



THE REPUBLIC OF THE GAMBIA

**THE GAMBIA NATIONAL BIODIVERSITY STRATEGY
AND ACTION PLAN (GBSAP)**

DRAFT

COORDINATED BY

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MARCH, 1998

Received 21/3/98

FOREWORD

ACKNOWLEDGMENT

EXECUTIVE SUMMARY

Article 6 of the CBD calls upon Parties to develop national strategies, plans or programme for the conservation and sustainable use of biological diversity or to adapt, for this purpose, existing strategies, plans or programmes to reflect, *inter alia*, the measures set out in the Convention relevant to the Contracting Party concerned. It also urges Parties to integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

To fulfill one of the key obligations under Article 6 of the Convention, The Gambia has prepared this National Biodiversity Strategy and Action Plan (GBSAP). The GBSAP sets out a strategy for action under the following main headings; forestry and forest biodiversity, fisheries and aquatic ecosystems; wildlife, wetlands, agricultural biodiversity, livestock, geology and water resources, policies and legislation, international agreements and social and cultural aspects of biodiversity. The Action Plan recognises that much of biodiversity loss in The Gambia, as elsewhere, is due to economic policy distortions and the resultant poverty that encourage rapid over exploitation of biological resources rather than sustainable use. It also recognises that slowing down the rate of biodiversity loss will require policy and institutional reform as well as institutional strengthening for effective action in all the areas. The Plan highlights the need to strengthen national capacity and identified major gaps in our knowledge and understanding about biodiversity, brought into light the major threats facing biodiversity and proposed strategic actions on how to address them.

Furthermore, the GBSAP emphasizes the need for policy reform to support biodiversity conservation and sustainable use, institutional reform and strengthening to make new investment effective. Due emphasis is placed on the implementation of field based activities in the areas of research, ecotourism, forestry, wildlife fisheries and water resources to consolidate and augment ongoing and proposed conservation projects in The Gambia. Although the plan is directed to all strata of Gambian society (from decision makers to rural farmers) recognising that conservation and sustainable use of biodiversity is the duty of every Gambian, the projects and programmes proposed are designed for local communities as important stakeholders whose livelihood depend on the conservation and sustainable use of biodiversity.

The action plan was prepared with the active participation of local communities from the herder and herbalist to the trader and policy makers through zonal and divisional workshops and a national forum where the document was finalised. It is truly an action plan by consensus. The key actors for implementing The Gambia Biodiversity Strategy and Action plan include the local communities, NGO's, PVO's, the public sector and the donor community. The active participation and involvement of these key partners will ensure the success of the Action plan.

LIST OF ACRONYMS

CBD	Convention on Biological Diversity
ECOWAS	Economic Community for West African States
EDF	European Development Fund
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GDP	Gross Domestic Product
GEAP	Gambia Environmental Action Plan
GIS	Geographic Information System
ICAM	Integrated Coastal Area Management
ICCAT	International Committee on the Conservation of the Atlantic Tuna
IDAF	Integrated Development of Artisanal Fisheries
IDRC	International Development Research Centre
IUCN	World Conservation Union
LGA	Local Government Area
MOE	Ministry of Education
MOH	Ministry of Health
MSY	Maximum Sustainable Yield
NARI	National Agricultural Research Institute
NEA	National Environment Agency
NGO	Non -Governmental Organisation
NORAD	Norwegian Agency for Development
SRFC	Sub-regional Fisheries Commission
TAC	Total Allowable Catch
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WWF	World Wide Fund for Nature

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INTRODUCTION

Over the past few years, the term “biodiversity” has become a catchword in the political, scientific and economic development processes. It is now widely acknowledged that biological diversity- the variability among genes, species and ecosystems- forms the foundation for sustainable development. The values of the genetic, species and ecosystem diversity is quite apparent agriculture, medicine, scientific research, esthetic/recreation as well as ecological functioning.

Despite its importance, however, biological diversity has experienced serious assault from both human activities and natural forces. Several species have been lost due to deforestation, pollution, over-exploitation of biological resources, and the industrial and green revolutions¹. The dreadful fate to the global biodiversity was identified as one the most serious disasters facing humanity during the preparatory discussions for the United Nations Conference on Environment and Development (UNCED). The global legally binding Convention on Biological Diversity (CBD), that was adopted during the UNCED provides renewed hope to save and promote the sustainable use of the remaining biodiversity.

The CBD, as a framework convention provides several guiding principles and key elements that should be undertaken at various levels to promote the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources. Article 6 of the CBD calls upon Parties to develop national strategies, plans or programme for the conservation and sustainable use of biological diversity or to adapt, for this purpose, existing strategies, plans or programmes to reflect, *inter alia*, the measures set out in the Convention relevant to the Contracting Party concerned. It also urges Parties to integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

To fulfill her obligations under Article 6 of the Convention, The Gambia prepared the Gambia Biodiversity Strategy and Action Plan (GBSAP). The GBSAP sets out the overall goals, principles and strategic actions for the conservation and sustainable use of biodiversity in The Gambia.

The Overall Vision

Consistent with Vision 2020, the overall vision of this NBSAP is “*to conserve and promote the rationale use of the nation’s biological diversity for the benefit of the present and future generations in the manner that is consistent with the overall goal of sustainable development*”.

¹ WRI, IUCN and UNEP, 1992.

The NBSAP is intended to:

- Provide a framework for setting priorities (policy and field actions) for the conservation and sustainable use of biodiversity in the Gambia;
- Guide the investment and capacity building programmes in the conservation and sustainable use of biodiversity;
- Catalyse and provide guidance for legal, policy and institutional reforms necessary to achieve effective conservation and sustainable use of biological diversity;
- Enhance coordination of national efforts aimed at the conservation and sustainable use of biological diversity.
- Facilitate information sharing and coordinated action among the various stakeholders at the national level and foster scientific and technical cooperation with other countries and international organisations.

Long-Term Goals

The overall goals of this strategy and action plan is to specify strategies and catalyse action to;

1. Slow down the rate of biodiversity loss in The Gambia and address the threats that are or are likely to affect biodiversity.
2. Protect and preserve genetic, species and ecosystems diversity, maintain important ecological processes and life-supporting systems and enhance the productivity and integrity of components of biological diversity.
3. Ensure the sustainable use of the components of biodiversity for the benefit of the present and future generations.

The following specific operational objectives to achieve the above stated goals are:

1. To protect, preserve and restore the biological diversity of The Gambia both in-situ and ex-situ through;
 - a) Establishment and management of a network of protected area systems representative of major ecosystem types and unique or threatened natural habitats.
 - b) Protection and sustainable use of biodiversity outside protected areas
 - c) Rehabilitation and restoration of degraded ecosystems

- d) Protection of endangered and unique species
- e) Recovery and re-introduction of threatened species into their natural habitats
- f) Establishment and maintenance of ex-situ conservation facilities

2. To identify, assess and monitor, on a regular basis, the status and trends of the components of biological diversity.
3. To identify and mitigate, in a timely manner, the processes and activities that have or are likely to have adverse impacts on biodiversity.
4. To control the introduction of alien species and living modified organisms that threaten the ecosystem, species and genetic diversity in the Gambia
5. To ensure that the components of biodiversity in The Gambia are exploited and used in such a way and at a rate that does not lead to the decline of the biological diversity or jeopardise its capacity to meet the needs of the present and future generations.
6. To provide or promote social, economic and other forms of incentives for the conservation and sustainable use of biological diversity.
7. To enhance scientific and technical capacity for research, training and technology transfer in the fields relevant to the conservation and sustainable use on biological diversity.
8. To promote public awareness about the need to and the appropriate practices to conserve and sustainably use biological diversity.
9. To facilitate exchange of information and technical and scientific cooperation with other Parties in the field of conservation and sustainable use of biodiversity.
10. To assert The Gambia's national sovereignty over her genetic resources by putting in place appropriate legal, policy and administrative measures to regulate access to genetic resources in The Gambia and to ensure fair and equitable sharing of benefits from the use of such resources and the associated indigenous knowledge.
11. To preserve, maintain and promote wider application of the knowledge, practices and innovations of local communities and protect their intellectual property rights.
12. To enhance the synergies among the biodiversity related Conventions and Treaties at the national level.

Approaches and Mechanisms:

The above objectives will be realised through various enabling mechanisms. The key strategic actions will include the following;

- Review and harmonise existing policies and legislation.
- Enact new policies and legislation in areas which are not or inadequately covered by the existing legislation such as access to genetic resources, biosafety,
- Mainstream biodiversity into sectoral and cross-sectoral policies, plans and programmes
- Undertake human resource capacity building in critical areas such as taxonomy, inventory, data and information management, planning and policy analysis, resource economics, etc.
- Strengthen the institutional capacity of the implementing agencies in terms of physical facilities, staffing and policy framework.
- Enhance the data and information management and exchange system
- Promote community involvement in planning and implementation
- Establish and maintain partnerships with the private sector and other stakeholders.
- Develop and implement field projects with the key stakeholders.

GUIDING PRINCIPLES

The implementation of this NBSAP, including the determination of priorities and selection of options, will be guided by the following principles;

- Biodiversity in The Gambia belongs to Gambians.
- The conservation and sustainable use of biodiversity is a responsibility of all citizens and residents of The Gambia.
- Community participation and informed stakeholder involvement in the planning, implementation and decision making processes is a prerequisite for effective conservation and sustainable use programmes.
- The best way to conserve species is to maintain their habitats. Therefore, in-situ conservation, preferably within protected area systems using an ecosystems approach, is fundamental to the effective conservation of biological diversity and the protection of threatened species.
- Biodiversity within protected areas can be conserved when at the same time the natural habitats are used sustainably and profitably by the surrounding local communities

through innovative management approaches such as community conservation, collaborative forest management, etc.

- Reliable and up to date data and information underpin rational decisions and appropriate actions for effective conservation and sustainable use of biological diversity.
- Successful conservation of biological diversity requires incorporation of the conservation and sustainable use concepts into the relevant decision making and management processes including; resource allocation and management, development appraisals and decisions and sectoral and cross-sectoral policies
- The loss of biological diversity can not be effectively slowed down without addressing the underlying causes which include, *inter alia*, population size and distribution densities, level of resource consumption, market factors and policies that provide incentives for resource depletion, under valuation of environmental goods and services, inappropriate laws, policies and institutions and ignorance about the roles of biodiversity, its status and the rate at which it is lost.
- Conservation and sustainable use efforts need to incorporate best practice models and cost-effective approaches and forge partnerships in action to maximise the comparative advantages of the various actors.
- Successful conservation and sustainable use of biodiversity requires appropriate supportive policies and institutional arrangements;
- An integrated approach, rather than sectoral approaches, is key to successful conservation programmes.
- A key ingredient to effective long term action is capacity building at all levels- community level, field, policy and decision making levels.
- Biodiversity conservation can not succeed unless local communities assume a greater role in the planning and management of natural resources and receive a fair share of the accruing benefits.

THE COUNTRY BACKGROUND

The Gambia is a small Sahelian country, bordered by Senegal and extending to the Western Coast of Africa between 13° and 14° N. It covers a total land area of approximately 10,689 sq. km with a length of about 400 km and a width varying between 24-28 km. It has a population of about 1.1 million people and a population growth rate of 4.2 % per annum.

The climate of the Gambia is characterized by a Sudano-sahelian type of climate, with a short rainy season from June to October and a long dry season lasting from November to May. The average annual rainfall is 900 mm. There has been an average reduction of 27% in the annual average rainfall since 1951. The mean temperature is 25° C.

The Gambia has four major landscapes, namely; the floodplain, the colluvial slopes, the lower plateau and the upper plateau, with different soil types. The natural drainage is centered on the River Gambia and its tributaries, namely; Sandougou, Nianija, Sofaniama, Bao and the Bintang Bolongs. River Gambia, which is over 680 km long, originates from the Fouta Djallon highlands in Guinea.

With its characteristic Sudan savanna woodland vegetation, The Gambia has the following main ecosystem types: forest ecosystems (close & open woodland ecosystem), agricultural ecosystems (arable and rangeland ecosystems), marine and coastal ecosystems, inland water ecosystems (wetlands) and terrestrial ecosystems (tree/shrub savanna).

The Gambia is endowed with a high diversity of plant and animal species. The components of biodiversity embrace the wild fauna and flora and associated ecosystems as well as the domestic species, including plant varieties and land races of domestic animals that have been bred and developed for thousands of years by farmers, as well as species that are dependent on the agricultural systems developed and maintained by humankind.

2. THE CURRENT STATUS AND THREATS TO BIODIVERSITY IN THE GAMBIA

Introduction

In 1997, The Gambia carried out a Biodiversity Country Study to gather and analyse biological and socio-economic data to provide the assessment framework for preparing the national strategy and action plan. It was coordinated by the Department of Parks and Wildlife Management in the Ministry of Agriculture and Natural Resources. A National Steering Committee, comprising representatives from the relevant government institutions and NGOs, was established to provide both policy and technical guidance to the process. A team of national consultants from relevant institutions was contracted to handle specific issues covered in the study, including; agriculture, fisheries, forestry, livestock, wildlife, climate and water resources, geology and minerals, social and cultural issues, population and health, national legislation, international conventions, government polices and expenditures on conservation and economic values/benefits of biodiversity. The World Wide Fund for Nature (WWF) provided the technical advice and backstopping. All the information was obtained through literature review and compilation of data from the existing secondary sources within the country. Some interviews were carried out with government officials, professionals and local people and field visits were made to a few places

The Status and Trends of the Components of Biodiversity

The Gambia Biodiversity Country Study revealed that although The Gambia is a very small country, it has a wealth of biological diversity. It has various ecosystem types, including; forest ecosystems (close & open woodland ecosystem), agricultural ecosystems (crop land ecosystems), marine and coastal ecosystems, inland water ecosystems (wetlands), as well as terrestrial ecosystems. The country has several protected areas including six national parks and game reserves, 66 forest parks and one Ramsar site, which promote in-situ conservation. There are only very few ex-situ facilities including the animal orphanage of Abuko nature reserve. There are several coastal and marine habitats of high ecological importance including; the Toll point to cape creek (Camaloo corner), Oyster creek mangrove swamp, Tanji Bird Reserve, Tujereng Lagoons, River Kakima Delta-kachuma forest, Dau Dula to Kartong coastal forest and Kartong point at the Allahein river mouth.

The Gambia has several species of wild animals and plants. The available data shows that there are 117 species of mammals (Murphy, 1997), about 525 species of birds representing 75 families), 47 species of reptiles and 30 species of amphibians. There is no reliable data on the status and distribution of most invertebrates including; Arthropods (insects, etc), Crustaceans, Molluscs, Platyhelminthes (flat worms, round worms, etc), Annelids, Nematodes and Arachnids as well as microorganisms including; Viruses, Bacteria, Protozoa, Fungi, Lichens and Algae.

Similarly, most lower plants, including; Mosses, Ferns, Bryophytes and Pterophytes as well as higher plants (angiosperms and gymnosperms) are poorly studied. About 13 species of animals have become extinct over the last few years and a similar number is threatened with extinction. The Gambia also has a high diversity of marine fish and other aquatic species, including; Crustacean, Cephalopods (mainly, cuttlefish, squids, and octopus), oysters, lobsters, crabs, dolphins, sharks, whales and other marine mammals and other species, although no reliable data is available.

Agricultural Biodiversity

The country's biotic assets in relation to agriculture embody agricultural systems, domestic, wild plants and animals, soil organisms and pests. The country's land and water resources are important resources which support the life systems necessary for producing crops, livestock, wildlife and forestry resources. Agriculture, being the main source of food for the country's peoples as well as the major foreign exchange earner has a pivotal role in the country's resolve to maintain, preserve and improve its biological diversity. The issue of providing food to a rapidly growing population while mending our already fragile terrestrial ecosystem is indeed quite daunting.

Fifty two per cent (52%) of Gambia's total land area (5,558 km²) is arable while 28-36% of this arable land area is cultivated annually (1997). Agricultural production depends on soil characteristics which, in the Gambia, have varying qualities. Soil fertility in the Gambia today is generally regarded as low, which is the unfortunate result of rapid population growth and poor agricultural management practices. Plant nutrient depletion rate is considered moderate and the loss of soil through erosion is estimated at 12.5 tons per hectare per year (1993). The loss of soil is due to erosion, a consequence of the loss of the country's vegetative cover and also due to the lowering of the soil retention capacity resulting from the leveling of flood plains for irrigation as well as due to wind erosion.

Based on aerial photographs taken in the land use study 19.., the total rangeland is 604,100 hectares. Agricultural production depends predominantly on water from rain which falls for only four months of the year. The rainfall pattern has changed in recent decades to a uni modal pattern barely exceeding 800 mm, which is a result of the Sahelian drought the country has been experiencing since the late sixties. The River Gambia and the underground aquifer systems spanning the entire country largely provide the water resources. Good drinking water is estimated at 80,125 Mm³, both from deep and shallow sources. Increasing water and land use to cater for the growing population, has adversely affected biological diversity, a matter of grave concern to Gambia's. The country's water resources are replenished primarily by rain.

