

UNITED REPUBLIC OF TANZANIA



Achieving the
2010
Biodiversity
Target



**FOURTH NATIONAL REPORT ON IMPLEMENTATION OF
CONVENTION ON BIOLOGICAL DIVERSITY (CBD)**



Vice President's Office,

Division of Environment

July 2009

Published by the Vice President's Office, Division of Environment,
United Republic of Tanzania (URT), Dar es Salaam 2009

Copyright ©2009 Division of Environment, Vice President's Office, URT

ISBN: 9987-8990-

This publication may be reproduced for educational or non-profit purposes without special permission from the copyright holders provided acknowledgement of the source is made. The Vice President's Office would appreciate receiving a copy of any publication that uses this publication as a source.

For further information, please contact:

Permanent Secretary
Vice President's Office,
P. O. Box 5380,
Dar es Salaam.
TANZANIA.

Phone : +255-22-2113983/+255-22-2118416/+255-22-2116995

Fax : +255-22-2125297/ +255-22-2124631/+255-22-2113856

E-mail: info@vpdoe.go.tz or biosafety@vpdoe.go.tz

PREFACE

The United Republic of Tanzania ratified the Convention on Biological Diversity on 8th March 1996 whose objectives are Conservation of Biological Diversity, Sustainable use and fair and equitable sharing of the benefits arising from utilization of genetic resources.

Biodiversity is the source of economic and ecological security of present and future generations. Thus, the current and future economic, social and ecological contributions of genes, species, and ecosystems make the conservation and sustainable use of biodiversity, not just a technical concern but a political imperative as well. Diversity and variety enable humanity to adapt to local, regional and global changes. As a Party to the Convention, Tanzania is required to fulfill the obligation of reporting under Article 26 that “requires the Parties to present reports to the Conference of the Parties (COP) on measures taken to implement the Convention and the effectiveness of those measures in meeting the Convention’s objectives”. This Fourth National Report on the Implementation of the Convention on Biological Diversity highlights the initiatives and strategies put in place to implement the Convention during the reporting period. It also provides an account of achievements and constraints encountered in the implementation process.

The Government of the United Republic of Tanzania is committed to continue to invest and build the necessary capacity for effective and efficient implementation of the Convention. Enactment and operationalization of the Environmental Management Act of 2004 provides for legal and institutional framework for sustainable management of the environment. The Act also addresses the declaration of environmental protected areas; Environmental protection plan and ecosystem management plan for environmental protected areas; Conservation and protection of economically sensitive areas; Prohibition of human activities in certain areas; Protection of mountains, hills and landscapes; Management of forest resources; Promotion of the conservation of fisheries and wildlife resources; Conservation of biological Diversity (in-situ and ex-situ) and Regulation for the development, handling, and use of Genetically Modified Organisms and their products.

As we all know the biodiversity of our planet, is facing a lot of challenges. Climate Change is one of them. It is in this regard that the Government has decided to implement Reducing Emission from Deforestation and Forest Degradation (REDD). We know that forest ecosystem have the ability to adapt to Climate Change and provide livelihood to forest dependent communities who are partner in safeguarding forest and supporting the mitigation of Climate Change through carbon sequestration.

Building human and physical resources, implementation of awareness raising campaigns and programmes are very crucial to the implementation of the Multilateral Environmental Agreements including the Convention on Biological Diversity. This is just the beginning of a long journey and for that reason, the support and cooperation of all stakeholders is needed. We believe that the year 2010, as an International year for Biodiversity will increase awareness on the importance of biodiversity and livelihood aspects, and it will also enhance our fight on biodiversity loss.



Dr. Batilda S. Burian (MP)

Minister of State (Environment)
Vice President's Office

ACKNOWLEDGEMENT

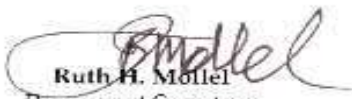
The successful preparation of this fourth national report on the implementation of the Convention on Biological Diversity despite the time constraints is a result of commitment and hard work by many institutions and individuals who deserve a vote of appreciation. We cannot refer to all of them, but we assure them of our heartfelt appreciation and we value their cooperation and support.

