the animals rest" until the next rainy season. They also rotate the sections of forest in which they trap game during the hunting season, again explicitly so as to "let the animals rest" or let them "give birth".

B INDIGENOUS KNOWLEDGE OF FLORA

Local communities do utilize a wide range of genetic resources in their socio-economic activities. For example, the Amerindian people use more than five hundred species of plants⁷.

They have accumulated a wide knowledge base and skills for identifying, characterizing and conserving the plants. They undertake multiple cropping and keep different kinds and breeds of livestock on their farms. This not only ensures diversity in economic activities but diversity of genetic resources.

In Latin America, farmers have developed one hundred and forty-six varieties of potato through experimentation involving crossing established cultivated varieties with their wild relatives⁹. The breeding activities are based on the knowledge of the genetic traits of the different varieties. The local farmers select varieties according to specific traits expressed by the varieties. The most prominent traits they look for are: high yielding potential, disease and pest resistance, ability to withstand high moisture, drought resistance, shape and taste and ability to withstand heavy rainstorms.

Local communities in different regions of the world have also developed knowledge and techniques for conserving plants which produce recalcitrant seeds. Such conservation is undertaken in home gardens and plants include indigenous vegetables.

Home gardens are used to conserve sterile fruits plants for example bananas¹⁰ and plant species that have medicinal properties or are of religious value. For example, the Huastec Indians of Mexico conserve a wide range of medicinal plants in home gardens¹¹.

In Ethiopia, farmers of the Tigray communities have established specific institutional mechanisms for promoting seed banking in order to conserve a wide range of traditional seeds. The farmers have collectively established a community seed bank¹². This effort is a response to the concerns of the farmers themselves of a large portion of traditional seeds being

forces the local farmers to give up their long season crops and concentrate on the most early maturing varieties.¹³ The Tigray communities efforts specifically address the problems of loss of traditional seeds (which are genetic resources) and the traditional knowledge for selection and conservation.

The seeds selected by the Tigray farmers are stored under special containers that are moisture free or have low moisture content. The seeds are then invested in the custody of local women who frequently check the seeds to ensure that they are viable and free from pest infection. The women occasionally sun-dry the seeds. They also grow samples of the seeds in home gardens to ensure that the stored seeds retain their regenerative potential. One important feature of the Tigray form of institutional organization is that it facilitates easy sharing or exchange of seeds among the farmers and even outside communities. One channel of seed exchange is the "practice of offering a portion of the best selected seeds as gifts to the poor in connection with the Saint Mary celebration in the Orthodox Church"¹⁴.

Generally, African cultivators stress food diversity and security over high productivity in their resource management. Their techniques include carefully managed crop species and cultivar diversity, staggered planting and harvesting dates, mixed cropping, relay cropping, cultivar mixtures within plots and the planting of scattered crops in a variety of microenvironment. They also have numerous insect control techniques. Cultivators use techniques such as inter-cropping, to stabilize yield fluctuations, facilitate pest, weed and

the centre. This ensured nature reserves in particular areas. However, the rest of the community was allowed to get wood and medicinal plants from the peripheral areas.

Among the Luo, the place where a prominent person was buried became semi-sacred and was preserved. Such area was known as "GUNDA" and usually grew into a bush or forest. However, as the population increased, there was need for more land and the practice gradually died out.

In the Kikuyu community, prayers were conducted under a special tree known as the 'Mugumo' tree. This tree was considered very sacred and nobody was allowed to cut it. This ensured its preservation.

With modernization, most communities have abandoned their cultural practices and this has led to increasing loss of biodiversity. There has therefore arisen the need for local people to be reminded that they need to conserve the biodiversity around them otherwise future generations shall not be able to sustain themselves. The efforts for doing so have mainly been co-ordinated by Non-Governmental Organizations (NGOs) which have environmental awareness as their principle aims. The following provide examples of what some communities are doing to conserve biodiversity.