The domestic animal resources of agricultural importance are quite considerable and the potential

for further development of the livestock resources is bright. According to the Livestock Census 1993/1994, the Gambia has the following livestock population: cattle 287,376 ; sheep 115,589 ; goats 213,732 ; horses 17,556 ; donkey 33,448 ; pigs 14,000 ; poultry 740,000. In spite of the increase in these figures, the demand for livestock is still greater. An important strategy to meet this demand which exploits the biological diversity of the animal resources is to boost production by introducing fast breeding domesticated wild animals which are socially acceptable to the Gambia, such as the grass cutter.

Marine and Coastal Biodiversity

The Gambia has a 80 km long coastline and an Exclusive Economic Zone (EEZ) extending 200 nautical miles from the low water mark. Fisheries resources are provided from two sources, the river covering an area of 2,000 km² and the ocean covering the continental shelf to an area of 5,000 km². The estimated total biomass of demersal and pelagic fish resources in Gambian waters is as follows: Demersals 22,000 tons and Pelagics 156,000 tons giving a total figure of 178,000 tons (Fridtjof Nansen, 1995). The total fish potential from the maritime fisheries is estimated at about 88,000 tons with pelagic and demersal fish resources constituting 78% and 21% respectively. Total annual fish production is around 38,000 tons in 1996, clearly indicating a surplus potential. Information on the size of the river fish resources and annual fish landings from the river fisheries are not available. Certain fish species, such species include the lobster (*Palinurus* spp), shark, catfish (*Arius heudeloti*) and the white grouper (*Epinephelus aethus*) are threatened as a result of unsound human exploitation strategies

Fish is an important source of cheap protein to the population and is believed to have potential for greater contribution to addressing the country's food security policy objective and the economy in general. Based on the current production levels there is considerable scope for exploiting the marine pelagic fisheries and aquaculture. In contrast, there is great need for tighter and more effective control of the threatened demersal resources.

Wetlands, which include marine, coastal, inland waters, seasonal fresh water ponds/marshes are distributed country-wide. In addition to the six protected areas, there is a wetland protected reserve, the Bao Bolong, which covers a total area of 13,000 hectares. Detailed information on species and distribution of wild life in the country is limited.

Forest Biodiversity

Forests, apart from their crucial importance to the biological diversity of several life systems, are also important natural resources by providing energy, materials for the construction industry, food and medicine to the population. 43% of the country's total land area (505,300 hectares) is under forest cover with woodland accounting for 10% and the remainder consisting of Savanna woodland and mangroves which are found along the Gambia river. The mangroves system is

estimated to cover 60,000 to 67,000 hectares. There are 66 forest parks covering a total area of 34,029 hectares. There are currently 6,462 hectares of forest land under community management. The forest ecosystem has dramatically changed in the last two to three decades from being a dense and highly biological diverse environment to its present bare state. Rapid population growth is the single most important cause of the state of deterioration of the forest ecosystem. The Forest Policy (1995-2005) intends to reserve, maintain and develop 30% of forest land resources of the country ensuring that 75% of these forest lands are managed by local communities.

Terrestrial Biodiversity (Wildlife)

Wildlife resources form an important component of the country's biotic assets from both ecological and economic viewpoints. There are 6 wildlife Protected Areas, occupying a total land area of 37,772 hectares, approximately 4% of Gambia's total land area and 66 Forest Parks, with a total area of 34,029 hectares. According to the available data, there are 117 species of mammals, 47 species of reptiles and 30 species of amphibians making a total of 194 species of wild animals in The Gambia. However these figures are by and large estimates, the number could be higher than this if more detail investigations are undertaken. The Gambia is also endowed with a rich avifauna estimated at a total of over 507 species for its 10,689 km² and one bird species every 21.0 km². It has no endemic and only 2 species - the puff-back shrike (*Dryoscopus gambensis*) and the spur-winged Goose (*Plectropterus gambensis*) bear its specific epithet. However, this is an incomplete list and more information on distribution of residents, arrivals and departures of migrants, breeding data (still sparse), and habitat requirements is being accumulated.

MAJOR THREATS TO THE GAMBIA'S BIODIVERSITY

Biodiversity in the Gambia is faced with several direct threats including the loss and fragmentation of the natural habitats due to deforestation, wetland drainage and infrastructural development, overgrazing and poor farming practices as well as indirect causes of including; population pressure, poverty, illiteracy, lack of resources, limited trained human power and inappropriate policy and institutional regimes.

The destruction of natural habitats, particularly forests and the mangrooves, is by far the biggest threat to biodiversity in The Gambia. This encompasses a wide range of problems that have a direct effect on the viability of natural ecosystems, including the loss of diversity in animal and plant species, in terrestrial and aquatic ecosystems and the destruction of areas of scenic beauty. According to a land use study which was carried out in 1975 for the period 1946-1968, there was a reduction in the total closed forest area from 28% in 1946 to 3% in 1968 and 31% to 5% of the woodland savanna (Ridder, 1991). Due to the rapid destruction of the natural habitats, several species that have become extinct or are threatened with extinction, including 26 species of

mammals, for example, the hyena, leopard, sitatunga and the West African manatee.

Bush fires are another major threat which has resulted in the destruction of natural habitats and loss of biodiversity. About 80% of the standing bio-mass is usually consumed by bush fires every year.

Agricultural encroachment, has also played an important role in habitat loss and fragmentation. Coupled with the high population pressure and its resultant increasing demand on the available land, the extension of agricultural land area has significantly reduced the size of natural habitats.

The farming systems have diverged from subsistence family food production to extensive cash crop production which have led to deforestation and shortening of fallow periods. These processes have eroded the country's biological diversity without any significant increase in farm yields. For example, over 22% of original forest area was destroyed between 1982-1989 (Ridder, 1991) with a corresponding increase in agricultural land.

Mangroves and other wetland ecosystems throughout The Gambia are threatened by both anthropogenic factors such as conversion to other land uses, overharvesting wetland products, etc as well as natural factors such as mangrove die-back. This has led to the decline or disruption of the ecological values provided by these ecosystems such fish breeding grounds, resulting in the loss of some species.

The Gambian coastal and marine biodiversity is seriously threatened by coastal erosion, sand mining and pollution. The rate of erosion of The Gambian coastline has been estimated to be 1-2 metres per year amounting to a land loss averaging 2.5 -3.0 ha of land per year or 200,000 - 300,000 m³ per year (Delft hydraulics, 1992). Sand mining is the biggest catalyst of erosion and associated environmental impacts in the coastal area. On the other hand, discharge of untreated effluent from industries such as the Gam Tan factory into nearby tributaries e.g Lamin bolon (tributary) is believed to be contributing to the drastic decline of marine mammals such as the West African manatee (*Trichechus senegalensis*) and most of the crustaceans.

Modernisation of agriculture and poor farming practices have also, in different ways, contributed to the loss of biodiversity in The Gambia. Agricultural ecosystems in which naturally occurring plants and animals have been replaced by crop plants and livestock animals deliberately selected by human beings have resulted in loss of certain agrobiodiversity. Loss of agricultural biodiversity and the impact of agriculture on ecosystem functions can be grouped as follows:

- Soil compacting, the loss of complex vegetation cover, the drainage of wetlands and the clearance of watersheds.
- The simplification of agricultural systems by removal of multi storeyed vegetation, particularly trees and ground cover, results in the exposure of soils to erosive forces of sun, rain and wind, and subsequent loss of top soil.

- Larger mechanized mono-cultural production units require homogeneous topography. Consequently, wood lands, fallow fields and individual trees are eliminated and features such as wetlands, streams etc. are smoothed over resulting in a major loss of habitat for wild relatives of domesticated plants and animals.
- Intensive agro ecosystems that rely on fewer species and varieties have become more susceptible to diseases and pests, and to climate change variations.

Poverty is one of the biggest indirect threat to biodiversity in The Gambia. The majority of the population depends entirely on natural resources for their basic requirements which are often exploited irrationally. Such high demands, coupled with unsustainable practices of exploitation and utilization have placed undue pressure on natural resource base thereby considerably impacting negatively biological diversity.

CURRENT MEASURES FOR THE CONSERVATION AND SUSTAINABLE USE BIODIVERSITY

In recognition of the urgency of the biodiversity situation, particularly the extinction of species and the serious threats facing them, The Gambia Government declared its intention to encourage the protection of the remaining wildlife species (fauna and flora) by setting aside protected natural habitats for them and simultaneously promote conservation education to increase public awareness about wildlife and general environmental issues. Since 1916, six wildlife protected areas with a total land area of approximately 37,777 ha (i.e about 3.5% of The Gambia's land area) have been established- see Box below.

WILDLIFE PROTECTED AREAS AND NATURE RESERVES IN GAMBIA

NAME	DATE	AREA (ha)
Abuko Nat. Reserve	1968	105
Barrow River Gambia	1976	589
Bioko National Park	1986	4,940
Kiang West	1987	11,526
Janji Coastal Park	1993	612
Barrow-bolon Wetland	-	20,000
TOTAL AREA		37,769

The proposed wildlife policy aims to increase the protected area coverage to about 5% of the land area. Three of the protected areas are currently opened to the general public, namely Abuko Nature Reserve, Tanji River Bird Reserve and Kiang West National Park (KWNP). However, apart from KWNP, no other protected area has a management plan or any guiding document to assist in management. There is therefore an urgent need to prepare a general wildlife/biodiversity policy document for the balanced development of present and future protected areas.

Likewise, habitats and ecosystems have been protected through the establishment of forest parks for purposes of protection (natural forests), production and utilization. Currently, there are about (66) sixty-six forest parks of different categories covering a total land area of about ha. Interm of active management there are about (12) twelve-state forest with a total area of approximately 5.400 ha. The concept of community forestry was

introduced a few years ago and is in general term designed to create an environment for the active participation of local communities in forest management, protection and utilization and to empower communities to take charge of their own affairs and accrue benefits from the forest resource through revenue retention or direct use. The community forestry concept is highly successful and is being replicated in other parts of the country. Discussions are underway to initiate (CBNRM) community base natural resources management programmes for the wildlife sub-sector for the effective participation of local communities in wildlife schemes and the generation of revenue at the local level. The new forest policy (1995 - 2005) aims to significantly increase the total land area of managed forests to 30% of the total land area of The Gambia and that 75% of this 30% be properly managed. It also aims to develop 17000 ha of forest park and put 200,000 ha of land under community forest management.

Legal, Policy and Institutional Measures

Various legal, policy and institution measures were taken by government to promote the conservation and sustainable use of her biodiversity. The earlier approach was to develop sector-specific laws and policies. However, the most recent policy initiatives have adopted new strategies focussing on developing a comprehensive development policy framework, institutional strengthening of administrative and legislative capacities, public education to create greater awareness, community conservation and research. Several cross-sectoral policies, legislation and action plans, such as the GEAP and NFAPs have also been developed.

Specific commitment biodiversity conservation stretches from 1977, when the President made a declaration on conservation of wild flora and fauna, which is popularly known as The Banjul Declaration.

In the wildlife sector, the initial policy strategy was to set up a system of protected areas and a total of six national parks were established. The new policy objective is to increase national parks to 5% of total land area and putting emphasis on community conservation.

In the fisheries sector, the broad policy objectives are to encourage rational exploitation of coastal and inland fisheries to increase employment, maximize foreign exchange earnings and to improve the nutritional standard of the population. This is based on the strategy of expanding extension efforts and facilities by strengthening the operational capacity of the department of fisheries, undertaking basic research on fishery resources and detailed surveys to establish sustainable yields, and the protection of the territorial water by limiting the number of industrial fishing boats. Recently, the Government has also adopted the policy of involvement of the local communities in the management of aquatic and fisheries resources.

In the forestry sector, the long-term policy objective is to minimise forest destruction while ensuring self-sufficiency of timber for fuel wood and for industry and maximizing government revenue from the forestry sector as well as protecting the natural flora and fauna of the forest. The strategies adopted include; the formulation of national legislation for managed exploitation and development of forestry resources, the promotion of commercial exploitation of forestry products and conservation measures. The latter included the banning of charcoal production, introducing improved wood burning stoves and groundnut shell briquettes, village woodlot programmes and agroforestry in the form of forestry plantation. These were further supplemented by various extension and public education programmes and the creation of a system of forest parks administered by Government. The new Forest Policy came into effect in 1995. This is in fact the first real comprehensive Gambian Forest Policy whose cornerstone is the sustainable management of the forest resources through the active participation of the rural population. In accordance with the goals and objectives of the policy, The Gambia Forest Management Concept

(GFMC) was developed to be used as a guideline for the rational management of the forest resources.

In the agricultural sector, agricultural policies and programmes have included explicit measures for increasing agricultural production while arresting natural resource degradation and enhancing the conservation of biological diversity. This has been done through, for example, measures that enhance agro-ecosystem resilience, introduction of new crop varieties that are suitable to the environment and crop diversification to increase the range of crop genetic diversity. Other strategies adopted include sustainable production methods such as soil conservation methods, minimum/zero tillage methods, intercropping, integrated pest management, and crop rotation.

Furthermore, the government has acknowledged the impact of population growth and urban sprawl on biodiversity and responded through urban intensification strategies. This has involved concentrating population densities into already built-up areas by upgrading infrastructure and utilities to levels that can support more intensive urban use and higher population densities.

The above-mentioned policy measures are supported by various biodiversity-related sectoral laws including the following; the National Environmental Management Act, 1994; the Fisheries Act, 1995; the Fisheries Regulations, 1995; The Wildlife Conservation Act, 1977; The Wildlife Regulations, 1978; The Banjul Declaration 1977; The Forest Act - 1997; The Forestry Regulations, 1978; The Plant Importation and Regulation Act, 1963 and The Prevention of Damage by Pests Act, 1962.

The Gambia is also a signatory and a Party to various regional and international treaties and agreements which are related to or affect biodiversity. The international conventions include; the Convention on Biological Diversity, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Wetlands of International Importance Especially as Water Fowl Habitat (Ramsar), Convention Covering the Protection of the World Cultural and Natural Heritage, United Nations Convention on the Law of the Sea, United Nations Convention to Combat Desertification, United Nations Framework Convention on Climate Change, Vienna Convention for the Protection of the Ozone Layer, Montreal Protocol on Substances that Deplete the Ozone Layer, London Amendments to the Montreal Protocol on Substances that deplete the Ozone Layer, Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal and the Treaty Banning Nuclear Weapon tests in the Atmosphere in Outer Space and under Water.

The regional agreements to which The Gambia is a Party include; the Convention on the African Migratory Locust; Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region(WACAF); Protocol Concerning Cooperation in Combating Marine Pollution in cases of Emergency in West and Central African Region (WACAF); Bamako Convention on the Ban of the Import into Africa

and the Control of Transboundary Movement and Management within Africa of Hazardous Wastes; and the Convention Establishing a Permanent Inter-State Drought Control Committee for the SAHEL (CILSS).

CURRENT INSTITUTIONAL RESPONSIBILITIES AND CAPACITIES

The conservation and management of biodiversity in The Gambia currently cuts across various sectoral departments, including the Department of Parks and Wildlife Management, Forestry, Fisheries, Agriculture and others were established by government to regulate the use of the natural resources and ensure their effective management. These institutions have varied capacities but overall, they lack trained manpower and equipment to enable them to fully execute their mandates.

Department of Parks and Wildlife Management (DPWM).

The DPWM is in charge of the conservation, management and development of the wild life resources and protected areas of the country. For the purpose of implementing the Convention on Biological Diversity, it is the lead government institution. There are five functional units as follows: Directorate; Conservation, Education and Extension Unit; Parks and Protected Area Management Unit; Research, Crop damage Assessment and Control Unit; and Surveillance Unit.

The staff enrollment at the DPWM is 39 of which one is professional. Based on its human resource requirement estimate of 106, the current staffing level is much inadequate in both numbers and skills. There is also a dire need for vehicles and to a less extent equipment. Its recurrent budget and expenditure from 1996/7 Government Estimates is D423,306.00 while total expenditure including funds from multi-lateral and bi-lateral sources is approximately DM5.3 (1996) The level of revenue that accrues directly from the protected areas, though presently lower than the size of its recurrent expenditure, has potential for growth. The total contribution of wildlife to the country's economy exceeds the reported level as an unquantified portion of the earnings generated by Tourism is also attributable to the parks and wild life resources. From the approximated US\$ 60.1 million foreign exchange earnings generated from Tourism, parks and wild life played a contributing role.

Department of Fisheries.

Fisheries Department is responsible for planning, management, and development of the fisheries sector. The development of the sector is to be achieved by the sustainable exploitation and utilization of the country's fisheries resources to achieve increased food security, increased employment and enhanced foreign exchange earnings. The Department plays a pivotal role in the management of the resources by providing scientifically based advice on the requisite exploitation rate of the resources. It has four functional units as follows: Administration, Research and Development, Inspectorate, and Extension.

Its staff roll is presently 93 with most of the professional being highly trained. There is need for increased trained manpower, equipment and funding to enable it to better come to terms with

issues of the fisheries resource base and aquaculture development. The annual budgetary allocation is D1,252,320 in 1996/97 and the total revenue from licenses etc. is around D4.5 million.

Department of Forestry.

It is responsible for promoting the rational management of the forest resources. An important area of the current forest policy (1995) ensures the sustainable management of forest resources through the active participation of the rural population who are the immediate stakeholders. The Department has four functional units as follows: Natural Forestry Management, Extension, Community Forest, and Technical Services.