We would like to express our gratitude to the governmental ministries, institutions, civil society and individuals who were involved in the preparation of chapters that formed the basis of this Fourth National Report on the implementation of the Convention on Biological Diversity (CBD). We wish to express our appreciation to the Ministries of Natural Resource and Tourism; Agriculture, Food Security and Cooperatives; Water and Irrigation; Livestock Development and Fisheries; Communication, Science and Technology; and Institutions and Agencies including National Environmental Management Council (NEMC); Sokoine University of Agriculture, University of Dar Es Salaam, Tanzania Fisheries Research Institute (TAFIRI); Tanzania Forest Research Institute (TAFORI); Tanzania Wildlife Research Institute (TAWIRI); Tropical Pesticide Research Institute (TPRI); Kibaha Sugar Research Institute; and Commission for Science and Technology (COSTECH) for their Contributions towards completion of this Report.

We are grateful to the Director of Environment, Vice President's Office, Mr. E.K. Mugurusi, for the role he played as a National Focal point, in providing overall guidance and coordination of the process.

We are particularly indebted to the team of experts that compiled and edited the Report for their commendable efforts and inputs towards completion of the Report. The team included Dr. S.R. Mwinjaka, Mr. S.R. Nkondokaya, Dr. C.M. Shayo, Mr. F. Ngerageza, Mr. O. Kamukuru, Mr. T. Bwana, and Mr. D. Nkondola from the Vice President's Office.

Lastly but not least, we are grateful to UNDP Tanzania Country Office and GEF for funding the information-input-surveys that culminated into this Fourth National Report on the Implementation of the Convention on Biological Diversity, as well as the preparation and publication of this Report.



Ruth H. Mollé
Permanent Secretary
Vice President's Office

EXECUTIVE SUMMARY

Tanzania is located in Eastern Africa, between 1°S to 12°S and 30°E to 40°E. It is constituted by Mainland Tanzania and Zanzibar with a total area of 945,087 km² of which 886,037 km² is surface land. It shares borders with Kenya and Uganda in the North; Rwanda, Burundi and Democratic Republic of Congo in the West; Zambia and Malawi in the South-West and Mozambique in the South; and Indian Ocean in the East. Some 40 km offshore are the islands of Zanzibar (Unguja and Pemba) and Mafia (to the South), plus numerous smaller islands.

Tanzania's endowment of unique Biodiversity and natural resources is unparalleled. The natural ecosystems of forests, savannah, pastures and rangelands, wetlands, rivers, lakes and the Ocean with which Tanzania is endowed, form the basis of the natural resource wealth. Measures of biodiversity in terms of ecosystem types, species richness and endemism show that the country is very rich biologically and is one of the fourteen-biodiversity hotspots in the world. Out of 25 globally known biodiversity hotspots, Tanzania harbours six: the Eastern Arc old Block-Mountain Forests (Usambara, Nguru, Uluguru, Ukaguru and Udzungwa Mountains); the Coastal forests (e.g. Pugu, Rondo); the Great Lakes for Cichlid fishes (lakes Victoria, Tanganyika and Nyasa); the marine coral reef ecosystems; the ecosystems of the alkaline Rift-Valley Lakes (e.g. Natron and Eyasi); and the grassland savannas for large mammals, for example, harboring the famous Serengeti National Park. About a quarter of Tanzania's land area is covered by unique ecosystems in form of forest reserves, national parks and game reserves.

Tanzania has two main types of forest namely natural, and plantation forests. Natural forests found in Tanzania are of three main types namely miombo woodlands, montane forests and mangroves. According to the National Forest Programme - NFP (2001), the country possess about 33.5 million hectares (ha) of natural forests. Almost two thirds of this area consists of woodlands on public lands of which 13 million ha have been gazetted as forest reserves. The forest reserve area includes about 80,000 hectares of plantations, mainly consisting of *Pinus patula* and *Cupressus lusitanica*. Out of the forest reserve area, 1.6 million ha are managed as catchment forests and about 6% is within National Parks.