3.2.1

MAASAI COMMUNITY

There has always been a close and relatively harmonious association between the Maasai and wildlife. As Doctor David Western put it:

disease control, provide soil cover far longer than single culture crops, and optimize available soil moisture for crop production.

Many techniques once labelled 'primitive' have been vindicated by modern social science, particularly those associated with shifting cultivation. Incomplete clearing of fields, leaving stumps and some large trees, keeps root systems intact to help bind the soil when the rains come. Another example of appropriate traditional practices, the ancient technique of shallow plowing, has more recently become known as "minimum tillage"¹⁵. It is a superior technique particularly in low-quality rain-intensive soils.

Wild plants are valued as sources of food, medications and numerous other uses. Studies of !Kung hunter-gatherers in Southern Africa have documented a rich and detailed knowledge of local flora. Individuals questioned by a plant taxonomist supplied names of 206 out of 211 plant varieties collected.

3.2 THE ROLE OF INDIGENOUS COMMUNITIES ON THE LOCAL SCENE

Traditional communities have from time immemorial, conserved biodiversity without their knowledge. By this I mean that they participated in their cultural and socio-economic activities without realizing that in the process, they were conserving biodiversity.

For example, among the Mijikenda, part of their rituals involved the burying of a charm in a particular place of a forest. This was done by a prominent clan elder. Thereafter, the forest became sacred and access to it was restricted. It was only the elders who could go to

“Seasonal migration patterns and foraging strategies of Maasai livestock and wildlife species are so similar that their riches are intermingled and inseparable.”¹⁶

The Maasai and other pastoralists can be seen as “ecosystem people” in the sense that they have evolved a way of life integral to the surrounding ecosystem. They became adapted to and influenced their environment without destroying its sustainability. Their survival depended on its continuing productivity.

In the past and to some extent today, the Maasai are educated through the experience of living in their surroundings, to become good observers of natural process such as seasonal change, weather and wildlife habits. Survival strategies require an intimate knowledge of their environment. They are connected with the wild world around them. This experience is reflected in their ideology and legitimized by participation in their ceremonies, rituals and social institutions. The recognition of an interdependence between humans and other forms of life is expressed through cultural practices and beliefs. Many animal species have special significance. The lion hunt, ‘OLA MAYIO’ is associated with honour and bravery, the duiker, jackal and cape hare are bringers of bad fortune.

Learning about wildlife and the natural world was part of traditional education. This is described well by a Maasai Warrior thus:

“Our education is acquired out there on the grazing grounds Instead of passing ‘INTEMAT’ (tests) about things that are foreign, we test our knowledge of our environment by actually getting into thorny bushes, the home of many wild animals”¹⁷

The Maasai do not normally kill wildlife, although there are reports of hunts and of taming wildebeest for milk for human consumption and calf rearing to survive famine. It has been suggested that the Maasai co-existed peacefully with wildlife because most species were not a threat to their livelihood¹⁸. However, with the formation of parks in Maasailand, prohibiting Maasai use of important grazing land and water sources, it is not surprising that they increasingly view wildlife as a competitor.

3.2.2 BUKUSU COMMUNITY

Plants are tightly linked into the culture of the Bukusu people of the Bungoma area. The traditional economy is largely based on the extent of the bioproductive resources. These include soil and vegetation.¹⁹

The Bukusu utilize a wide range of plants in their diet, consuming at least 1000 different species of vegetables and fruits.²⁰ The extent of use varies considerably among different age groups. For example, children eat fruits more often than adults. As a result, they are more knowledgeable on their names, characteristics and location, than adults. Women on the other hand, are more knowledgeable about vegetables.