The staff roll presently stands at about 140. Following downsizing of the staff in 1986, there was hardly an improvement until recently which has been made possible by multi-lateral assistance. Even though Government's budgetary allocation to the Forestry Department has increased over the years much greater funding has been provided from multi-lateral sources to boost its financial and human resource capacity. Nonetheless, the total financial and human resources mobilized by the Department are regarded as insufficient taking into consideration its expanded functions as per the 1995 Forest Policy. Government expenditure in Forestry (1996/7 Estimates) is D1.7 million which is roughly of the same order of magnitude as its funding from bi/multi-lateral sources (The Gambia Development Co-operation Report 1995). Current revenue collected by the Forestry Department is around D1.5 million.

As an intervention measure the Forestry Department through the technical co-operation from the German Government focuses greater attention on natural forest management in the form of: Protection, improvement of silvicultural practices, testing of models to new concept and involvement of the local population. The aim is to increase the total land area of managed forests.

The Department has developed an action plan, the National Forestry Action Plan (NTFAP) which centres around 15 themes, including; ensuring the development of policy institutional implementation tools; development of community forest management; refinement of principles for forest management planning for state, community and private forests; ensuring sustainable supply of forest produce for urban and rural population; ensuring licenses, permits, royalties, stumpage fees reflect replacement cost of forest produce; contribution to the coordination and harmonization of forestry activities and related sectors; and support of applied forestry research to acquire baseline data.

Department of Livestock Services (DLS).

The DLS is responsible for providing veterinary services and animal production. Its mandate

includes the provision of advice with respect to livestock, to enhance the capacity of livestock producers, disease control, veterinary public health services and to work with private sector and communities to develop the industry and enhance sources of animal protein. This has the 6 divisions: Directorate; Extension, Training and Field Services; Tsetse and Vector Control; Investigations; Industries/Marketing and Veterinary Public Health; Range and Feed Management.

Its staff roll comprises of a total 204 personnel composed of 6 animal scientists, 22 middle level, 70 livestock assistants and various categories of support staff. Budgetary allocations were D5.09 million, D4.78 million, D4.39 million and D4.24 million in 1993, 1994, 1995 and 1996 respectively. The Department's funding from bi/multi-lateral sources registered D11.65 million much of which was spent on institutional capacity building. Its recurrent budgetary requirement is estimated to be 50-60 % greater than the present which would enable it to implement its envisaged programme and activities.

The Department routinely collects information on disease outbreaks, slaughter figures, vaccination records and clinical treatments. As mentioned earlier, livestock censuses are conducted from time to time. The last census data has been computerized and the data base is kept at the DLS headquarters and also with the International Trypanotolerance Centre (ITC) located in the Gambia.

The International Trypanotolerance Centre (ITC) has been engaged in research work in The Gambia and the sub-region in the field of trypanotolerance and the productivity of Ndama cattle since its inception in 1984. The ITC has modern research laboratories at Kerr Sering (headquarters) and at the Centre's field station in Keneba and Sololo. The centre is currently staffed by 15 research scientists, 10 middle level staff and about 30 support staff. Most researchers at ITC. have access to electronic mail and the Internet.

Recently, the Centre's mandate has been broadened to encompass all aspects of livestock production and health. The Centre has various databases including information on health and productivity of Ndama cattle, distribution and tsetse population dynamics and the epidemiology of trypanosomiasis in The Gambia.

Department of Agricultural Services (DAS)

The DAS is responsible for reducing the deterioration of the country's soil and water resources and to improve agricultural production through conservation practices and crop protection by pest control. It has two units namely, the Soil and Water Management Unit (SWMU) and the Pest Management Unit (PMU). The Department has information on the country's agricultural production systems, soil insect pests and other plant diseases. The DAS works very closely with

the country's farmers providing extension and training services and collaborates with the NGO's that work in the sector.

The nominal roll is 480 staff with about 40 % serving as support staff to the Agricultural Services Project (ASP). The department's annual recurrent budget is D8,077,970 with about 80 % constituting the cost of staff salaries. The department is short of trained manpower in agricultural engineering, soil science, crop pests and crop diseases in addition to information technological equipment.

National Agricultural Research Institute (NARI)

NARI, created in 1993 to take over the activities of the former Department of Agricultural Research and Agricultural Engineering Unit, is presently responsible for research on agriculture and natural resources which include livestock, forestry, fisheries etc. The broad mandate requires the reorganising of the existing research programme to incorporate the other components. It has a staff complement of 149. Research is conducted at two main stations-Yundum and Sapu assisted by four out-reach stations for multi-location trials. The policy of the institute is applied client-oriented in crops, forestry, fisheries and other natural resources.

Department of Water Resources (DWR).

The DWR has a broad mandate encompassing water resources assessment, monitoring and management, and weather and climate observation, recording, assessment and monitoring. It operates six Divisions: Administration and Directorate; Hydrology; Meteorology; Rural Water Supply; Water Quality and Control; Communications and Data Analysis. The department's human resources include 18 senior managers, 51 middle level and 183 junior staff.

It is currently equipped to provide basic information on ground and surface water resources and weather and climate. However, its human resource requirement ofas compared with the present 252 staff roll indicates a shortage. The study also highlights the need for increase in resources such as equipment, facilities and funding. For instance, the operation budget for the Department, as provided in the Recurrent and Development Estimates 1995/6 shows the development budget reduced to D350,000 from D490,000. The average annual allocation to the Department of DM3.78 represents 14.6% of its estimated annual budgetary requirement.

National Environment Agency (NEA)

The NEA, which was created in 1993 is mandated, according to the National Environment Management Act (NEMA) to coordinate and implement the Gambia Environmental Action Plan (GEAP) as well as being responsible for all environment related issues in the country. With a nominal roll of about 40 comprising of approximately 50 % professional staff and 50 % support

staff, it has three functional centres namely Administration and Finance, Technical Services network(TSN) and the Inter-sectoral Network (ISN).

The Agency executes its functions through programmes (listed below) manned by eight Working Groups drawn from representatives of Governmental, Non Governmental Organisations and Private Sector Institutions. Each of the working groups has an agenda appropriate to its programme, develops strategies and action plans which it also implements. The Agency is the Secretariat for all the eight working groups.

The ISN has working groups in these areas; 1. Environmental Impact Assessment; 2. Environmental Quality; 3. Environmental legislation; 4. Pesticides and Hazardous Chemicals; 5. Ozone Layer; 6. Contingency and Disaster Preparedness; and 7. Inspectorate. The working groups under the ISN have the following programmes; 1. Environmental Education and Communications; 2. Environmental Information Systems; 3. Agriculture and Natural Resources and 4. Coastal and Marine Environment

The Agency has a Documentation Centre and an Environment Information Centre (EIC)for Geographic Information System (GIS) application together with an Environment Award Scheme. It has set up an electronic communication network system by e- mail known as the Gambia Environmental Information System Network, "GEISNET" which serves all institutions involved in environmental management in the Gambia. Its office and Working Groups are also generally well set up and equipped in information technology.

The Agency in collaboration with other government departments is responsible for ensuring that all projects have undergone an Environmental Impact Assessment (EIA) prior to clearance.

NEA's recurrent annual expenditure is financed through a Gambia Government annual subvention of about D1.5 million while the GEAP is funded by multilateral assistance to the tune of US\$ 2.6 million annually. Revenues accruing from pesticide registration and royalties from sand mining are quite limited.

Even though the agency may not be expected to be responsible for a large complement of staff, it however, needs to be allowed to develop its manpower resources until it has obtained the required number and quality of staff. The present inadequacies in this area include trained manpower in Policy Analysis and Development, Inspection Services and Environmental Economics

The institutional arrangements for implementing the strategic recommendations are not spelled out in the reports. It must however, be presumed that the action plans put forward will be implemented by those that proposed the Plans and some key stakeholders such as the communities and other non-governmental institutions. Thus, the institutions described above are

each responsible for implementing the action plan generated by it and relevant to it. In the cases where more than one of the institutions is implicated, it is expected that a collaborative joint action will be employed as indicated in the action plans. It is also presumed that the Department of Wildlife and Parks Management will continue to be the lead institution for the overall implementation of the Convention.

NATIONAL CONSERVATION AND DEVELOPMENT OBJECTIVES AND SECTORAL CONSERVATION GOALS

The need for the conservation and sustainable use of biological biodiversity is recognised in the national development agenda. Vision 2020, The Gambia's socio-economic strategy for the period 1996-2020, highlights the need to guarantee a well-balanced ecosystem. One of its long-term objectives is *"to conserve and promote the rationale use of the nation's natural resources and the environment for the benefit of the present and future generations in the manner that is consistent with the overall goal of sustainable development"*. It calls for the diversification of the agriculture and natural resource base to facilitate the production of a wider range of food and export produce. It furthermore underscores the role of biological and cultural diversity in promoting tourism in The Gambia and offers to put in place appropriate institutional and legal framework that will promote this diversity.

The National Development Plan (1996-2000)

The Gambia Environment Action Plan

SECTOR-SPECIFIC GOALS

Different sectors have set different sector-specific conservation goals and objectives in their policy statements and long term sector strategies. These include the following;

- Wildlife Sector: To establish National Parks and Nature Reserves covering at least 5% of the national land area for the conservation, protection and management of fauna and flora in a view to improve the management capacity of the Parks and Wildlife Management department and increase revenue generation from wildlife resources;
- Forestry Sector: To reserve, maintain, develop and manage forest land resources covering at least 30% of the total land area which is capable of environmental protection through minimising soil degradation and erosion, maintaining river bank stability, protecting wetland and improving, conserving and preserving biodiversity;
- Agricultural Sector: To diversify agricultural production with a view to reducing the vulnerability of the sector to exogenous stocks and minimising natural resources deterioration and degradation;

- Livestock sector: To ensure efficiency and balance between livestock and the fragile environment by embarking on the rational and sustainable exploitation, management and conservation of range resources (grasslands/pastures, soil and water).
- Fisheries Sector: To promote efficient conservation, management and development of inland and marine fisheries which shall ensure the optimum and sustainable utilization of the fisheries resources for the benefit of the people in The Gambia.
- Water Resources Sector: Provide an information base pertaining to water resources and climate monitoring so as to enhance conservation of biological and address the requirements of the Convention on Biological Diversity;
- Environment Sector: Control environmental degradation and pollution in both natural and human ecosystems through firm regulations and applications of Environmental Impact Assessment (EIA);

3. THE STRATEGY

3.1 INTRODUCTION

The Gambia Biodiversity Strategy and Action Plan is aimed at providing a framework for slowing down the rate of biodiversity loss, sustainable utilization and conservation of the resource base and providing an integrated operational framework to set priorities and guide investments. It also aims at enhancing national capacities for biodiversity conservation and providing a framework for the public sector, NGOs, PVOs and the international conservation organisations to work together as real partners and set a course for biodiversity conservation in The Gambia.

The NBSAP emphasizes the need for policy reform to support biodiversity conservation and sustainable use, institutional reform and strengthening to make new investment effective. Due emphasis is placed on the implementation of field based activities in the areas of research, ecotourism, forestry, wildlife fisheries and water resources to consolidate and augment ongoing and proposed conservation projects in The Gambia. Although the NBSAP is directed to all strata of Gambian society (from decision makers to rural farmers) recognising that conservation and sustainable use of biodiversity is the duty of every Gambian, the projects and programmes proposed are designed for local communities as important stakeholders whose livelihood depend on the conservation and sustainable use of biodiversity.

The Strategy summaries the gaps, constraints, goals and objectives that are common to all sectors responsible for the conservation and use of biological diversity in The Gambia and those that are sector specific. The differentiation is necessitated by the fact that although there are common gaps and constraints, the goals, strategies, and activities proposed for implementation are largely different and sector specific. The sectors covered include; 1) Population, health and education; 2) Agriculture; 3) Forestry; 4) Wildlife; 5) Water Resources; 6) Livestock; 7) Fisheries; 8) Legislation; 9) Conventions; and 10) Land and mineral resources.

3.2 GENERAL CROSS-SECTORAL GAPS AND CONSTRAINTS TO THE CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY

The conservation of biodiversity in The Gambia is hampered by several constraints that are common to all the sectors. The major constraints include the following; lack of equipment and other logistics - transport, fuel, office supplies, etc; limited trained manpower and under staffing; inappropriate and outdated laws and policies; poor institutional arrangements; lack of adequate funding; and poor infrastructure- roads, communication facilities.

1. *Lack of data:* The biggest gap to the conservation and sustainable use of biodiversity in The Gambia is perhaps the lack of data and information on the status and distribution of biodiversity.

There is no up to date data on the structure, taxonomic composition and distribution of most of the components of biodiversity. This has significantly hampered effective planning and rational decision making. Likewise, there is no biodiversity assessment and monitoring system in place.

2. *Lack of community involvement:* The second major gap is lack of community participation. Most of the conservation activities, save the community forestry initiative, are still government driven, with little or community involvement in terms of management responsibility and benefit sharing. There is low participation of NGOs and citizen groups in conservation activities.

3. *Low awareness:* The other gap relates to the lack of awareness of the utility value of the genetic resources and thus undervaluation of biodiversity in the national accounting system. There is little understanding of the contribution made by genetic resources to the social and economic development of the country and the methodologies for determining the economic value of biological resources. The lack of awareness is reinforced by lack of technical expertise already mentioned.

4. *Lack of an overall legal, policy and institutional framework for biodiversity conservation:* This another fundamental gap. There is no single policy and legislation on biodiversity. Biodiversity is managed under several sectoral laws. However, certain key areas such as biosafety, access to genetic resources, control of alien species and others are not covered in the existing sectoral legislation and policy frameworks.

5. *Poor coordination:* Although many institutions are involved in biological diversity related to activities, there is poor coordination in so far as conservation and utilization of biological resources are concerned. Biodiversity conservation is still a piecemeal activity undertaken by the traditional sectoral agencies- wildlife, forestry, fisheries, etc. Each institution seems to follow its own sectoral mandate with the result that there is duplication of work and inefficient use of the scarce resources. There is no integrated land use planning or ecosystem approach to conservation.

STRATEGIES TO ADDRESS THE CROSS-CUTTING GAPS/ISSUES

LACK OF PUBLIC PARTICIPATION

Areas for the conservation of biological diversity in The Gambia are mainly located in the provinces where the land concerned belongs to the inhabitants. It is therefore essential that conservation strategies should involve the people whose lands are used for conservation purposes. However, most of the existing sectoral legislation, policies and programmes on the conservation of biological diversity contain no explicit provisions for public participation. The wildlife and forestry laws adopted a "policing" approach. Very limited human activity is allowed within protected areas and even where some human activity is allowed, it is stringently regulated.

The original owners of the protected areas do not participate in the planning and management of such areas nor do they realise any direct benefits. A few recent policies and legislation such as the NEMA and draft Forest Bill recognise the importance and include provisions for public participation. The Forest Department has over the last few year implemented a community forestry programme which has shown success. The Department of Parks and Wildlife Management is also experimenting the Community Conservation approach in the Kiang West National Park. However, these initiatives are void of a supportive regulatory framework.

Strategies

The following strategies are proposed to address the above gaps;

- Adopt participatory approaches to conservation such as collaborative forest management, community wildlife conservation, etc
- Ensure wide public participation and consultation in the biodiversity planning and decision-making processes, particularly by the affected local communities.

NGO AND PRIVATE SECTOR INVOLVEMENT IN CONSERVATION ACTIVITIES

Most of the conservation activities in The Gambia are still a concern of the government. There are very few NGOs, professional associations and community groups involved in biodiversity conservation activities. This is partly due to the historical gap of low non-government initiatives brought about by the lack of a supportive NGO policy in the country to stimulate formation of NGOs. Secondly, the respective government departments have not been vigorous enough to invite, establish and maintain partnerships with both foreign and national NGOs and the private sector to engage in or support conservation activities.

Strategies: The following strategies are proposed to address the above gap;

- Establish a strong Partnership Programme to reach out to and encourage NGOs and the private sector involvement.
- Facilitate the formation of a National Biodiversity Working Group to provide a forum for NGOs, the private and other members of the civil society to meet and discuss issues related to biodiversity and present their views to government.

INTER-SECTORAL COORDINATION AND COOPERATION

In The Gambia, components of biodiversity are managed by different institutions and governed by different legislation. Each legislation deals specifically with one resource or particular area, e.g. the forest act concerns itself only with forests and not the management of the wildlife or water ecosystems within the forest. The respective sectoral legislation do not have provisions

for a framework for coordination and cooperation with other related sectors. There is a need to amend the existing laws to provide for such inter-sectoral coordination and joint planning, management and enforcement of the legislation. For example, the enforcement powers and the extension services of the personnel of each sector should be delegated to the other. This will make it possible for forest rangers for example to enforce the wildlife legislation and vice versa. Such arrangement would bring about closer collaboration between the responsible authorities. Of more importance however, is the fact that more personnel would be available at the disposal of each authority and promote cost-effective extension work and enforcement of the relevant legislation.

There have been some efforts to foster inter-sectoral coordination and cooperation through the National Environment Agency. However, these efforts are still grossly lacking and hindered by several factors such as lack of enough personnel for networking and lack of resources to sustain the activities of the technical committees.