The Miombo woodlands are the most extensive woodland area in Tanzania covering a large part of the hinterland from the coastal area. There are more than 20 million ha of the miombo ecosystem in Tanzania (both wet and dry woodlands). The wet

Miombo woodlands are found in areas around Lake Rukwa and in most areas in Kigoma region as well as some parts of Biharamulo and Ngara Districts in Kagera region. Furthermore, some parts of Mbeya region especially along Lake Nyasa fall under this category. The areas adjacent to the coastal forests covering greater parts of Morogoro, Coast, Lindi, Mtwara and Ruvuma Regions and some parts of Handeni district in Tanga region fall under the dry Miombo category. Significant amount of wildlife areas is mainly within the Savannah grasslands characterized by dry miombo woodlands dominated by the genera of *Acacia*, *Combretum* and *Commiphora*. Of the 15% forest cover gazetted in Tanzania, 3% overlap with wildlife protected areas. This signifies the importance of natural forests in wildlife. Out of Tanzania's total land surface area, 25% is set aside for wildlife conservation. About 43.7% of the total land area in Tanzania is somehow protected (or conserved) where wildlife protected areas (including Game Controlled Areas) cover at least 28% of the total land area of mainland Tanzania and forest reserves cover around 15.7%. However, most of the wildlife is found outside existing protected areas thus making its survival to be in a race against development. Nevertheless, Tanzania has been practicing community-based natural resource management by encouraging participatory forestry and wildlife management through Wildlife Management Areas, Community Forest Reserves. There are 14 National Parks which cover 4.1% of the country's total land surface. These are areas of high biodiversity values and represent unique habitats of Tanzania. The main purpose of these areas is conservation of representative habitats and wild animals, which constitute unique naturally occurring biodiversity of Tanzania. Serengeti National Park, one of the world heritages famous for its endless plains signifies the wonders' of nature in Tanzania. There are 32 Game Reserves, all covering 10.4% of the total land surface area and 38 Game Controlled Areas, which cover 9.6% of the total land surface area. Licensed hunting, non-consumptive tourism, human settlements and other human activities, research and education are permitted.

Tanzania also possesses important populations of species that are globally endangered and threatened. These include Black rhinoceros, Wild dog, Chimpanzee, African elephant, Cheetah and Wattled Crane. In total, Tanzania harbours about 33 species of mammals, 30 species of birds, 19 species of fish and 46 species of invertebrates classified as globally threatened. Tanzania has also 293 species of reptiles in 104 genera and 21 families and most species have a wide distribution range. The number of bird species is 1065 of which 25 (2%) are endemic and mostly are forest-based species.

The Montane forest ecosystem are located in the mountainous areas for instance in the Eastern Arc Mountain forests. Others include forests on the slopes of Kilimanjaro and Meru Mountains in Kilimanjaro and Arusha regions. Furthermore, montane forests are found in the Livingstone and Rungwe mountains in Mbeya Region. The montane forests in Tanzania cover about 2 million hectares of land. Most of the

montane forests possess high water catchment value hence being main sources of major rivers such as the Great and Little Ruaha, Kilombero, Wami, Ruvu, Kihansi, Pangani, Zigi just to mention some. Apart from water catchment values the montane forests are also centers of high biodiversity resources of flora and fauna including harboring endemic and near endemic species. Eastern Arc Mountain forests are of exceptional global importance because of their high biodiversity values. The forests in the Eastern Arc area possess high endemism for instance about 100 vertebrates (10 mammals, 20 birds, 38 Amphibians, 29 reptiles) are endemic to the Eastern Arc Mountain forests. About 1500 plant species including some 68 tree species, are known to be endemic to the Eastern Arc Mountains. The Uluguru Mountains alone has about 135 plant species that are confined to that single mountain block while more than 100 endemic species are known to exist in West and East Usambara Mountains and Udzungwa Ranges.

Conservation and management of natural forests in montane, miombo and coastal areas has been a challenging task. This is due to increased human population that exerts great pressure on the forest resources. The coastal forests have been subjected to high intensities of forest resources utilization. Some forests have been highly degraded due to encroachment. Pressure on coastal forests is due to more demands for cultivation, timber harvesting, and production of charcoal. Degradation of mangroves occurred in many parts of the country. The major immediate causes of mangrove forest degradation were the over-harvesting of mangrove for firewood; charcoal-making; building poles; and boat construction which accounted for about 46 %, and clear-cutting of mangrove for agriculture, solar salt production, road construction, urbanization and hotel construction which accounted for about 30%. Bush fires are another hindrance to sustainable forests management in Tanzania. Thousands of hectares natural forests are set to fire every year thereby reducing their biodiversity values by killing various species of flora and fauna and retarding growth rate to some of the tree species. Other drivers for biodiversity loss in forest ecosystem include poverty, low level of awareness on the importance and services that forest biodiversity provides and inadequate alternatives of energy sources.