Recent changes in land use in the area have irreversibly altered the distribution of biological diversity and a number of these plants are likely to be lost. In response to these changes, local people have started to domesticate some of the traditional plants—The distribution of genetic resources is closely tied into the patterns of socio-economic evolution and is reflected in a diversity of practices ranging from food patterns to religious beliefs.²¹

Among the Bukusu, genetic resource conservation and utilization is understood through a local knowledge system that treats botanical material as part of a larger domain of links between natural, social and metaphysical factors.²² There is a division of labour between men and women on the local management of genetic resources. Most of the work relating to vegetables is carried out by women. Not only are women the ones selecting the varieties, but they are also the ones involved in the sale and promotion of the vegetables.²³

1.2.3 TURKANA COMMUNITY

The people of Turkana have evolved well-managed and basically sound ecological strategies which enable them to utilize the vegetation on a sustainable basis. According to Brainard²⁴, they exploit different economic niches (grazers and browsers) and diversify food procurement.

The Turkana silvo-pastoral system makes best use of the vegetation both in time and space through a transhumant system of wet and dry season grazing combined with setting aside specific dry season grazing reserves (EPAKA or AMIRE).²⁵ Such complex broad silvo-pastoral systems have worked in the past but are now primarily threatened by externally driven interventions since they usually cannot cope with the speed of change which such interventions bring.

The Turkana have a well developed knowledge of their flora and its uses. Within this, woody species are especially valued since they can survive and produce well even through long dry seasons. Their knowledge reflects the lifestyles and the extent of their dependence on

the woody vegetation. Indeed, the woody vegetation constitutes the district's most valuable resource of which the Turkwell riverine forest and the Loima mist forest are the most important. Understanding this, the Turkana have developed the management of their trees especially in the drier parts where the vegetation resource is more critical.

The herd owners within their ere (that area of permanent settlement where old and young stock remain all year round)²⁶ may have ownership rights to particular resources which may include fodder, trees ('ekwar'), dry season wells and sorghum gardens. These are resources are owned by the herd owner and his close family relatives and outsiders are allowed to use them without prior permission.²⁷ Although ekwar literally means the area beside the river bank, indicating the importance of riverine vegetation, it reflects the usufruct rights to the trees that grow beside the rivers.

The systems of ekwar is strongest along the river courses in the driest central parts of the district where the riverine vegetation is most important. However, not every house-hold has an ekwar. People own their ekwar for long periods of time often in excess of two generations. The boundaries vary considerably but usually relate to a river bank or a prominent tree or trees. Wet season use of the ekwar is not considered as important as dry season use. It is in the dry season that the ekwar provides livestock food from trees such as Acacia tortilis, Cordia sinensis and Salvadora persica.

On this basis, the ekwar appears to be part of a land use management strategy for the Turkana that includes wet and dry season grazing combines with reserved grazing areas and dry season fodder reserves.²⁸ Relating this utilization to ownership values only serves to sho

how important the people consider trees in general and the riverine forest in particular.²⁹ The Turkana also utilize more than 53 species of wild plants as food.³⁰ This is contrary to the common belief that the Turkana's way of life is basically pastoral.

3.2.4 KAMBA COMMUNITY

Although the Kamba have made little or no effort to conserve the indigenous fruits by exsitu approaches it appears that only a negligible loss of their germplasm has occurred.³¹ Indigenous fruits have been playing a big role in the nutritional quality and diversification of the rural food base in Kitui district.

Most people rely heavily on indigenous trees, shrubs and herbs for their daily supply of fuelwood, medicine, food and fodder for their livestock. There are many farmers who have conserved these valuable trees amongst other plants. This is a show of great understanding of nature and the need to conserve it, despite little scientific knowledge on these plants. Living with the plants is an old time tradition to them.

A tradition deeply rooted in their culture, the Akamba are said to have derived their name from the 'MWAMBA' tree.³² Their efforts are in line with the basic principles of conservation and utilization of genetic resources for posterity.

Frequent and prolonged droughts may pose a threat to fruits with short rotational cycles especially when they are punctuated by heavy rains which erode the soil, sweeping away the seeds and washing them into rivers.