Strategies: The following strategies are proposed to address the above gaps;

- Establish a Standing Inter-Sectoral Technical Committee on Biodiversity under the DPWM to provide technical advise and facilitate integrated biodiversity planning and ecosystems management approach and the integration of biodiversity concerns into sectoral and cross-sectoral policies, programmes and plans.
- Organise regular inter-sectoral planning and coordination meetings and review workshops on biodiversity.

BIODIVERSITY PLANNING

Planning is an important element in the conservation of biological diversity. This recognised in the Convention on Biological Diversity which calls on Parties, in article 6, to develop national biodiversity strategies and action plans. Comprehensive biodiversity planning, has hitherto been grossly lacking in The Gambia. This is partly because there is no policy or legal mechanism to provide for such comprehensive biodiversity planning. Each sector (forestry, wildlife, fisheries, agriculture, etc) has been developing its own management plans without necessarily adopting an integrated planning and management approach. The NEMA contains specific provisions on environmental planning. For example, Sections 20 and 21 require the preparation of action plans at the national and local levels through the established planning procedures. In order to cater for coherence in legislation, provision is made for the plans to be coordinated with plans prepared under the Physical Planning and Development Control Act. However, provisions in NEMA are general and not referring to any specific area of biodiversity concern. They do not call for integration of biodiversity in the sectoral and cross-sectoral policies, plans and programmes as required in Article 6(b) of the CBD.

Strategies: The following strategies are proposed to address the above gaps;

- Establish and equip a Biodiversity Unit under the DWPM to act as the Secretariat to facilitate and coordinate the implementation and regular revision of this NBSAP and encourage and support the development of similar Biodiversity Strategies and Action Plans at the divisional and community levels;
- Ensure wide public participation and consultation in the biodiversity planning processes, particularly the affected local communities.

IDENTIFICATION AND MONITORING

Identification and monitoring are some of the most important tools in any conservation of biodiversity strategy. This is recognised in Article 7 of the CBD. The requirement for identification and monitoring is not explicitly included in most of the existing conservation related legislation, policies and programmes. The Wildlife Conservation Act in section 4 provides for the development of wildlife management plans but does not specifically require inventories and monitoring systems to be established. Some provisions on assessment are found in Section 32 of NEMA. The provisions therein are not however adequate to ensure effective and efficient identification and monitoring in the relevant sectors.

Strategies: In view of the above gaps, the following strategies are proposed;

- Carry out inventory of major ecosystem types and identify those that are unique, threatened or of special significance.
- Build the capacity in taxonomy
- Carry out taxonomic studies for key plant, animal and microbial species
- Identify processes and categories of activities which have or are likely to have adverse effects on biodiversity.
- Develop and implement criteria and indicators of species and ecosystem quality and size.
- Develop a comprehensive programme for biodiversity assessment and monitoring
- Create a biodiversity database at the DPWM by the year 2003
- Link the biodiversity database and other biodiversity information centres to the National Clearing House Mechanism

IN-SITU CONSERVATION

a) Protected Areas

In-situ conservation measures in The Gambia have mainly included the establishment and management of protected areas (PAs). The Wildlife Act, 1977 provides for establishment of national parks and nature reserves. A total of six national parks covering a total land area of 37,772 hectares (i.e about 3.7% of the Gambia's land area) already exist. The Forest Act, 1977 also provides for establishment of forest parks. There are currently sixty-six such parks with a total area of 34,029 ha. A new protected wetland reserve (Bao Bolong) covering a total area of 13,000 hectares has been designated as a Ramsar site. However, the current PA network is not representative enough to cover all the major ecosystem types and unique or threatened habitats. For example, there are no coastal or marine PA and several wetland habitat are not represented in the PA system. Besides, most of the PA's are poorly managed due to lack of the requisite resources. Most of them do not have up-to-date management plans and their boundaries are not marked. There is need to expand the PA system and ensure the capacity to manage the existing PA's.

Strategies: The following strategies are proposed to promote in-situ conservation within protected areas:

- Expand, by the year 2003, the protected area system from the current 3.7% to 5% of the total land area, covering major ecosystem types and unique or threatened habitats, and using the IUCN categories.
- Establish Marine Protected areas to protect key marine habitat and areas of high conservation values (such as the Camaloo corner, Tujereng lagoons and Bijol Island).
- Update and implement management plans for all the current six wildlife protected areas by the year 2000.
- Establish and maintain, in consultation with the local people, buffer zones around all the national parks and nature reserves by the year 2003.
- Strengthen the capacity for the management of the PA's.
- Establish multiple use zones within the PA's where local communities can be allowed to collect limited amounts of products (such as firewood, fruits, mushrooms, medicines, etc) for subsistence and carry out minor activities (such as bee keeping) which are compatible with the conservation objectives.
- Revise the forest protected area system and establish core forest nature reserves surrounded by "extractive" or "multiple use" zones where non-timber forest products can be collected by local communities on a sustainable basis.
- Control the introduction of alien species and living modified organisms into PA's.
- Introduce species recovery programmes and recover to viable levels the populations of at

- least two threatened species (i.e.) by the year 2005.
- Enhance the protection of endangered species and the control of illegal harvesting and trade of wildlife species.

b) In-situ Conservation Outside Protected Areas

A significant portion of in-situ conservation in The Gambia takes place outside protected area system. Several natural forests, wildlands, wetlands, riverine systems, coastal and marine ecosystems, rangelands and agricultural landscapes support significant biological diversity. Most of these areas are located on public and private land and are subjected to various types of land use. There are no effective laws that cover the conservation and sustainable use of biodiversity in these areas. In this situation, the most effective approach is to promote awareness and provide incentives to owners of these lands to conserve and sustainably use the biodiversity under their control.

Some of the existing conservation programmes outside protected areas include the tree planting and community forest conservation initiatives by the Forest Department. Currently, a total of 6,462 ha of forest land (including fifty-eight community forests) are under community management. Buffer Zone Management is also currently implemented only around Abuko Nature Reserve and Kiang West National Park. The Department of Parks and Wildlife Management intends to enrich the buffer zones with tree planting and remedial measures. There are no significant private initiatives yet in establishing private conservation areas.

Strategies: The following strategies are proposed for promoting the conservation and sustainable use of biodiversity outside protected areas;

Forests and wilder lands

- Promote tree planting
- Rehabilitate at least 5,000 ha of degraded forest areas and rangelands by the year 2005
- Promote integrated land use planning

Agricultural landscapes

- Promote organic farming and integrated pest management
- Encourage traditional farming practices, multiple cropping systems and minimum tillage
- Promote agroforestry and the revive the taungya system;
- Encourage crop diversification and promote the cultivation of the traditional plant cultivars and rearing of local animal breeds.

Marine and coastal ecosystems

- Promote integrated coastal and marine management
- Control coastal erosion, sand mining and marine pollution
- Control the introduction of alien species into the marine environment
- Protect the mangrove habitats along the shores of the River Gambia.
- Rehabilitate the degraded mangrove areas

Wetlands

- Develop a wetlands policy
- Create awareness about the importance of wetlands and methods for their wise use.
- Carry out a survey of wetlands to assess their size and distribution, composition and uses.

EX-SITU CONSERVATION

Ex-situ conservation has hitherto not been widely pursued in The Gambia. Indeed, there is no explicit provisions in the existing laws for the establishment of ex-situ conservation facilities. However, a few such facilities the animal orphanage of Abuko nature reserve have been developed. Animals at the orphanage include, the lion, spotted hyena, bushbuck antelope and the chimpanzee. Basically, the idea is to try and successfully release captive-bred animals into the wild. In that regard the chimpanzees have already been released into their natural habitat upcountry. Also, a genebank has been established at the National Agricultural Research Institute (NARI) to store plant germplasm collections in The Gambia.

Strategies: The following strategies are proposed to enhance ex-situ conservation in the country;

- Establish at least one botanical garden and one zoo by the year 2007.
- Improve the capacity for the management of captive breeding programmes and ensure that the field collections or any re-introductions do not threaten the in-situ populations.
- Establish, by the year 2005, at least one seedbank to ensure the preservation of the full range of germplasm of local plant land races and one breeding station and genebank for local animal breeds.
- Enhance the capacity to handle low cost *in-vitro* conservation and embryo-transfer techniques and germplasm collections.
- Establish a microbial culture collection for maintaining micro-organisms and storage of any genetically engineered materials.

INCENTIVE MEASURES AND ECONOMIC VALUATION OF BIODIVERSITY

Incentives can be effective tools for inciting and motivating different stakeholders (local communities, private sector, etc) to conserve and sustainably use biological diversity. Direct

incentives (such as grants or loans, subsidies, tax exemptions, cost-sharing and in-kind or service-oriented incentives such as granting access/user rights, technology transfer, support for community development projects, etc) can be significantly induce interest and commitment to conservation. On the other hand, disincentives such as fiscal disincentives (taxes, user fees, non-compliance fees, fines for damages) or statutory disincentives; e.g imprisonment, denial of user rights, etc) can play a big role in discouraging depletion and misuse of biological diversity. Currently, there is no explicit system of incentive measures for the conservation and sustainable use of biological diversity in The Gambia. There are, however, a few policy provisions that would act as incentives. They include, *inter alia*, the community forestry programme which is intended to provide user rights and management responsibilities to the local communities to manage their forest estates as community forest parks. The idea has been inbuilt into the forestry policy and the draft Forest Bill. The draft wildlife policy is also proposing to introduce community conservation whereby communities around the national parks will participate in the their management and share part of the revenue from the parks and also be allowed to collect small amounts of products from the parts for local subsistence. This policy if implemented will provide incentives for local communities to conserve biodiversity. The NEMA also has introduced an Environmental Award Scheme intended to act as an incentive measure. It also contains provisions of disincentives for bad environmental behavior.

Incentive measures are grossly lacking in all the other sectoral legislation, policies and programmes. On the other hand, there are several policies which act as perverse incentives that encourage the depletion, misuse or undervaluation of biological diversity. Examples include; commercial forestry concessions, below-cost timber sales, subsidies to commercial fishing, subsidies on the growing of monocrops of improved varieties, or vermin control policies. There is urgent need to deposit provisions for incentive measures in all the relevant sectoral legislation, policies and programmes and to remove the perverse incentives.

Strategies: The following strategies are proposed;

- Identify and promote policies, programmes and actions that act as positive incentives for the conservation and sustainable use of biodiversity;
- Identify and review/remove legislation, policies, programmes and actions that act as perverse incentives for the conservation and sustainable use of biodiversity.
- Promote the integration of market and non-market values of biodiversity into the national development plans, *inter alia*, national accounting systems, project appraisals and investment programmes.
- Introduce a conservation tax for private sector whose commercial activities derive directly from the use of biodiversity goods and services.

- Review the licencing and concession systems in forestry, fisheries, tourism and other relevant sectors to identify and revise unfavourable provisions.
- Introduce a “developer pays” policy requiring developers to take appropriate measures to mitigate negative effects of development on biodiversity, rehabilitate degraded ecosystems, replant or restore equivalent systems in other areas, etc.

RESEARCH AND TRAINING

Research and training are important tools for in the conservation and sustainable use of biodiversity. The importance of research, identification and monitoring of biodiversity is highlighted in preamble and articles 7 and 12 of the CBD. In The Gambia, research and training in areas related to biodiversity has been low . Almost all agencies responsible for the conservation of biodiversity in The Gambia lack the required human resource capacity to effectively and efficiently manage their various sectors. Training of personnel in the various biodiversity sectors is therefore a key priority. This should not be limited to staff on the professional cadre, but should extend to administrative and enforcement officers as well as local communities in biodiversity conservation. On the other hand, legal and policy provisions for research on biological diversity are non existent in most of the relevant sectoral legislation and conservation programmes. NEMA has few general provisions on research (see Sections 7, 10 and 49) which should be implemented by the NEA. It is important that such provisions be included into the various sectoral legislation as it greatly helps the identification and monitoring requirements under the convention.

Strategies:

- Carry a training needs assessment for professionals and extension staff in all the sectors responsible for biodiversity conservation.
- Develop a biodiversity training programme in the critical areas including; taxonomy, assessment and monitoring methodologies, conservation and ecosystem management techniques, economic valuation of biodiversity, policy analysis and integrated resource planning.
- Establish and equip biodiversity research institutions and strengthen the research and information dissemination programmes.
- Identify research priorities and design and implement targeted research programmes.

ENVIRONMENTAL EDUCATION AND AWARENESS

One of the major indirect threats to the conservation and sustainable use of biodiversity in The Gambia is illiteracy, ignorance and lack of awareness. Quite a sizeable number of the local people in the provinces are illiterate. Awareness about the full importance of biodiversity and therefore the need to conserve it is still very low. The average farmer in The Gambia believes that biodiversity exists to be exploited for use regardless of whether it is kept within the right equilibrium. The environmental education campaign so far undertaken by different organisations has not yielded significant results in terms of changing people's attitudes towards biodiversity nor have they succeeded in raising political will for biodiversity conservation and reflection of the true value of biodiversity in the national accounting systems. The various sectoral legislation, except NEMA, make no specific provisions for environmental education which implies that they are not obliged in their mandate to undertake environmental education programmes.

The current Education Policy (1988-2003), seeks to provide educational opportunities for all citizens and develop the country's human resources. However, it does not have specific provisions for environmental education. Its major objectives are: a) to increase access to basic education in Grades 1-9 and radically improve the quality of learning at these grades; (b) to increase access to post-secondary and vocational training; and c) to increase opportunities for training for out-of-school youth, school leavers and adults, in order to enhance employment, especially self-employment prospects. To achieve these objectives, the following strategies were adopted; 1) Restructuring of the school system; 2) training education sector personnel; 3) improving the management of the education sector; 4) improving coordination in provision of post-secondary and vocational training; and 5) improving facilities for training for out-of-school youth, school leavers and adults.

However, public education and awareness is vital if there is to be any meaningful and successful conservation of biological diversity. There is urgent need to promote public environmental awareness and to integrate environmental education in the school curriculum.

Strategies: The following strategies are proposed to enhance environmental education:

- Develop and implement a rigorous information, education and communication (IEC) programme be pursued to increase awareness and therefore concern for the protection and preservation biodiversity by the youth, local communities, NGOs, the private sector, local authorities, policy makers and relevant government officials (planners, attorneys, extension workers, etc).

- Launch a media campaign on the conservation and sustainable use of biological diversity
- Encourage informal environmental education through use of music, dance and drama and other relevant methods by NGOs and other actors.
- Emphasize and enforce the integrated approach to environmental issues by the line State Departments of Health, Education, Population Officers and Central Statistics Department through an informed data base.
- Assess the training needs of the professional and field extension staff in all the relevant areas.
- Strengthen the environmental education and extension programmes, with specific emphasis on the importance of and appropriate measures required for the conservation and sustainable use of biodiversity.
- Review the school curriculum at the lower and post-secondary levels to include environmental education in general and biodiversity in particular.

REGULATION OF ACCESS TO GENETIC RESOURCES

The Gambia has not yet put in place a holistic national regulatory regime governing access to her genetic resources and mechanisms for benefit sharing. However, there are sectoral provisions on access in different Acts. For example, *the Forest Act requires that any person should first obtain a licence from the Chief Conservator of Forests* before cutting, taking, working or removal of any forest produce from the central forest reserves. The Fisheries, 1995 prohibits any person to fish in any waters of The Gambia without being in possession of a valid fishing licence. The international community access The Gambia's fish resources through, either reciprocal fishing agreement as is the case with Senegal, fishing access agreements, e.g. the EU/Gambia Fishing Agreement and or joint ventures. The extent to which these agreements affect the resource base is not fully understood as catch reporting by concerned fishing vessel operators is very poor but evidence gathered through fish stock analysis indicate heavily fished stocks.

The National Environment Management Act, 1994 is the latest legislation that makes explicit provisions for regulation of access to The Gambia's genetic resources. Section 35 (2), states that the Council (i.e the National Environment Management Council, NEMC), shall make regulations and prescribe guidelines regarding access to genetic resources of The Gambia, including; (a) measures for regulating the export of germplasm, (b) measures for sharing of benefits derived from the germplasm originating from The Gambia, and c) fees to be paid for access to

germplasm. Nevertheless, the regulations and guidelines have not yet been developed by the NEMC.

Strategies: The following strategies are proposed;

- Develop a comprehensive national legislation and administrative arrangement on the regulation of access to genetic resources and benefit sharing.
- Establish an Inter-Agency Committee to oversee regulation of access and use of genetic resources including; development of guidelines for access and prior informed consent (PIC), reviewing of applications for bio-prospecting, negotiation of the access agreements and recommendation of granting of PIC.
- Carry out public awareness at all levels on the potential benefits of genetic resources, need to regulate field collections for bio-prospecting and other commercial uses and the rights of individuals and institutions to demand benefits from access to their genetic resources and indigenous knowledge.
- Carry out capacity building and training on access, benefit sharing and intellectual property rights at all levels, including development and implementation of research agreements.
- Provide incentives to promote the bio-prospecting within the country so as to add value to the biodiversity in the country. For example royalties/security of intellectual property rights (IPRs) should be provided to act as incentives for the indigenous knowledge particularly for herbalists. Local communities should be facilitated to improve their system of acquiring and preserving the natural products from plants and animals. Furthermore, local people and enforcement officers should be rewarded for policing and intercepting illegal bio-prospecting.

TRANSFER OF TECHNOLOGY

The CBD recognises that the transfer of technology is essential for the achievement of the objectives of the Convention. As such it encourages the transfer of technology to developing countries. This is however tied with the requirement that the benefiting country provides the necessary legal protection for technology transferred which are subject to patent protection. This requirement therefore demands the existence of patent laws in the country benefiting from the technology transfer. The Gambia has no patent law. It is therefore imperative that such law be put in place so as to alleviate the chances for transfer of technology.

Strategies:

Exchange of Information

Gathering and exchange of scientific information could be beneficial to the conservation of biological diversity. The CBD in Article 17 requires that States parties shall facilitate the exchange of information from all publicly available sources. The gathering and exchange of information is adequately provided for in NEMA (Sections 48 and 49). Probably what is required now is to have similar provisions built in sectoral legislation. The institutional mechanism to facilitate the gathering and exchange of scientific data also needs to be provided for in sectoral legislation. The Gambia has not yet established a Clearing House Mechanism to facilitate information exchange and foster technical and scientific cooperation.

Financial Resources

As has already been indicated, one major constraint to the conservation of biological diversity in The Gambia is lack of adequate financial resources. The funding levels for conservation have been chronically very low in The Gambia over many years. The prevalent national economic crisis, coupled with the fairly low political will for conservation, have seen conservation relegated to the background in terms of priority areas for national funding. There is been no significant effort to raise government funding for conservation activities in the last couple of years. Significant external funding for biodiversity conservation has not come by either.

The Government of The Gambia is the main provider of funds for the conservation of biological diversity. It had been shown previously that the financial resources available for conservation of biological diversity is inadequate. In order to alleviate this situation, it is essential that Government's commitment to protection of the environment be also reflected in its financial allocation to this sector by providing more funds. The relevant sectors should also tap their potential of obtaining financial assistance from donor countries and organisations interested in environmental protection in general and conservation of biological diversity in particular. A vigorous funding strategy for biodiversity conservation must be developed.

Strategies: The following strategies are proposed;

- Set up a Taskforce to identify new and additional sources funding such as private sector funding, conservation membership clubs, royalties on bio-prospecting, etc. and develop a funding strategy.
- Undertake local fund raising drives and seek private-sector funding from conservation-linked businesses and industry and in-kind support.

- Assess alternative financial mechanisms such as Biodiversity Trust Funds, Endowment Funds or Conservation Foundations and determine the best option (s).
- Develop a new policy and management strategy to enhance economic returns (revenues) from biodiversity goods (e.g logging or fishing fees, royalties from bio-prospecting, etc) and services (e.g tourism) and ensure re-investment of significant percentages of such returns into conservation.
- Develop good project proposals and seek donor funding for them.
- Explore the feasibility of “Debt for Nature Swaps” programmes in The Gambia and lobby potential implementers.

3.3 SECTOR-SPECIFIC GAPS AND THE EXISTING AND PROPOSED STRATEGIES TO ADDRESS THEM

There are several sectoral policy goals and strategies which are relevant to the conservation and sustainable use of biodiversity. The existing policies and strategies will be reviewed, pursued and enhanced as part of this NBSAP. This section outlines some of the existing and proposed strategies to address gaps the existing sectoral gaps and constraints with the view to enhance the conservation and sustainable use of biological diversity in the different specific sectors.

3.3.1 WILDLIFE

The conservation of wildlife in The Gambia and the rational utilization of its resources is constrained by several factors. The tussle between conservation and man's quest for survival is very prominent. Serious and delicate conflicts have arisen. This is so because all conservation areas in The Gambia are situated in the provinces where the local people obtain their living from the income the utilization of wildlife and other natural resources. Thus, the progressive restriction of their right of access to such places causes them loss of income and other means of survival such as food, firewood and medicines. The people around these areas therefore believe that the creation of national parks is an obstacle to their basic needs for survival. Conservation is seen as standing in the way for their farming, hunting or cattle grazing yet they do not see direct benefits from such conservation. The effect is that some reactionary individuals protest by way of deliberately setting fires within park boundaries. In some cases, the members of the communities near these parks have refused to cooperate with enforcement agents and sometimes boycott environmental education programmes.

The role of local communities in wildlife management and the need to share benefits from the parks with them is not formally recognised in the existing wildlife management programmes. There is no mechanism for involving them in the conception and management of protected areas.

It is therefore no surprise that local communities have come to see protected areas as property which has been seized from them. Consequently local and rural communities have continued to carry out activities which threaten the survival of species and entire wildlife habitats such as destruction of habitats by wildfires, illegal hunting, uncontrolled commercial harvesting of building and fencing materials and encroachment of farms into protected areas. These anthropogenic factors highlight the conflict between conservation and human survival due to the inappropriate management strategies.

Gaps: The major gaps in the Wildlife sector include the following; 1) Lack of a system plan/general management plan for the DPWM; 2) No up-to-date checklist of fauna species in The Gambia; 3) Outdated Wildlife Act and lack of policy for Wildlife; 4) Buffer zone are not demarcated in all protected areas; 5) Lack of private initiatives in establishing protected areas; 6) Absence of environmental impact assessment.

Strategies: The following strategies are proposed:

- Establish an effective wildlife policy and legal framework
- Expand the wildlife protected area system to 5%
- Identify, demarcate and promote the protection of natural heritage sites;
- Develop a biodiversity research, assessment and monitoring programme which will include; carrying out inventories, basic ecological research, socio-economic studies, etc
- Promote the sustainable utilisation and conservation of biodiversity resources
- Empower local communities to manage parks and reserves and control of wildlife outside PA's
- Improve access to wildlife resources in and outside protected areas by local communities, researchers and tourists within the overall framework of the national legislation and international conventions
- Establish and maintain buffer zones around protected areas
- Promote environmentally compatible and sustainable land use practices in areas around protected areas
- Adopt measures for the recovery and re-introduction of threatened species
- Build the capacity of the Department of Parks and Wildlife Management
- Design and develop environmental education and extension programmes and activities to improve on negative attitude towards wildlife

Strategic Recommendations

- 1) Community participation, ownership, cost sharing and investment in the management of protected areas should be promoted;

- 2) Legal and enforcement measures to control illegal use of wildlife should be done in consultation with the local communities, while striking a balance between people's legitimate needs and the conservation of biological diversity.
- 3) Devise a community participatory approach to conservation by involving the local communities in the planning, implementation and management of conservation projects.
- 4) Develop strategies for a more effective and vigorous environmental education campaign with a view to educating the local communities on the need and benefits of conservation.
- 5) Alternative income generating projects need to be put in place for those who lose income by reason of conservation.
- 6) Cultural diversity issues and biodiversity conservation should be complementary to each other.
- 7) Slaughtering of warthogs, hippos, wild pigs birds should be critically reviewed, putting into consideration the needs and aspirations of local communities.

3.3.2 FORESTRY

Forests in The Gambia are under severe pressure mainly due to the population growth, inappropriate forest production methods and management systems, uncontrolled bush fires, tree-cutting for charcoal and firewood, overgrazing and encroachment for agriculture and human settlement. To arrest the rapid degradation and destruction of the forests, the Government in 1985 adopted a long-term policy with the objective to minimise forest destruction while ensuring self-sufficiency of timber for fuel wood and for industry and maximizing government revenue from the forestry sector as well as protecting the natural flora and fauna of the forest. The strategies adopted then included the following:

- Enactment of a national legislation on forests
- Promotion of commercial exploitation of forestry products and conservation forestry;
- Banning of charcoal production,
- Introduction of improved wood burning stoves and groundnut shell briquettes,
- Promotion of village woodlot programmes and agroforestry and farm forestry.
- These were further supplemented by various extension and public education programmes and the creation of a system of forest parks administered by Government.

In 1995, a new Forest Policy came into effect whose cornerstone was sustainable management of the forest resources through the active participation of the rural population. In accordance with the goals and objectives of the policy, The Gambia Forest Management Concept (GFMC) was developed to be used as a guideline for the rational management of the forest resources. The main goals of the forest policy are:-

- i) To reserve, maintain and develop forest land resources covering at least 30% of the total land area which is capable of protection.
- ii) To ensure that 75% of forest lands are managed and protected according to forest management principles.
- iii) To ensure that sufficient supply of forest produce needed by both urban and rural population is available through the rehabilitation of forest lands and the establishment of fast growing plantations and woodlots.

Strategies: The following strategies are proposed to enhance the conservation and sustainable use of forest biodiversity:

- Adopt measures to address the causes of natural forest loss and degradation.
- Adopt an ecosystem approach to forest management
- Promote collaborative forestry management involving local communities
- Develop and apply incentive measures and methodologies/standard criteria for valuing benefits from the forest biodiversity
- Adopt economic measures and incentives to promote the conservation and sustainable use of forest resources
- Harmonise existing laws and policies and develop a policy and legislation on biodiversity
- Establish and implement measures to control bush fires
- Improve the forest licensing system
- Enhance the surveillance of forest parks
- Promote public education and awareness about sustainable forest management
- Promote multiple-use forestry, apply better extension methods, intensify community forestry.
- Restoration of degraded forest areas affected by human encroachment, drought and desertification

3.3.3 FISHERIES

The current overall government policy objective for the fisheries sector, is to encourage rational exploitation of coastal and inland fisheries to increase employment, maximize foreign exchange earnings and to improve the nutritional standard of the population. This has been based on the strategy of expanding extension efforts and facilities by strengthening the operational capacity of the department of fisheries, undertaking basic research on fishery resources and detailed surveys to establish sustainable yields, and the protection of the territorial water by limiting the number of industrial fishing boats. Recently, the Government has also adopted the policy of involvement of the local communities in the management of aquatic and fisheries resources. The long term goals of the Fisheries Sector are; increased food security; increased employment opportunities;

enhanced government revenue earning capacity and; increased foreign earnings. The broad policy objectives of the fisheries sector are:

- i) to improve the nutritional standards of the population;
- ii) to effect a rational and long term utilization of the fisheries resources;
- iii) to expand the participation of private Gambian entrepreneurs in the fishing industry.
- iv) to optimize production by reducing post harvest losses.

Gaps: The major gaps/constraints include the following;

- a) Unavailability of information on biological characteristics of fish species.
- b) Inadequate knowledge of the mangroves as breeding and feeding grounds and habitats for juvenile and adult fish,
- c) Inadequate definition and delimitation of protected areas
- d) Inadequate knowledge of the potentials of aquaculture.

Strategies

- a) Develop research capacity of Fisheries Department
- b) Conduct studies and inventory on biology, taxonomy and ecology of species
- c) Develop and implement a research plan on ecology of mangroves
- d) Develop a 5-year master plan for fisheries resources survey to establish reliable biomass estimates and MSY
- e) Strengthen regional and sub-regional cooperation in fish stock assessment
- f) Involve communities in management through publicity, information and education

Activities

- a) Develop and implement a 3-year fisheries research plan preceded by species inventory.
- b) Conduct on job and university training of staff in aquatic biology, ecology of running waters, ichthyology, oceanography and environmental ecology at all levels
- c) Conduct studies on mangroves and fisheries
- d) Define and identify and demarcate protected areas for fisheries purposes
- e) Institute fisheries resources co-management and conduct public awareness campaigns.
- f) Develop and implement 5-year research master plan for the River Gambia
- g) Implement pilot coastal and inland aquaculture projects

3.3.4 AGRICULTURE

Goals for the Agricultural sector are to:

- i) improve nutritional standards in rural areas
- ii) limit bulk cereal imports

- iii) increase cash crop production and
- iv) diversify the agricultural base

The policy objectives are:

- a) To diversify the agricultural production base with greater attention to horticulture and livestock development;
- b) To increase ground nut production and productivity in order to increase rural cash incomes and foreign exchange earnings;
- c) To develop functional rural credit markets;
- d) To improve access to inputs, research and seed multiplication;
- e) to increase production and productivity of cereals;
- f) to improve the income generating capacities of rural women.

Strategies

- a) Encourage efficient cotton growing and sesame production.
- b) Improve commercial poultry farming.
- c) Expand commercial horticulture production.
- d) Encourage mobilization of rural savings and harmonize NGO agricultural lending.
- e) Introduce and multiply improved varieties of maize, millet, sorghum and groundnut.

Recommendations

- a) Maintain crop diversity, there must be a thorough study of the crop and its environment.
- b) Soil and Water conservation must be promoted and encouraged for all farming systems
- c) A more holistic and environmentally sound Integrated Pest Management Program must be developed to reduce crop ravage due to pests.

3.3.5 LIVESTOCK

Policy Goals:

- i) To progressively diversify the livestock sub-sector by broadening the number of species, variety of breeds, products and by-products.
- ii) To improve the traditional production system and promote the development of a modern sector.
- iii) To enhance food security and self-sufficiency goals in terms of animal protein consumption.

- iv) to ensure efficiency and balance between livestock and the fragile environment by embarking on the rational and sustainable exploitation, management and conservation of range resources.

Strategies

- a) Promotion of livestock fattening schemes and artificial insemination programmes.
- b) Promotion of active community participation in management and utilization of range resources.
- c) Promotion of involvement of livestock professionals in private sector activities related to development of the industry.

Activities

- a) Domestication of Wild Species
- b) Support to farmers in terms of training and inputs.
- c) Inventory of Range Resources.
- d) Demarcation of Rangelands.
- e) Institutional and capacity building
- f) Introduction of exotic species
- g) Farmer training in feed resources management and utilization

3.3.6 WATER RESOURCES

The overall long-term goals are:

- a) Provision of adequate and safe water;
- b) Water resources assessment; and
- c) Contribution to the socio-economic development of the country through:

Gaps

- a) Lack of upper air monitoring station and marine meteorological station.
- b) Lack of a Provincial Headquarters to facilitate timely monitoring of the hydrological situation in the eastern half of the country.

Strategies

- a) Improve analysis of climate and hydrological aspects of drought and desertification monitoring;
- b) Identify, select and adopt basic software and hardware for the required processing

Activities

- a) Replace obsolete equipment and mend broken down structures in the Meteorological and Hydrological station Network.
- b) Improve analysis of climate and hydrological aspects of drought and desertification monitoring;
- c) Identify, select and adopt basic software and hardware for the required processing

3.3.7 LAND RESOURCES

Gaps

- a) Topographic maps (contour maps or digital elevation models) are not available from either the Department of Lands and Surveys or the National Environment Agency.
- b) The Unit's technological facilities are extremely limited.

Activities

- a) Prevention of illegal sand mining in coastal zone and to prevention indiscriminate mining activity country wide so as to prevent environmental degradation.
- b) Review and update Minerals Act to take into account current situation including environmental concerns.
- c) Monitoring of Coastal Erosion and Coastal Dynamics to provide necessary information on coastal dynamics for effective coastal zone management.
- d) Establishing closer cooperation with other government institutions involved in soil, hydro geological and other geology related matters - e.g Soil and Water Management Unit, Department of Water Resources.
- e) Establishing links with geological establishments within and outside the sub-region including international geological organisations.
- f) Upgrading skills of the Unit's personnel through training to ensure sufficient technical and managerial expertise and understanding to properly develop and manage all aspects of The Gambia's earth resources.

Strategic Recommendations:

- a) A massive and timely training programme should be launched to build up capacity in the Unit.
- b) Detailed mineral resource assessment through field investigation and laboratory analyses need to be undertaken.
- c) Detailed mapping and assessment of the Kundam clays with a view to establishing a ceramic industry in Basse should be conducted .
- d) Promotion of the mineralised beach sands (i.e. the ilmenite, rutile and zircon) for foreign investment.
- e) Strengthening the technical capability of the Geological Unit through academic training, attachment programmes.
- g) There is an urgent need for a review of the State Lands Act and forestry to resolve land ownership and private/community tree tenure issues.

3.3.8 POPULATION

Rapid population growth, increased urbanization and illiteracy are among the major threats to the protection and conservation of biological diversity in The Gambia. Over the past two decades the country's population has more than doubled and the average annual growth rate has risen to over 4.2 per cent. The rapid growth rate is characterized by a youthful population, high fertility rates, lower mortality rates and higher life expectancy. The higher population has meant higher demand for more food, fuelwood, timber, construction materials and other sources of income. Human settlements are generally small and widely spread which poses serious problems to the natural habitats. These settlement patterns have precipitated deforestation, wetland drainage, mangrove destruction and other forms of habitat destruction in the bid to expand agricultural land and obtain more products for subsistence. The resulting loss of habitats has led to increased threat to and loss of certain animal and plant species. Another major concern due to the growing population is the increased generation of solid and liquid waste which in addition to being a health hazard, is a threat to biodiversity.

a) Population Policy Goals

In 1992, the government adopted a comprehensive national population policy which has the following specific goals:

- I) To achieve a reduction in the rate of population growth in order to attain a balance

between population growth and the pace of economic progress, thereby ensuring sustained development.

- ii) To ensure a balanced spatial distribution of the population.
- iii) To promote the health and welfare of all Gambians.
- iv) To enhance the status of women, enabling them, among other things to participate in decision-making in respect of child-spacing and family size.