CONSERVATION

As was mentioned earlier in the chapter, communities can be encouraged to participate in the conservation of genetic resources with the financial and moral support of non-governmental organizations (NGOs). The following provide examples of two case studies whereby NGOs have helped local communities to conserve biodiversity.

3.3.1 KAKAMEGA PILOT PROJECT

Kakamega Forest demonstrates very clearly that forest management is about people as much as it is about trees. 57 villages surround the forest and their perceptions of it and their established use of its resources are critical factors to consider in planing a management strategy.

Several socio-economic/cultural surveys conducted concluded that at current rates of use, Kakamega Forest will virtually disappear in less than 3 decades.³⁵ Long before that, biodiversity will have been irreparably damaged and the forest degraded beyond hope of restoration. In addition, local communities will have lost a precious resource on which they are heavily dependent.

Thus law enforcement has been boosted and a resultant increase in arrests and convictions of illegal user, particularly wood cutters and charcoal makers has helped limit the spread of misuse. However, these interventions are not enough to ensure long term conservation of the forest. The crucial factor therefore is for the forest authorities to secure the

goodwill and co-operation of the local communities, who historically have viewed forest guards and rangers as an interfering and hostile force. The pilot project therefore has taken the lead in promoting the concept of a participatory management system where local communities share responsibility for forest conservation with officials.³⁴

This approach has received widespread interest and support in the villages. Village representatives chosen from the local communities receive a special training and return home to the pilot villages to explain the objectives of forest conservation. The long term aim is for villagers to take over much of the forest policing work in exchange for carefully regulated rights to the exclusive use of certain areas of the forest. Some of these areas will be designated as protection and rehabilitation zones and others will be for village utilization.

3.3.2 MAU PILOT PROJECT

The South West Mayu and Trans Mara forests are part of the largest remaining area of indigenous forests in Kenya, and play an important ecological role in catchment protection and water supply both for domestic and commercial purposes. The biodiversity of the Mau Forest Complex with its variety of habitats is of considerable importance. In these habitats, an unusual mix of West African and Afromontane faunal species occurs. The South West Mayu and Trans Mara Forests have a large human significance as well. The eleven thousand settled households situated within 2 km of the forest boundaries depend on the forest for many of their subsistence needs.³⁵ Their annual extraction of firewood, fibbers, food, medicinal plants, honey and other products is valued at ten million shillings.

Another group of people, the Okiek Dorobo, consider the forest their true and original home. They traditionally lived in the forest as hunters and gatherers and were particularly dependent on honey. Today however, population growth and economic acculturation with neighboring tribes has resulted in increased cultivation and grazing within the forest, to a level at which forest dwelling is no longer compatible with long term conservation. The government has made repeated attempts to evict the Dorobo but some have moved deeper into the forest while others have clustered at the edge of the forest, where they have no means of livelihood.³⁶ A comprehensive conservation plan has been prepared which includes permanent resettlement of the scattered Dorobo communities. The area selected for settlement is appropriate for supporting cultivation and livestock.

PROBLEMS FACING LOCAL COMMUNITIES IN CONSERVING BIODIVERSITY

Despite the local efforts of genetic resource conservation in different countries, a number of techno-economic, policy and institutional limitations characterize local conservation programmes and activities. First, local knowledge on conservation is increasingly being eroded as a result of the introduction of exotic genetic resources into the local socio-economic systems.³⁷ In some countries, national policies and public institutions do not favour the propagation and conservation of indigenous genetic resources and the associated technological knowledge base.³⁸ There are no national policy and legal regimes that clearly articulate and promote local technological efforts of biodiversity conservation.

Secondly, in many instances, local communities in developing economies lack adequate economic resources to invest in conservation of a wide range of genetic resources through the application of their technological skills and knowledge. Furthermore, they do not have resources to invest in procuring the equipment for seed cleaning and preservation. There are no defined economic incentives to local communities to promote their efforts in conservation.