Strategies

To achieve the above goals, the policy outlined a set of strategies which include, inter alia:

- i) Increasing the voluntary use of traditional and modern methods of contraception.
- ii) Reducing the number of women marrying before age 16.
- iii) Improving the management of high-risk pregnancies.
- iv) Improving the nutritional status of women and children.
- v) Addressing the harmful and promoting helpful cultural attitudes and practices affecting the status of women.
- f) Slowing the pace of rural-urban migration.
- g) Regulating the effects of population growth on natural resources.

3.3.9 LEGISLATION AND POLICY GAPS

The policy and legislation governing the conservation and use of biological diversity in the Gambia is sectoral in nature, obsolete, too rigid and top bottom in approach. Although National Environment Management Act (NEMA), 1994 seeks to put in place a general framework for the conservation of biodiversity, its provisions are too general to serve that purpose. Provisions for public participation is virtually absent in the sectoral legislation, save the NEMA and the Draft Forest Bill. The regulatory regime is also riddled with gaps and serious legal conflicts. The situation is exacerbated by poor enforcement due to lack of trained staff, logistics, funds and other resources. The apparent gaps in the legislation include lack of explicit provisions for;

- ex-situ conservation,
- control of alien species and risks from genetically modified organisms,
- protection of threatened species and populations,
- regulation of access to genetic resources,
- protection of indigenous knowledge and intellectual property rights of local people,
- joint development and transfer of relevant technologies that use genetic resources

By and large, the existing sectoral legislation for biodiversity are not effective to assure successful conservation and sustainable use of biodiversity under the prevailing socio-economic circumstances. There is need to overhaul the present sectoral legislation. Two options exit. One is to review the various sectoral legislation and replace them with new ones. The second option is to develop a new framework legislation on biodiversity.

Sectoral Legal and Policy Gaps

State Department of Justice

- There are no adequate staff at the headquarters and there are no divisional branches of the State Department to effectively handle all cases related to violation of laws on the conservation and sustainable use of natural resources and the environment.
- There are very few State Attorneys who are trained in environmental law.
- The chiefs who preside over tribunals at the local level do not have any legal training.
- There are no public awareness programmes about the existing laws in general and those governing the conservation and use of natural resources in particular.

Wildlife

The Wildlife Conservation Act (1977) generally deals with the conservation and rational management of wildlife in The Gambia. Basically, it provides for an administrative structure, regulates the establishment of national parks, reserves and local sanctuaries. It also controls hunting, prohibits certain methods of hunting, sale, import and export of wild animals and also makes provision for enforcement powers. The Act could best be described as an anti-hunting legislation. The bulk of its provisions deal with the prevention of and regulation of hunting. Its framework is largely one of policing and punishment. It is very restrictive or even repressive. It does not provide for the recovery of threatened species nor does not also make any provision for control of alien species or the risks from genetically modified organisms. The main obstacle is the lack of capacity to enforce the provisions of the Act. There are very few enforcement officers (only 20) and consequently violations of the Act and therefore deterioration of the wildlife stock continues unabated. The alternative option is to adopt community conservation which is more cost-effective.

In summary, the following are the major gaps in the wildlife legislation which need to be addressed:

- There is no well-defined approved policy for wildlife conservation
- The Wildlife Act (1977) is too outdated, for example the penalties and fines imposed under this Act are too low to deter illegal action;
- The Act is too command oriented and not participatory in approach.
- There is no legal provision to encourage community participation in wildlife management.
- There is no legal provision to encourage partnerships between the Department of Wildlife Conservation and NGOs or the private sector.
- The enforcement of the provisions of the Act has been impeded by lack of capacity .

Forestry

The Forest Act, 1977 complimented by the Forest Regulations, 1978 is still the existing legislation on forests. A major revision of the Act is being carried out for the first time, but has not yet become law. The current Act is concerned mainly with the declaration of viable land as protected forests or forest parks. It is a criminal offence to start fires, pasture cattle, take forest produce, erect buildings in, hunt or fish and destroy forest property within such areas without a permit. Some trees are protected trees which may not be harvested.

The current forestry legislation has several gaps too. It does not provide for the participatory involvement of rural communities in forest planning or the power of rural communities to make rules covering local use of forests. This problem is further exacerbated by the current land tenure system. Although the land belongs to the people, by restricting access to and utilisation of the forests and forest resources, the land is effectively seized from them by the Government. The new forest policy which has been formulated based on the principle of community forest management will attempt to address this problem. The new forest law also emphasizes local ownership and management of the forests. However, its success will depend on the response and confidence of the rural communities. Serious and vigorous environmental education would therefore be required to sensitise the local communities.

In addition, the Act has the following gaps;

- It does not specifically cater for the means of combating desertification.
- It does not provide for an ecosystems approach to sustainable forest management.
- Provisions for control of alien species in forest areas are not included.

Fisheries

The Fisheries Act (1991), revised by Decrees no.44 and no.54 of 1995, provides for the management and development of inland and marine fisheries to ensure the optimum utilization of the fisheries resources for the benefit of the people in The Gambia. It attempts to control over-exploitation of fisheries resources by specifying the methods of fishing allowed and the mesh size of nets to be used. It contains provisions for the issuing of licenses to both local and foreign fishing vessels and prohibits the use of explosive poison or other noxious substance which aims at killing, stunning, disabling or catching fish or that makes fish more easily caught. The Act also makes provision for both technical and regional cooperation. It seeks to promote aquaculture through research and extension services and to promote markets for such products. The Act controls commercial access by foreign vessels and ensures that the country benefits from the exploitation of its fisheries resources by charging fees for the granting of fishing licenses.

Although the Act is fairly comprehensive, it has certain gaps as far as the conservation and

sustainable use of biodiversity is concerned. For example,

- It does not have any provisions designed to protect threatened species.
- It has no provision to control introduction of alien species or living modified organisms.
- The penalties for non-compliance are generally low

Land Tenure

Land tenure represents one of the main constraints to the conservation and rational management of forests, wildlife and their resources. The land tenure system in The Gambia is a mixture of customary and statutory rules. Under the customary rules, land is held on trust by heads of families for the benefit of the family members, clan or lineage and sometimes for the benefit of the entire community (community land). Under the Lands (Provinces) Act, 1991, land is vested in the District authorities for the use and common benefit of the community in which the land is situated. The State Lands Act, 1990, abolishes customary tenure in Banjul and Kombo St Mary Division and replaced it with a system of leasehold tenure. The object of the Act is to bring about ultimate uniformity in land tenure by vesting all lands to the State. The Act also excludes the ownership of any national waters, thus ensuring that there is no monopoly of fisheries and water resources by any individual. This may have a positive impact on biological diversity in that it puts a check on the exploitation of resources and in conjunction with other laws e.g. the Fisheries Act, it encourage the sustainable use of the fisheries and fisheries resources.

There is a provision in it which enables the Secretary of State responsible for the Act to designate provincial land as State Land. This means that most of the lands for forest and wildlife protected areas were originally under the jurisdictional limits of land governed under customary law. Thus declaring new protected areas, which originally belonged to the local people represents a direct appropriation of the properties of local communities into the hands of government. People see their lands as being seized from them by government, often without due compensation, and not only that their rights to exploit such lands were taken away. The result of such conflict is that it breeds a culture of outright resistance among the affected local communities to protected areas and direct opposition to the implementation of the legislation and projects in such areas.

Land Use Regulations, 1995

These Regulations classify land into uses, classes and land zones and refers to a schedule (I or II) which sets out the details. They require maps and development plans to be made and classified according to the schedules and proposal maps of draft local plans to indicate appropriate type of land use and intensity of development. The planning authority is required to review and decide on all applications for development activities that are permitted in a particular zone.

For purposes of biodiversity conservation, three land use zones are more directly relevant i.e 1) Open land which includes; land for agriculture, forest shrubs and vacant land; (2) special areas

including tourism areas, mining and quarrying, green belts and buffer zones and protected reserves; (3) Water areas which comprise water bodies and swamps and flooded areas. In protected reserves, green belts and buffer zones, no activities are allowed at all. Small- scale industry occupying not more than 100 m floor areas may be carried out in Forest Areas.

The legislation are fairly recent and their adequacy have not yet been tested to indicate any shortcomings. These Regulations have serious underpinnings on biodiversity matters for consideration. The restriction of development on water areas means that the aquatic life is protected. However the disposal of sewage effluent into water areas may be harmful to aquatic life and perhaps some swamp vegetation. Also tanks and reservoirs and treatment plants are allowed in rivers, creeks, canals, lakes etc. These could help minimise the hazards likely to be caused by the sewage disposal. However, leakages from such reservoirs, treatment tanks etc may also adversely affect water bodies and fishes if they contain hazardous substances.

Apart from the establishment of large poultry farms, no form of development is allowed in protected reserves. This means that the animals within the reserves would be protected human activities. Also the only a few human activities such as playing fields and recreational grounds are permitted in buffer zones and green belts (e.g. gardens, orchards, botanical gardens, parks, nurseries). This restriction, if adhered to, would have a positive impact on biological diversity. For the special areas reserved for tourism all types of activities or development in consonance with tourism development is allowed. This may have an adverse effect on biological diversity conservation in that trees may have to be cut down and animal life disrupted by such developments.

National Water Resources Council Act, 1980

This Act establishes a National Water Resources Council to serve as Governments policy making body for water resources development, utilization and conservation, prevention and control of water pollution and the control of effluent discharge into water bodies. The Act also establishes a Department of Water Resources for the purposes inter alia, of preparing plans for investigating the rational management, use, control and protection of water resources, exploring the existence, location and behavior of underground water and to ascertain the quantity of such underground water and executing and enforcing laws and regulations affecting water.

Plant Importation Act and Regulation, 1963

This Act basically enables the Secretary of State to make regulations which prohibit or regulate the importation of plants, seed, soil, manure, container straw or other packing material; the destruction of such goods found to be infected and related matters. However, it falls short of regulating the importation of living modified organisms (LMOs). Nevertheless, it is the most appropriate Act that could be amended to control the introduction of LMOs and alien species.

National Environmental Management Act, 1994.

This Act provides that the National Environment Agency (NEA), in consultation with the lead departments, has specific responsibility to promote conservation of biological diversity by developing national strategies integrating conservation and sustainable utilization of ethnic resources in public and private activities, identifying components of biological diversity in the country and maintain an inventory, prohibit and restrict trade or traffic in biological diversity and promote in-situ and ex-situ conservation of biological diversity. It contains provisions that are directly concerned with the protection and conservation of biodiversity in general, including; in-situ and ex-situ conservation. It gives the National Environment Management Council power to make regulations and policies that are aimed at conservation and sustainable utilization of biological diversity.

There are certain areas of conflicting roles between NEA and other sectoral departments as provided for in this Act. For example, in Section 33 (1), the Agency is given powers to promote in-situ conservation (including the management of protected areas). In The obligation under this part is to promote in-situ conservation. In Section 33 (2), the Agency is also given the power to develop guidelines for various biodiversity issues such as land use, selection and management of protected areas and buffer zones, protection of habitats and ecosystems etc. Unlike in other sections, there is no qualification on Section 33 to require consultation with the lead agencies in undertaking these roles. This clearly brings the NEA and the various line Departments concerned into direct conflict.

Similarly, Section 34 of the Act also makes no provision for consultation with the relevant sectoral departments. Section 35 of the Act also gave powers to the National Environment Management Council (NEMC) the power to make regulations prescribing guidelines for basically the same issues as are given to the NEA. This also breeds conflict and calls for some reflection and rationalisation. However, it is worthy of note that the NEMC is the policy making body and the NEA is the implementing organ of the NEMC policies. With effective communication between the two bodies, the issue of conflict may be avoided.

The above mentioned gaps notwithstanding, these provisions should be interpreted so as they require consultation. In practice, this has been the approach of the Agency.

Strategic Recommendations

General:

- 1) More Environmental Lawyers should be trained and a Legal Unit should be established in the National Environmental Agency with at least two lawyers.

- 2) More staff at the Attorney-General's Office should be trained in environmental law and the capacity of police prosecutors should be enhanced through training.
- 3) In line with the aspirations of Vision 2020, review the current land tenure system to make vest all rights to land in the government to facilitate easy declaration of land state land for conservation and other purposes without much community animosity.
- 4) Review and harmonise the existing legislation so as to remove areas of conflict and apparent gaps in coverage.

Wildlife

1. A review of the Wildlife Act with a view to bringing the same in line with modern trends. The penalties stipulated under the Act and Decree no 90 need to be reviewed as they are on the low side.
2. Include provisions in the legislation for a compensation mechanism for making good to those people affected, lands taken from them. There needs to be a balancing mechanism for the purpose of granting access in protected areas and the resources therein yet ensure conservation and rational utilization.
3. Put in place legal provision in the Act on a mechanism for fair and equitable sharing of revenue generated from protected areas.
4. Thoroughly review the land tenure system with a view to resolving the tenure conflicts

Forestry

1. Push for quick enactment of the new draft Forest Law to address gaps in the old legislation and include environmental issues and biodiversity.
2. Sensitise the local communities on the need for conservation and the new concept encapsulated in the draft forestry legislation.
3. Put in place a continuing environmental education training programme for rural communities and also management programmes for communities involved in community forests.
4. Review the land tenure system with a view to make same more conducive to conservation of biological diversity.
5. Enhance the human and material resources of the forestry department.

Fisheries

1. Review fisheries legislation with a view to protect certain endangered species.
2. Put in place programmes to enhance the human and material resource capacity of the Fisheries Department.
3. Put in place permanent surveillance posts to compliment the activities of the Gambia Navy.

3.3.10 CONVENTIONS

Gaps

- a) There is no formal national-level coordination and exchange of information under the different International Conventions.
- b) There is no mechanism for joint management of transfrontier protected areas affected by different international or regional treaties.
- c) There is no joint research and monitoring, and harmonization of management planning, or sharing of facilities and costs in the implementation of the different Conventions at the national level.

Strategic Recommendations

- a) There is a need for staff exchange to foster closer collaboration and enhance expertise knowledge on the existing trans-frontier protected areas.
- b) Twin the Nuimi National Park and the Sine Saloum Delta National Park to form an international Biosphere Reserve.
- c) A joint Ramsar site and Biosphere Reserve should be established with the Delta du Saloum National Park. Joint planning between the two parks should be developed, in particular joint management of mangrove, joint protection of fish and shrimp stocks, and joint surveillance of the Parks and especially the adjacent marine areas.
- d) All the Conventions are very relevant and are recommended to be ratified by The Gambia for the preservation of biodiversity.

CHAPTER 4: THE ACTION PLAN

4.1 CROSS-CUTTING PRIORITY ACTIONS

4.1.1 CAPACITY BUILDING

4.1.2 POLICY AND LEGISLATION

4.1.3

4.2 SECTORAL ACTION PLANS

4.1 PARKS AND WILDLIFE MANAGEMENT

1. Establish an effective policy and legal framework

- Review and update the current Wildlife Act (1975) to be in line with environmental and socio-economic objectives of other national programmes as well as the international conventions and agreements such as the CBD, CITES, CMS and Ramsar.
- Develop a comprehensive people-based wildlife management policy which is in line with the environmental and socio-economic objectives of The Gambia's programme for sustainable development. The new policy should include provisions on the relationship between people and protected areas, taking into account the multiple use concept and the role local communities play in managing resources as the ultimate protectors and beneficiaries.

2. Identify, demarcate and promote the protect natural heritage sites;

- Carry out an inventory of the heritage sites including; scare graves, traditional circumcision sites, and areas renowned for idol/traditional worship such as “Kachikally” in Bakau, “Folunko” in Kartong, and “Mbulumanoto” in Dankunku.
 - Demarcate and protect the important heritage sites.
3. *Document, recognise and protect the indigenous knowledge of local communities*
- Document, preserve and protect the indigenous knowledge, innovations and practices of local communities associated with biodiversity and the heritage sites;
 - Analyse the relationship between families/clans and specific species of animals and birds since it has a direct impact on the management and use of several species.
4. *Expand the protected area system*
- Increase the total wildlife protected area from the current 3.5% to 5% in order to protect key representative ecosystems and achieve a regional balance of protected area systems. Appropriate sites with potential high ecological value shall be selected in the eastern part of the country.
5. *Carry out research, assessment and monitoring*
- Prepare and update the checklists of terrestrial and marine mammals and avifauna to ascertain the number of species represented in The Gambia.
 - Conduct research and produce documentation on levels of hunting, poaching, and various uses of biodiversity resources
6. *Promote the sustainable utilisation and conservation of biodiversity resources;*
- Assess and take into account the local people’s needs in all biodiversity conservation initiatives;
 - Ensure that the conservation of biodiversity and the maintenance of cultural diversity are complementary to each other;
 - Maintain the customary, subsistence uses of biological resources and the traditional property systems which are compatible with the conservation and sustainable use of biodiversity;
 - Preserve the cultural values pertaining to nature and cultural or religious sites.
7. *Empower local communities to manage parks and reserves and wildlife outside PA's*
- Review the systems of community participation, access to and ownership of resources, cost

sharing and investment in the management and conservation of protected areas.

- Empower local communities to participate in the planning and management of protected areas.
- Develop and implement community conservation projects/programmes
- Review policies and regulations on the killing of animals and birds, that are regarded as pests to take into account the concerns and aspirations of local communities.

8. *Improve access to wildlife resources*

- Improve access to wildlife resources in and outside protected areas by local communities, researchers and tourists, within the overall framework provided by the national wildlife management policy and legislation and international conventions.

9. *Establish and maintain buffer zones around protected areas*

- Create buffer zones around all protected areas to act as corridor for wild animals and for protection against encroachment and intensive use.
- Enrich the existing buffer zones.
- Identify and allow compatible human activities, such as bee-keeping, basketry, etc in the buffer zones by local communities

10. *Promote environmentally sound and sustainable development in areas near protected areas*

- Identify and promote sustainable land use practices, such as woodlots, vegetable gardens, bee keeping to improve the income base of surrounding local communities;
- Encourage the planting of rare species to provide communities with valuable source of traditional medicines while enhancing biodiversity.

11. *Adopt measures for the recovery and re-introduction of threatened species*

- Conduct a programme to re-introduce extinct plant and animal species

12. *Build the capacity of the Department of Parks and Wildlife Management*

- Train DPWM staff in the relevant areas and necessary skills, including; management planning, biodiversity valuation, assessment and monitoring, etc.
- Establish and equip a Biodiversity Unit under the DWPM to act as the Secretariat to facilitate and coordinate the implementation of the NBSAP;
- Set up an Eco-tourism Unit in the DPWM

4.2 THE FORESTRY SECTOR:

1. Adopt measures to address the causes of loss and degradation of all natural forests

Some of the major causes of forest biodiversity loss and fragmentation are conversion of forests to agricultural systems, unsustainable levels of harvesting of forest products, illegal tree felling for commercial purposes, establishment of new settlements, overgrazing/browsing especially during the dry season. These factors have led to adverse impacts on genepool of forest biodiversity, the population viability, the ecological balance of natural communities, and ecosystem processes and functions. To remedy this trend, the following actions shall be taken;

- Empower local communities to monitor illegal activities,
- Stop establishment of new settlements in forest areas
- Discourage lopping of branches to provide browse for livestock and offenders should be punished,
- Encourage every member of the community to actively participate in tree planting activities,
- Sensitize the public continuously through media campaigns on the importance of the forests and the maintenance of vegetation cover
- Ban the clearing of virgin forest areas

2. Adopt an ecosystem approach to forest management

- Analyse and integrate the functional entities, people and the multiple use aspects in the management plans of all forest ecosystems.
- Elaborate and implement criteria and indicators of sustainable forest management
- Direct the forest administration and individual forest officers to see beyond trees and consider and manage forests as entire ecosystems

3. Promote collaborative forestry management involving local communities

- Discourage the traditional forestry policing approach in favour of involving the local communities in the management and rational utilisation of forest resources and in the making of management decisions, policies, and practices as well as the designing, implementation, and evaluation of forest programmes and projects.
- Involve women in the development and implementation of multiple use forestry projects
- Address the immediate needs and wishes of the local people when developing forest policies and management plans,
- Return the ownership rights to the local communities.
- Integrate the indigenous knowledge and practices of local communities in all forest

management initiatives.

- Review the role of forestry officers to change from control to facilitation.

4. Develop and apply methodologies and standard criteria for valuing benefits from the forest biodiversity

The economic value of biodiversity stems from the many benefits derived directly from it including the opportunities for tourism, education, research, food security, medicine and energy for domestic use and also habitat security for our fauna and marine life. It is however often difficult to attach economic value to some of these benefits which are non marketed. The following actions are proposed:

- Develop standard criteria for valuing benefits from the biodiversity in order to arrive at indices which can be used to assess the economic value of biodiversity.
- Train key personnel in the application of biodiversity valuation methods
- Integrate values of biodiversity into the national accounting system

5. Adopt economic measures and incentives to promote the conservation and sustainable use of forest resources

- Reduce taxes on imported forest products to make their prices competitive enough to encourage the importation of such products, hence protecting the country's forest cover.
- Subsidise costs for alternatives to fire wood, such as gas and electricity, to make them more affordable to encourage wide usage by the general public to minimise cutting of firewood and charcoal burning

5. Harmonise existing laws and policies and develop a policy and legislation on biodiversity

As sectoral policies review continues, the opportunity shall be used to harmonise policies related to the protection, conservation and use of biodiversity with a view of coming up with a clear national biodiversity policy to be backed by an enforceable legislation.

6. Establish and implement measures to control bush fires

Bush fires are one of the major threats to biodiversity in The Gambia. In addition to destruction of the vegetation, bush fires have led to death of several wild animals resulting in impoverishment of the habitat in terms of species composition and density. To reduce incidence of bush fires, the following measures are proposed;

- ban smoking in all public places, vehicles, forest reserves and national parks and reserves
- introduce and encourage the use modern methods of honey extraction,

- sensitize herders and hunters about the dangers of fire and the need to refrain from lighting unnecessary fires,
- reintroduce prescribed burning and create fire belts,
- strengthen the spirit of community ownership of the forest and set up Village Fire Fighting Committees and provide them with fire fighting equipment and mobility for effective monitoring of fires, and
- institute stiffer penalties for culprits.

7. Improve the forest licensing system

There has been an increasing trend of abusing the existing forest licensing system whereby license holders have ignored the conditions stipulated in the license and used licenses outside the authorised areas, for different activities and species, or beyond the time limit authorized or the same license has been used several people. In order to address this problem, the Department of Forestry and all its agents will adopt the following measures in addition to routine enforcement;

- Establish village level licensing Committees and empower them to enforce the law and provide effective monitoring of the activities of license holders;
- Ensure thorough scrutiny of applicants and applications for the issue of licenses paying particular attention to equipment to be used in the harvesting of the forest products
- Limit and regulate the number of licenses to be issued to minimize abuse.

8. Enhance the surveillance of forest parks

- increase the number of extension staff of the Forestry Department,
- Establish local Forest Park Communities and provide them with the necessary means of mobility and other necessary tools and equipment.

9. Promote public education and awareness about sustainable forest management

- Sensitize the public about the consequences of unsustainable forest exploitation
- Integrate public awareness programmes on sustainable management and utilisation of natural resources in all projects that are implemented at the grassroots level
- Organize farmer/extension agent training workshops at the community level;
- Sensitize and train local people on multiple-use forestry

4.3 THE FISHERIES SECTOR

The proposed action plan for the fisheries sector focusses on the following key areas: conservation of the resource base, regulation of the artisanal and industrial sub-sectors, enhancement of the legal and institutional framework, adoption of an investment strategy; mobilisation of the necessary human and financial resources, and the economic aspects.

The following actions are suggested;

1. *Identify and protect fishing habitats from destructive activities*

- Halt illegal harvesting of mangroves which are important fish breeding areas.
- Identify key fish breeding sites and restrict their use during certain seasons to encourage fish regeneration
- Identify and monitor the effects of threats to fisheries habitats, and the fisheries species and develop appropriate mitigation measures

2. *Conduct research, assessment and monitoring of fisheries species and habitats*

- Carry out studies to critically examine fish habitats and the fisheries ecology (breeding, feeding, migration patterns, etc);
- Analyse the factors affecting the regeneration and distribution of the fisheries. These studies should also analyse the fish consumption levels and species preferences
- Conduct in-depth tailored research and surveys at reasonably regular intervals to monitor the abundance, location, and biological characteristics of individual and groups of species and habitats as essential basic management tool and to allow prediction of likely changes and their effects.
- Carry out studies to establish biomass and potentials (Maximum Sustainable Yield, MSY) of individual species, particularly the highly commercial species that are under intense fishing pressure
- Carry out in-depth studies of mangroves in relation to their biology, function and exploitation to provide data necessary for designing their protection and management strategies.

3. *Promote participatory approaches to fisheries management*

Participatory management is an ideal management approach in the open access nature of the fishery resources like in The Gambia.

- Review the current government's fisheries management approaches of enforcement, regulation and development.
- Involve local fishermen, resource users and other stakeholders in the planning, control, production and management and monitoring of the fisheries resources to help to achieve a balance between utilisation and regeneration rate of stocks;
- Develop mechanisms to ensure local ownership rights of fisheries resources
- Sensitise local communities and resource users about the state of the resources and the existing policies and legislation;

- Legalise community based fisheries management mechanisms and establish co-management systems.
4. *Study and integrate indigenous knowledge in fisheries management*
- Analyse, harmonise and adopt useful indigenous knowledge of the sea/river fisheries, type of species, their regeneration capacities and trends.
 - Promote integration of traditional management systems into the conventional modern fisheries management systems.
5. *Enhance and streamline the fishing control and regulation mechanisms*
- Ensure adequate and effective regulation and control of commercial fishing by trawlers, which often involves the killing and dumping of fish species not considered commercially important.
 - Develop comprehensive long-range plans and strategies for the conservation and sustainable use of fisheries resources
6. *Encourage and support small-scale fishing*
- Support artisanal fishermen so that they may not be easily marginalised and disturbed by big industrial firms with sophisticated fishing gear.
 - Review the issuance of fishing licenses especially in the execution of appropriate differential treatment of citizens as a way of motivating them to venture into the fishing industry.
 - Examine the role of women in fish processing and smoking and seek ways of assisting them;
7. *Promote Aquaculture and Mariculture*
- Develop and promote aquaculture especially in the freshwater zones of the River Gambia, with a view to salvage the threatened fish species.
 - Establish means for restocking the inland waters with some of the rarer fish species.
 - Promote fish farming on a pilot basis and encourage the private sector involvement.
8. *Enhance public education and awareness about fisheries*
- Organise sensitisation seminars and workshops for the fishing industry and resource users to create awareness and help to increase their knowledge and skills for the better

management and use of fisheries resources.

9. *Promote and strengthen regional and international cooperation in fisheries management*

- Establish and maintain regional and international collaboration in research, training, fish stock assessment and regulation, bearing in mind the nature of the resources (multi-species) and the shared stocks.

10. *Establish protected areas for fisheries conservation*

- Identify, demarcate and gazette key freshwater and coastal and marine protected areas
- Establish buffer zones around new PA's, where appropriate
- Develop management plans for the PA's established

11. *Control the introduction alien species and living modified organisms*

- Establish monitoring and regulatory mechanisms to detect and control the introduction of alien species by whatever means, especially in inland waters which are closed systems.
- Develop a legislation on the control of alien species

12. *Build and maintain the capacity for fisheries management*

- Strengthen the technical competence of the Department of Fisheries and other relevant agencies in terms of research, management and surveillance to improve the information base for the effectiveness of management actions and monitoring activities.
- Establish a Fisheries Consultative Committee to provide timely corrective management measures, ensure better understanding of fisheries policies and promote and maintain a balanced public and private sector management.
- Establish a Mangrove Committee under the Department of Fisheries to promote public awareness and establish co-management linkages for the protection and conservation of this important fisheries ecosystem.

4.4 AGRICULTURAL SECTOR

1. *Promote the conservation and sustainable use of indigenous plant genetic resources*

- Encourage and promote the growing of indigenous crop varieties and land races
- Develop and implement a research programme on indigenous crop varieties and

- medicinal plants
 - Improve traditional farming systems
2. *Develop the horticultural sub-sector to a high potential*
- Identify, introduce, and develop appropriate market incentives and storage facilities.
 - Diversify species to allow a large population and varieties of horticultural species and fully explore indigenous species such as 'bush yam'
 - Revive and fully involve the Department of Cooperation, the Gambia Cooperative Union and the Gambia Groundnut Corporation in the horticultural sub-sector, working very closely with the community level societies
3. *Promote sustainable agricultural practices and organic farming*
- Promote low input farming systems including the use of legumes, green manures and nitrogen fixing trees (NFTs), and inoculation of rhizobium bacteria so as maintain nutrient cycling and biological nitrogen fixation.
 - Encourage and support farmers to adopt regular use of organic manure from crop residues, animal dung and compost to promote the soil biotic capacity;
 - Promote traditional agro-forestry systems
 - Develop and implement an Integrated Pest Management Programme
4. *Promote soil and water conservation measures both at the lowlands and uplands*
- Encourage farmers to plough their fields such that ridges are perpendicular to the overland flow of water.
 - Divert or slow down soil erosion from farms by planting trees and grass in the upper reaches.
 - Encourage farmers to stop clearing all the land cover on the farmland during land preparation.
 - Conduct reconnaissance and carry out detailed soil studies, characterization and land evaluation of sites where soil conservation structures are needed and assess the civil works, agronomic follow-up, and monitoring and evaluation activities necessary.
 - Identify and train farmers in appropriate soil conservation practices
5. *Discourage continuous cropping and encourage crop rotation*
- Encourage farmers to allow their farms to fallow so as to regain fertility.
 - Promote agroforestry as a viable land use system.

- Promote sustainable agro-ecosystems and-nutrient cycling through crop rotations, crop/livestock mixed farming systems, inter-cropping and mixed cropping
- Address the underlying problem of population growth by identifying and promoting, in consultation with local communities, effective population control measures at the local level.

6. *Discourage the use of chemical fertilizers and encourage the use of organic manure.*

- Introduce and promote composting of organic waste at the village level
- Farmers and agricultural extension agents should manage crop residues and other organic material for conversion and use as organic fertilizers.
- Extension workers should improve their advice to farmers on the application of chemical fertilizers.
- Promote sustainable crop production through low input approaches e.g. use of green manure in rice production,
- Develop and adopt low input farming systems through participatory research.

7. *Identify and adopt drought mitigation measures*

- Construct anti-saline dikes
- Introduce salt tolerant, drought tolerant and short cycle species of crops.
- Develop new types of agricultural crops from the wild in collaboration with bilateral and international organizations, through joint research and monitoring programs, and exchange of genetic materials information and materials.
- Institutionalise seed production by establishing a seed technology unit under the National Agricultural Research Institute (NARI).
- Carry out a study of the crops and their environment to enable crops to grow in areas best suited for them and to maintain crop diversity.

8. *Assess the incidence of pests and strigga and develop appropriate mitigation measures.*

- To mitigate the effects of pests the communities should establish wildlife buffer zones and should avoid encroaching onto traditional grazing lands of wild animals.
- For farm lands, pest-scaring devices, such as battery operate and timed toy guns and explosives, should be employed to scare away agrarian pests. A more holistic and environmentally sound Integrated Pest Management Program must be developed to reduce crop ravage due to pests.

9. *Review the land tenure system*

- Establish conditions that will allow unconditional access to land to local farmers at the beginning of the rainy season so that efforts of landless farmers to produce food are not frustrated.

10. *Promote public awareness about appropriate management of agricultural resources*

- Develop and implement public awareness programmes including use of the mass media, local level workshops, farmer visits to regions of “success stories,” and farmer level field trials of scientifically tested and approved practices.

4.5 THE LIVESTOCK SECTOR

For sustainable use and conservation of biological diversity in the livestock sub-sector the following actions are proposed.

1. *Promote the conservation and sustainable use of indigenous animal genetic resources*

- Encourage and promote the rearing of local breeds such as the Ndama cattle, Djallonke sheep and West African Dwarf goats by local and commercial farmers
- Improve traditional poultry production
- Promote the domestication of fast breeding wild animals that are socially acceptable, in order to meet the substantially increasing demand for meat. The possible candidates for domestication include the Giant rat or pouched rat (*Cricetomys gambianus*), the Cane rat or Grass cutter (*Thryonomys swinderianus*) and the Spurs winged goose or Gambian goose (*Plectopterus gambiensis*).
- Promote the production of smaller species through integration in the traditional production system.

2. *Increase the production levels and the diversity of sources of animal protein*

- Improve the production of cattle and small ruminants through better management, disease control, improved feeding and nutrition, and genetic improvement through selection and breeding in order to increase productivity in a biologically efficient and financially profitable manner.
- Promote the rearing of short-cycled species including ducks, guinea fowls, turkeys, geese and rabbit in order to meet the growing demand for meat and other livestock products for both the domestic market and the tourist industry.
- Promote cow-calf herds to increase production of milk and young animals for marketing or fattening.

- Establish peri-urban dairy industries to boost domestic milk production in order to meet the growing demand for milk and other dairy products in the expanding urban centers.
 - Promote bee keeping.
3. *Carry out assessments, evaluation and analysis of range resources*
- Conduct research to document range conditions and trends.
 - Carry out studies and inventories in order to identify and classify range sites in accordance with their relative forage value, biomass accumulation and tolerance to repeated grazing
 - Carry out assessment of the carrying capacities of different grazing areas in different seasons to determine the maximum numbers of livestock they can hold, considering the palatability and nutritional value of their pasture, the biomass production levels and regeneration rates
4. *Promote the rational use of the range resources and keep livestock numbers in balance with the carrying capacity of the rangelands.*
- Limit the number of livestock to the carrying capacity of each range unit, measured in the standard sahel Tropical Bovine Unit (TBU) i.e equivalent to one beast weighing 250 kg,
 - Develop sound grazing management systems which would help to ensure optimum dry matter and nutrient intake by the grazing animals, perpetuate soil-plant base resources, increase ground cover, stabilise soils, increase soil organic matter and reduce noxious plant species.
 - Alternate periods of grazing and rest to manage and maintain the forage resource base.
 - Adopt de-stocking as a viable strategy to relieve pressure on the rangelands. For example, the number of cows which no longer produce calves or milk should be reduced.
 - Match the kind of livestock most suited to the forage supply by a particular range unit and the objectives of management since different kinds of stock (cattle, sheep, goats, donkeys and horses) have different preferences of various types of vegetation and/or plant morphological units within a range.
5. *Develop a range management strategy and plan*
- This rangeland management strategy should include; grazing management, fire control, rangeland improvement, fallow land improvement, animal health and improved animal feeding techniques.
6. *Encourage supplementary feeding, especially during the dry season*

- Conserve feed resources (crop residues) and the use of fodder trees for dry season feeding to alleviate pressure on the range resources.
- Establish feed mills and utilise locally produced grains and agricultural by-products to minimize reliance on imported feeds.