Credit and loan facilities provided to farmers always demand that they cultivate cash crops, most of which are exotic and are meant for international markets.³⁹ It is generally difficult for local farmers without considerable collateral to have access to credit.

Nevertheless, local communities have established diverse technological approaches and accumulated knowledge for biodiversity conservation. Indeed, conservation of biodiversity by local communities may be generally treated as part of national efforts since the communities are part of the national socio-economic and political system.

In conclusion, it is quite obvious that local communities operate in a vacuum as there exists no law which can regulate their role in the conservation of biodiversity. The only law touching on this issue is the Forest Act⁴⁰ which works against them as any person who is found with forest produce is presumed guilty until he can prove himself to be innocent. In the next chapter, recommendations shall be made as to what can be done to improve their role and rights in the same.

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CHAPTER FOUR:

CONCLUSIONS AND RECOMMENDATIONS

As was stated in Chapter One, the Convention on Biological Diversity (hereinafter the Convention) was held in Rio de Janeiro in 1992. One hundred and sixty seven countries signed it and by the end of 1993, forty one countries had ratified it. The convention entered into force on 29th December 1993.

Kenya was one of the nations which signed the Convention but it has not ratified it as yet. This study proposes to show why Kenya should do so.

4.1 IMPORTANCE OF THE CONVENTION ON BIOLOGICAL DIVERSITY

Firstly, the Convention represents the first time that a large majority of the world's states have come together and agreed a binding legal instrument in the field of biodiversity conservation and the sustainable use of biological resources.

Secondly, the Convention is important because of its global perspective. For the first time, biodiversity conservation is recognized and addressed as a common concern of humankind. It recognizes that individual states have the responsibility to conserve the biodiversity and sustainably use the biological resources within their jurisdiction.

Thirdly, the Convention articulates a series of national and international bio-related rights and obligations. It sets broad goals which Parties must fulfill at the national level. The Convention's comprehensive approach also lends to its importance. For example, it does not

only deal with biodiversity per se, it also deals with biological resources, the constituent components of biodiversity.

1.2 IMPACTS OF THE LOSS OF BIODIVERSITY

Failure to conserve biodiversity leads to the following economic and environmental

impacts:-

- a) Depletion of the natural resource base for economic and social development.
- b) Loss of source material for scientific and socio-economic research.
- c) Loss of genetic resources and wild types for crop improvement.
- d) Loss of wildlife, their habitats and ancillary benefits derived from them.
- e) Loss of potential species with economic benefit.
- f) Destruction of national cultural heritage through neglect and
- g) Difficulties in creating a national scientific database for information exchange on species.²

The above demonstrates why there is a need for Kenya to ratify this Convention. At present, Kenya's laws on the environment do not cater specifically for biodiversity conservation. This was shown in previous chapters.

Chapter One looked at the history of environmental law from medieval times to pre-colonial and post-colonial Kenya as well as the various conventions touching on biodiversity, that Kenya has been a party to.

Chapter Two looked at specific statutes and their provisions relating to biodiversity conservation.

Chapter Three focused on the role and rights of indigenous communities in biodiversity conservation, and the problems facing them.

In this chapter, recommendations shall be made as to what Kenya should do to improve her laws so as to incorporate biodiversity conservation, in line with Article 10 of the Convention which states that each contracting party, shall, as far as possible and appropriate:-

- a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making.
- b) Adopt measures relating to the use of biological resources to avoid or minimize impacts on biological diversity.
- c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.
- d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced and
- e) Encourage co-operation between its governmental authorities and private sector in developing methods for sustainable use of biological resources.³

The recommendations shall be set out on the basis of existing limitations in the following areas:-

- i) Law framework
- ii) Policy Measures
- iii) Role of Indigenous Communities
- iv) Role of Non-Governmental Organizations (NGOs)