7. *Mobilise and sensitise farmers to adopt appropriate methods and practices*

- Mobilise local people into farmer and herder associations such as the Livestock Owners Associations (LOA).
- Sensitise and educate the public on the methods to control bush fires and alien species, appropriate stocking densities, range management techniques and other issues.
- Strengthen the extension services

8. *Improve the water supply systems for animals*

- Provide adequate and well-distributed water points throughout the country.
- Increase the number of access ways to the watering points to avoid over- trampling of vegetation and permanent trails.

THE BIODIVERSITY ACTION PLAN: THE SECTORAL MATRIX

STRATEGIES	ACTIVITIES	ACTORS	OUTPUT/INDICATORS	SCHEDULE	ESTIMA COST (U
WILDLIFE SECTOR					
Establish an effective policy and legal framework	<ul style="list-style-type: none"> Update the Wildlife Act Develop a Comprehensive People-based Wildlife Management Policy 	<ul style="list-style-type: none"> - DPWM - AG's Chambers - NEA (ANR WG) - Relevant sectors - Local communities 	<ul style="list-style-type: none"> New Wildlife Act enacted by the year 2000 New wildlife policy in place by 1999 	1998-2000	\$ 80,000
Identify, demarcate and promote the protection of natural heritage sites;	<ul style="list-style-type: none"> Carry out an inventory of the heritage sites. Demarcate and protect the important heritage sites. 	<ul style="list-style-type: none"> - DPWM - MTC - DLS, DPPH - Local communities 	<ul style="list-style-type: none"> Directory of heritage sites New heritage sites gazetted 	1998 - 2003	\$ 100, 00
Document, preserve and protect the indigenous knowledge of local communities	<ul style="list-style-type: none"> Document, preserve and protect the indigenous knowledge, innovations and practices of local communities associated with biodiversity and the heritage sites; Analyse the relationship between families/clans and specific species of animals and birds since it has a direct impact on the management and use of several species. Enact a law to protect the indigenous knowledge and intellectual property rights of local people. 	<ul style="list-style-type: none"> - DPWM - MTC - NEA - Local communities - NGOs - AGs Chambers 	<ul style="list-style-type: none"> Research/case study reports Legislation on Indigenous knowledge and IPR 	1998 - 2003	\$ 42,000
Expand the wildlife protected area system to 5%	<ul style="list-style-type: none"> Develop guidelines for selection of PAs Identify and select sites with potential high ecological value Carry out an assessment of the sites Gazette the new selected sites at PAs 	<ul style="list-style-type: none"> - DPWM - DLS - AGs Chambers - Local authorities - Local communities 	<ul style="list-style-type: none"> Guidelines on selection of PAs New PAs (national parks/nature reserves) established 	1999 - 2008	\$ 1,500,0
Develop a biodiversity research, assessment and	<ul style="list-style-type: none"> Prepare and update the checklists of terrestrial and marine mammals and 	<ul style="list-style-type: none"> - DPWM - Local governments 	<ul style="list-style-type: none"> Cchecklists of animals/birds 	1999 - 2009	\$ 500,000

monitoring programme	<ul style="list-style-type: none"> • avifauna • Conduct research and document the levels of hunting, poaching, and various uses of biodiversity resources 	<ul style="list-style-type: none"> - Local communities, hunters, birdwatchers 	<ul style="list-style-type: none"> • Research reports 		
Promote the sustainable utilisation and conservation of biodiversity resources	<ul style="list-style-type: none"> • Ensure that local people's needs are taken into account in all biodiversity conservation initiatives; • Ensure that the conservation of biodiversity and the maintenance of cultural diversity are complementary to each other; • Maintain the customary subsistence uses of biological resources and the traditional property systems • Preserve the cultural values pertaining to nature and cultural or religious sites. 	<ul style="list-style-type: none"> - DPWM - MTC - Local authorities - Local communities 	<ul style="list-style-type: none"> • Customary uses of biodiversity promoted 	1998 -	\$
Empower local communities to manage parks and reserves and control of wildlife outside PAs	<ul style="list-style-type: none"> • Review the systems of community participation, access to and ownership of resources, cost sharing and investment in PAs • Empower local communities to participate in the planning and management of PAs • Establish community conservation programmes • Review policies and regulations on the killing of animals and birds, that are regarded as pests to take into account the concerns and aspirations of local communities. 	<ul style="list-style-type: none"> - DPWM - MTC - Local authorities - Local communities 	<ul style="list-style-type: none"> • Guidelines on community participation in wildlife management • Community conservation programmes established • New guidelines on the control of vermins • Conflicts between park authorities and local communities minimised 	1998 -	\$ 1,500,00
Improve access to wildlife resources in and outside protected areas by local communities, researchers and tourists	<ul style="list-style-type: none"> • Establish multiple use zones within PAs • Develop guidelines and codes of conduct on access to resources within the multiple use zones • Establish local Committees to regulate access to resources within their areas 	<ul style="list-style-type: none"> - DPWM - Local authorities - Local communities 	<ul style="list-style-type: none"> • Multiple use zones established within PAs • Access guidelines established • Local Access Regulation Committees established 	1999 - 2003	\$ 16,000
Establish and maintain buffer zones around protected areas	<ul style="list-style-type: none"> • Create buffer zones around all protected areas to act as corridor for wild animals and for protection against encroachment 	<ul style="list-style-type: none"> - DPWM - Local communities - Local authorities 	<ul style="list-style-type: none"> • Buffer zones established around all PAs • Buffer zones enriched and 	1999 - 2009	\$ 100,000

	<p>and intensive use.</p> <ul style="list-style-type: none"> • Enrich the existing buffer zones. • Identify and allow compatible human activities, such as bee-keeping, basketry, etc in the buffer zones by local communities 		<p>sustainably used.</p>	
<p>Promote environmentally sound and sustainable land use and development in areas near protected areas</p>	<ul style="list-style-type: none"> • Identify and promote sustainable land use practices, such as woodlots, vegetable gardens, bee keeping to improve the income base of surrounding local communities; • Encourage the planting of rare species to provide communities with valuable source of traditional medicines while enhancing biodiversity. 	<ul style="list-style-type: none"> - DPWM - Local authorities - NEA - NGOs - Local communities 	<ul style="list-style-type: none"> • Sustainable land use activities adopted by local communities 	<p>1998 -</p> <p>\$ 570,000</p>
<p>Adopt measures for the recovery and re-introduction of threatened species</p>	<ul style="list-style-type: none"> • Implement a programme to re-introduce extinct plant and animal species 	<ul style="list-style-type: none"> - DPWM 	<ul style="list-style-type: none"> • Recovery programme for threatened species implemented 	<p>1999 -</p> <p>1,000,000</p>
<p>Build the capacity of the Department of Parks and Wildlife Management</p>	<ul style="list-style-type: none"> • Carry out a training needs assessment and training programme • Train DPWM staff (on-job and abroad) in the relevant areas and necessary skills, including; management planning, biodiversity valuation, assessment and monitoring, etc. • Establish and equip a Biodiversity Unit under the DWPM to act as the Secretariat to facilitate and coordinate the implementation of the NBSAP; • Set up an Eco-tourism Unit in the DPWM • Procure equipment, tools, vehicles and other necessary materials for all the national parks. 	<ul style="list-style-type: none"> - DPWM - MoE - NEA - External Training Institutions 	<ul style="list-style-type: none"> • Training Needs Assessment Report and Training Programme developed • All DPWM staff trained in relevant areas. • Biodiversity Unit established • Ecotourism Unit established • National Parks provided with key equipment and materials 	<p>1999 - 2003</p> <p>\$ 1,700,0</p>

FORESTRY SECTOR

STRATEGIES	ACTIVITIES	ACTORS	OUTPUTS/INDICATORS	SCHEDULE	COST (U
<p>Adopt measures to address the causes of loss and degradation of all natural forests</p>	<ul style="list-style-type: none"> • Carry out an analysis of measures to mitigate the underlying causes of forest biodiversity loss. • Stop establishment of new settlements in forest areas • Discourage lopping of branches to provide browse for livestock and offenders should be punished, • Empower local communities to monitor illegal activities • Encourage every member of the community to actively participate in tree planting activities, • Sensitise the public continuously through media campaigns on the importance of the forests and the maintenance of vegetation cover • Ban the clearing of virgin forest areas 				
<p>Adopt an ecosystem approach to forest management</p>	<ul style="list-style-type: none"> • Analyse and integrate the functional entities, people and the multiple use aspects in the management plans of all forest ecosystems. • Elaborate and implement criteria and indicators of sustainable forest management 				
<p>Promote collaborative forestry management involving local communities</p>	<ul style="list-style-type: none"> • Discourage the "policing approach" in favour of involving the local communities in the management and rational utilisation of forest resources • Promote community forestry agreements through support to communities • Involve women in the development and implementation of multiple use forestry projects 				

	<ul style="list-style-type: none"> • Address the immediate needs and wishes of the local people when developing forest policies and management plans, Return the ownership rights to the local communities. • Integrate the indigenous knowledge and practices of local communities in all forest management initiatives. • Re-train forestry officers to re-orient their roles from control to facilitation 				
Develop and apply and methodologies/ standard criteria for valuing benefits from the forest biodiversity	<ul style="list-style-type: none"> • Develop standard criteria for valuing benefits from the biodiversity in order to arrive at indices which can be used to assess the economic value of biodiversity. • Train key personnel in the application of biodiversity valuation methods • Integrate values of biodiversity into the national accounting system 				
Adopt economic measures and incentives to promote the conservation and sustainable use of forest resources	<ul style="list-style-type: none"> • Reduce taxes on imported forest products to make their prices competitive enough to encourage the importation of such products, hence protecting the country's forest cover. • Subsidise costs for alternatives to fire wood, such as gas and electricity, to make them more affordable to encourage wide usage by the general public to minimise cutting of firewood and charcoal burning 				
Harmonise existing laws and policies and develop a policy and legislation on biodiversity	<ul style="list-style-type: none"> • Review and harmonise sectoral policies and laws related to the protection, conservation and use of biodiversity 				
Establish and implement measures to control bush fires	<ul style="list-style-type: none"> • Ban smoking in all public places, vehicles, forest reserves and national parks and reserves • Introduce and encourage the use modern 				

				<p>methods of honey extraction,</p> <ul style="list-style-type: none"> • Sensitize herders and hunters about the dangers of fire and the need to refrain from lighting unnecessary fires, • Reintroduce prescribed burning and create fire belts, • Strengthen the spirit of community ownership of the forest and set up Village Fire Fighting Committees and provide them with fire fighting equipment and mobility for effective monitoring of fires, and • institute stiffer penalties for culprits. 			
<p>Improve the forest licensing system</p>				<ul style="list-style-type: none"> • Establish village level licensing Committees and empower them to enforce the law and provide effective monitoring of the activities of license holders, • Ensure thorough scrutiny of applicants and applications for the issue of licenses paying particular attention to equipment to be used in the harvesting of the forest products • Limit and regulate the number of licenses to be issued to minimize abuse. 			
<p>Enhance the surveillance of forest parks</p>				<ul style="list-style-type: none"> • Increase the number of extension staff of the Forestry Department, • Establish local Forest Park Communities and provide them with the necessary means of mobility and other tools 			
<p>Promote public education and awareness about sustainable forest management</p>				<ul style="list-style-type: none"> • Sensitize the public about the consequences of unsustainable forest exploitation • Integrate public awareness programmes on sustainable management and utilisation of natural resources in all 			

				<p>projects that are implemented at the grassroots level</p> <ul style="list-style-type: none"> Organise farmer/extension agent training workshops at the community level; Sensitize and train local people on multiple-use forestry 					
FISHERIES SECTOR									
Identify and protect fishing habitats from destructive activities				<ul style="list-style-type: none"> Halt illegal harvesting of mangroves which are important fish breeding areas. Identify key fish breeding sites and restrict their use at certain times to encourage fish regeneration Identify and monitor the effects of threats to fisheries habitats, and the fisheries species and develop appropriate mitigation measures 					
Conduct research, assessment and monitoring of fisheries species and habitats				<ul style="list-style-type: none"> Develop and implement a fisheries species inventory plan Carry out studies to examine fish habitats and the fisheries taxonomy, biology and ecology (breeding, feeding, migration patterns, etc); Analyse the factors affecting the regeneration and distribution of the fisheries. These studies should also analyse the fish consumption levels and species preferences Conduct in-depth tailored research and surveys, at reasonably regular intervals, to monitor the abundance, location, biological characteristics of species and habitats to allow prediction of likely changes and their effects. Carry out studies to establish biomass and potentials (Maximum Sustainable Yield, MSY) of individual species, particularly the highly commercial species that are 					

	<ul style="list-style-type: none"> under more intense fishing pressure Carry out in-depth studies of mangroves-their biology, function and exploitation to provide data necessary for designing their protection and management strategies. 				
Promote participatory approaches to fisheries management	<ul style="list-style-type: none"> Review the current government's fisheries management approaches of enforcement, regulation and development. Involve local fishermen, resource users and other stakeholders in the planning, control, production and management and monitoring of the fisheries resources. Develop mechanisms to ensure local ownership rights of fisheries resources Sensitise local communities and resource users about the state of the resources and the existing policies and legislation; Legalise community based fisheries management mechanisms and establish co-management systems 				
Study and integrate indigenous knowledge in fisheries management	<ul style="list-style-type: none"> Analyse, harmonise and adopt useful indigenous knowledge of the sea/river fisheries, type of species, their regeneration capacities and trends. Promote integration of traditional management systems into the conventional modern fisheries management systems. 				
Enhance and streamline the fishing control and regulation mechanisms	<ul style="list-style-type: none"> Ensure adequate and effective regulation and control of commercial fishing by trawlers, which often involves the killing and dumping of fish species not considered commercially important. Develop comprehensive long-range plans and strategies for the conservation and sustainable use of fisheries resources 				
Encourage and support small-scale fishing	<ul style="list-style-type: none"> Support artisanal fishermen so that they may not be easily marginalised and disturbed by big industrial firms with 				

	<ul style="list-style-type: none"> sophisticated fishing gear. Review the issuance of fishing licenses especially in the execution of appropriate differential treatment of citizens as a way of motivating them to venture into the fishing industry. Examine the role of women in fish processing and smoking and seek ways of assisting them; 				
Promote Aquaculture and Mariculture	<ul style="list-style-type: none"> Develop and promote aquaculture especially in the freshwater zones of the River Gambia. Promote fish farming on a pilot basis and encourage the private sector involvement Establish means for restocking the inland waters with some of the rarer fish species. Implement pilot coastal mariculture projects 				
Promote public education and awareness about fisheries	<ul style="list-style-type: none"> Organise sensitisation seminars and workshops for the fishing industry and resource users to create awareness and help to increase their knowledge and skills for the better management and use of fisheries resources 				
Promote and strengthen regional and international cooperation in fisheries management	<ul style="list-style-type: none"> Establish and maintain regional collaboration in research, training, management planning 				
Establish protected areas for fisheries conservation	<ul style="list-style-type: none"> Identify, demarcate and gazette key marine and freshwater protected areas Establish buffer zones around new PAs, where appropriate Develop management plans for the PAs established 				
Control the introduction alien species and living modified organisms	<ul style="list-style-type: none"> Establish monitoring and regulatory mechanisms to detect and control the introduction of alien species especially in closed inland water ecosystems. 				

	<ul style="list-style-type: none"> Develop a legislation on the control of alien species 				
Build the capacity for fisheries management	<ul style="list-style-type: none"> Strengthen the technical competence of the Department of Fisheries and other relevant agencies in terms of research, management and surveillance Establish a Fisheries Consultative Committee Establish a Mangrove Committee 				
AGRICULTURAL SECTOR					
Discourage inappropriate farming practices and control soil erosion	<ul style="list-style-type: none"> Encourage farmers to plough their fields such that ridges are perpendicular to the overland flow of water. Divert or slow down overland flow through farms by planting trees and grass in the upper reaches Encourage farmers to stop clearing all the land cover on the farmland during land preparation. Promote sustainable agricultural practices such as use of legumes, green manures and nitrogen fixing trees (NFTs), traditional agro-forestry practices, and inoculation of rhizobium bacteria so as maintain nutrient cycling and biological nitrogen fixation. 				
Identify and adopt drought mitigation measures	<ul style="list-style-type: none"> Construct anti-saline dikes Introduce salt tolerant, drought tolerant and short cycle species of crops. Develop new types of agricultural 				

	<p>crops from the wild in collaboration with bilateral and international organizations, through joint research and monitoring programs, and exchange of genetic materials information and materials.</p> <ul style="list-style-type: none"> • Institutionalise seed production by establishing a seed technology unit under the National Agricultural Research Institute (NARI). • Carry out a study of the crops and their environment to enable crops to grow in areas best suited for them and to maintain crop diversity 				