4.2 LEGAL FRAMEWORK

This shall be looked at from two aspects namely:-

- a) General Legal Problems
- b) Specific Statutory Problems

A GENERAL LEGAL PROBLEMS

These are:-

- i) The continued sectoral approach to biodiversity conservation. Specific problems relating to the environment have been addressed in separate legislation. For example, pollution is addressed in environmental protection laws and resource degradation in Forests, Fisheries, Water, National Parks and Wildlife laws. There has not been sufficient cross-sectoral co-ordination among their approaches, or sufficient attention to the end results.
- ii) The existing legislation is out-dated, inadequate, unenforced and ineffective. Most of the legislation contained in the statutes is of colonial origin and therefore cannot cope with modernization. This is because these laws developed piecemeal over a long

period of time. Inevitably, there are many gaps in the legislation and many overlaps in the implementation process. In particular, it should be emphasized that a comprehensive policy on genetic resources has never been developed and therefore the focus of the laws is unclear.

- iii) There is no legal obligation or framework for the development and articulation of a national policy on conservation and management of genetic resources. Fragments of policy which emerge are conflicting and not legally binding.
- iv) There is no legal obligation on the state to conserve the environment. The citizens do not have a constitutional right to a balanced ecosystem. The efforts to conserve genetic and other resources therefore stem from the local imperatives of natural resource management and political consideration regarding a conserved environment. Standards are difficult to set and observe.⁴
- v) There is no national legal framework for asserting national economic sovereignty over genetic resources. Legal regimes that purport to define rights and obligations over genetic resources are undermined in their operations by the free flow of resources across national boundaries.
- vi) There does not exist a single legal instrument for regulating the conservation and management of domestic animals and livestock development. All activities take place outside the law.⁵
- vii) There is no regulation of collection and export of species of forest genetic resources. There is no legal instrument to control the introduction of new species and the

afforestation programme does not involve a legally regulated process of species selection and conservation.

- viii) The only comprehensive legal provisions deal with the sale, import and export of seeds of plant genetic resources. There are no laws on existu arrangements for conservation. The gene banking that is going on and the aggressive breeding programmes take place in a legal vacuum. In addition, agricultural legislation is operating to counter conservation ideals.⁵
- ix) Apart from insitu conservation arrangement through Marine Parks for aquatic genetic resources, there is no law to regulate:
 - a) Ocean fishing
 - b) Introduction of species in internal waters
 - c) Pollution of the marine environment (except oil spills)
 - d) Resources in internal waters i.e. lakes and rivers
- x) There is no law to state the roles/rights of indigenous communities in preserving genetic resources.

Recommendations for solving the above problems are:-

One of the first steps should be to undertake, a detailed review of existing legislation to identify areas which need strengthening in view of the current conservation imperatives.

Presently, the legislation covers genetic resources in areas which are designated as *

protected⁷ or in areas where the resources are relevant to the conservation of areas such as wildlife reserves. This protection does not extend to material that falls outside these regions.⁷

Previously, the conservation of wild plant species was done on the basis of their perceived economic or ecological benefits.⁸ With the increased capacity to screen plants for a wide range of uses, the scope for potentially useful plants is expanding and national legislation should reflect this change. In addition, use of biotechnological techniques such as tissue culture and genetic engineering is making conservation possible in areas where previously conservation was difficult.⁹

Since genetic resources are gaining importance rapidly, it is necessary to look into the possibilities of formulating genetic resources conservation legislation that would harmonize the existing laws, provide administrative measures for conservation, encourage scientific research and facilitate co-ordination between the various institutions involved in genetic resources-based activities.

The legislation should also provide for the formation of institutions that would provide technical expertise to other sectors of the economy which utilize genetic resources.

There are strong reasons to introduce legislation that would guarantee farmers' rights over local genetic resources as an incentive to conservation. This concept is still underdeveloped although there are sections of the existing legislation that could be interpreted to show that farmers have rudimentary rights over the material they use.¹⁰ Such an arrangement, if linked to the scientific establishment, would also ensure that local communities benefit from modern breeding techniques without losing control and access over their materials¹¹.

There should be enacted a law which places an obligation on the state to conserve the environment. In this way, citizens of Kenya would have a right to a balanced ecosystem and would be able to sue in situations where they feel that their right is being violated. Presently, a citizen cannot institute proceedings for an environmental-related claim as he has no locus standi to do so unless he has suffered a private injury. Non-governmental organizations can bring such a claim if it is first proved that they have locus standi.

A law should also be enacted which shall give Kenya complete sovereignty over her genetic resources. The system of Prior Informed Consent should be incorporated into this law so that resources do not leave the country arbitrarily.

Domestic animals are not catered for in any law. Thus their conservation and management is at stake. This needs to be looked into as well.

B SPECIFIC STATUTORY PROBLEMS

i) The Agriculture Act.¹²

Being the principal land use statute, it should specifically confer protection on crop genetic resources.

ii) Plant Protection Act.¹³

Though it caters for the conservation of local plants against diseases and pests, it has no provisions which prohibit the export of genetic resources as a way of protecting the local material. This is a serious omission which needs to be looked into urgently as a lot of genetic resources is being lost through export.

iii) Grass Fires Act.¹⁴

This law places more emphasis on property rather than on resource conservation.

Going by its name, this should not be the case and it could be amended to stress the need for resource conservation.

Secondly, its implementation is almost non-existent as it is common knowledge that people burn vegetation randomly whether or not it is their property.

iv) Suppression of Noxious Weeds Act.¹⁵

Though it was introduced with the good aim of protecting agricultural crops from weeds, one factor was overlooked, that is, plants declared to be weeds are immediately destroyed even before their value, if any, is known. It can only be presumed that a plant is declared to be a weed after it has been studied and proven so, as the Act does not state so specifically. Also, no provisions are made to assess other potential benefits of such plants. This inadvertently leads to a great loss of valuable biodiversity the Act should be amended to cater for this.

v) The Wildlife (Conservation and Management) Act.¹⁶

This Act caters for the protection of nature reserved. Over the years, there has arisen a situation whereby indigenous communities like the Maasai, are viewing wildlife as a threat to their basic ways of life because more and more land is being taken away from them for purposes of conserving wildlife and also, their farms are destroyed by wildlife and compensation from the relevant authorities is hardly forthcoming.

These issues need to be addressed within a legal framework as both wildlife and indigenous communities are important in biodiversity conservation.

vi) The Forest Act.¹⁷

Section 13 of this Act states that any person who is found with forest products, is required to prove that the product is not a forest product thus he is presumed guilty until he can prove that he is innocent. This section should be repealed because it decreases the chances of biodiversity conservation as people are afraid to deal with plants.

The following measures should also be introduced in the Act:-

- Establishment of protected areas for biodiversity and ecosystem objectives
- Establishment of conservation-related and resource-based management in legislation especially with respect to forestry concession agreements and the consistency with conservation objectives
- Assessment of impacts of agricultural and industrial activities on tropical moist forest ecosystems.¹⁸

vii) Fisheries Act¹⁹ and Maritime Zones Act²⁰

Marine and fresh water habitats are being destroyed by inappropriate fisheries practices, economic development or other economic activities. The above Acts though they provide penalties for these things, they are hardly ever implemented. Thus people breaking the law are never prosecuted and as a result, there is loss of biodiversity at an alarming rate such

that some species of fish may soon become extinct. As a result, greater regulatory control should take place.

viii) The Chief's Authority Act²¹.

This Act is important for the conservation of biodiversity because under it, chiefs have powers to inter alia, control the cutting of trees for timber, prohibition of wasteful destruction of trees and the control of grass fires.

In my opinion, chiefs do not take this role seriously and prefer to exercise other powers in the Act which are not related to biodiversity conservation. Thus they need to be encouraged to exercise these powers because being at the grassroots level, they can do a lot to influence people to conserve biodiversity.

POLICY MEASURES

The Government should undertake major reforms of science and technological policy and ensure that imperatives of scientific research and technological capability building for biodiversity conservation are clearly reflected in the policy. That means biodiversity conservation should be provided more space and attention in science and technology policy. In this respect, the Ministry of Research, Science and Technology should take a more active role and participate in discussion of biodiversity conservation and take on the responsibilities of promoting scientific and technological research for conservation.²²

The policy reforms should go beyond integration of biodiversity conservation concerns in science and technology management. They should involve a reorientation of public policies

on conservation to encompass the entire spectrum of biodiversity instead of focusing on a few species in isolation.

In the case of gene banking, conservation imperatives should cover wild species and in the area of wildlife conservation, the focus should be broadened to cover habitat and all species of animals and plants.

Training in specific scientific and technical areas such as plant and animal taxonomy needs to be given urgent recognition and supported through specific bilateral arrangements or through deliberate initiatives of the government and specific institutions of conservation. The training should be complemented by incentives and an institutional environment that promotes efficient utilization of trained personnel.²³

The build up of local scientific and technological manpower through training should also be complimented by other deliberative measures that enhance the procurement or acquisition of new technological knowledge for conservation. Such measures include building national information or databases and linking of these to international ones.²⁴

Government's funding of conservation activities and research pertaining to conservation is low and should be increased. This will involve the government providing more funds to the maintenance of biodiversity conservation institutions, ensure institutional continuity and the accumulation of national technological capabilities for conservation.

THE RIGHTS/ROLES OF INDIGENOUS COMMUNITIES

Governments and institutions will not be able to achieve the conservation of biodiversity unless rural communities are involved in decision making processes and in the management of their environment and natural resources.²⁵ Without government assistance, the influence of these communities will be very limited; many valuable initiatives and efforts in the past have been thwarted by a lack of institutional support.

In order for communities to assume responsibility for conservation, they need to be made fully aware of the importance of biodiversity, both to themselves, to society at large and to future generations. The ability to make policy decisions concerning biodiversity needs to be developed locally, regionally, nationally and internationally.

If nature is misunderstood, biodiversity will be misused and its very existence will then be threatened. Scientific research can only concentrate on a few species, while many more are being destroyed before they can even be classified or studied. It would be useful to tap the knowledge of indigenous people, which knowledge has long been ignored by scientists in developed countries.

The preservation of cultural diversity and encouragement of inter-cultural dialogue are necessary complements to the conservation of biodiversity. So far, little consideration has been given to the knowledge of indigenous people. However, harmful aspects of cultural practices should be phased out.²⁷

It is necessary to constrict economic alternatives to demonstrate the benefits of conservation. Scientific research and education at all levels must be greatly increased in this respect.

Incentives should be provided to farmers so that they maintain local varieties of plants and animals.

The utilization marketing and conservation of indigenous food crops should be promoted and indigenous food plants used to fight poverty, disease and malnutrition, and improve food security at the house-hold level.²⁸

Indigenous people should be encouraged to seek alternative income generating activities or livelihoods that do not over-exploit natural resources so as to reduce over dependence on declining resources and develop alternative sources of fuel and power.

There should be selective and wise enforcement of laws²⁹. Careful appraisal of the casual factors behind illegal activities is important. Merely enforcing the law may be insufficient to stop illegal activities if the underlying causes are also not addressed.

There should be made a law specifically catering for the rights of these communities so as to enable them to work within its framework

THE ROLE OF NON-GOVERNMENTAL ORGANIZATIONS

These play a big role in helping in biodiversity conservation especially as regards working together with the local communities. The case studies examples provided in Chapter 3, clearly illustrate this.

Thus it is important that there should be legislation to recognize their participatory role in environmental management.

In conclusion, it is my view that if all the above recommendations were taken up, Kenya would be in a better position than other countries as far as biodiversity conservation is concerned.