The coastal and marine ecosystem has various species that makes this segment of the environment rich in biodiversity. Biodiversity found in this ecosystem include fish resources, coral reefs, sea turtles, marine mammals, sea grasses and plankton. Signs of decline in biodiversity are becoming obvious in the coastal and marine environment. The main threats to these ecosystems include decline of marine and coastal living resources, destruction of coral reefs, coastal pollution and coastal erosion. The underlying drivers for Biodiversity Loss in Marine and Coastal Biodiversity include: Low level of awareness amongst coastal communities on the importance of critical ecosystems and poverty of the coastal communities.

Tanzania is rich in wetland resources, which include the great lake system, inland drainage systems, major river networks and deltaic mangroves. About 10% of the country's land is covered by wetlands. Wetlands have significant economical, social, cultural and biological values. They are among the most productive ecosystems; they are vital for production of electricity, groundwater recharge, control of floods, water retention, prevention of eutrophication of rivers and lakes, supporting specific biota and traditional uses. Through tourism, wetlands contribute significant amounts to country's GDP. However wetlands in Tanzania are under threats of being degraded. Activities that pose threats to the integrity of wetlands and its biodiversity in Tanzania include but not limited to: habitat change due to agriculture, grazing, housing and mining and quarrying; cutting of aquatic and other vegetation for fuel, housing and commercial activities; Improper fishing practices; siltation due to deposition of erosion materials that reduce the depth of the wetlands; pollution by domestic sewage, industrial effluent, and agrochemicals; siltation caused by poor agricultural methods and eutrophication leading to oxygen depletion.

The agro-biotic wealth in in Tanzania in general includes 47 recorded plant species that are cultivated in Tanzania, which include; 9 cereals [maize, rice, wheat, triticale, sorghum, millets, barley, oats, rye), 11 legumes (groundnuts, soybean, common bean, cow-peas, pigeon peas, green grams, chick peas, bambara nuts, lima beans, etc), 10 oil crops (groundnuts, sunflower, sesame, soybean, castor, coconut, oil palm, etc), 6 roots and tuber crops (cassava, sweet potatoes, round potatoes, yams/cocoyams), 4 fibre crops (sisal, kenaf, cotton and kapok), 3 beverage crops (coffee, tea, and cocoa) and 4 other crops (sugar cane, tobacco, pyrethrum and cashewnut). There are 79 indigenous plant species that produce edible fruits; forty-eight (48) introduced fruit trees, thirty-seven introduced vegetable crops and forty indigenous vegetable crops. There are also 109 ornamentals and 34 plant species of spices or herbs. Domesticated animal species in Tanzania, comprise of 18.8 million cattle, 3.5 million sheep, 13.5 million goats, 1.4 million pigs, 0.25 million rabbits, 2,048 horses, and 419,000 donkeys. Also there are 33 million local chicken, 214,330 ducks and geese, 91,136 turkeys and 43,195 guinea fowls. There are 7,911 water buffaloes and 8 camels recently introduced.

The biodiversity in agricultural ecosystem is threatened by human activities:-

- High consumer preferences, introductions of improved varieties, biological use of industrial fertilizers, extensive use of agro-chemicals, deforestation, overgrazing, lack of comprehensive research plans, environmental and health concerns and competition with synthetics.
- Intensive use of agro-chemicals which affect non-target organisms through environmental pollution and massive land movements to meet some agricultural practices have also affected soil micro-organisms.
- Inadequate systematic dissemination of knowledge from one generation to another, changes in food habits, localized consumption of traditional

- vegetables and fruits, external market for flowers and changes in the ecology of many areas, insufficient germplasm collection and preservation of indigenous fruits and vegetables and increased prices for inputs.
- Indiscriminate use of artificial insemination and cross-breeding to up-grade local breeds which often is affected by poor management and diseases (trypanosomiasis, tick and vector borne diseases, infectious diseases and internal parasites) that result in high mortality rates.

Underlying cause that contributes to threat to agriculture biodiversity is mainly due to inadequate knowledge to farmers and livestock keepers on the importance of sustainable practices that improves the conservation of agricultural biodiversity.

The Government has taken several actions to implement National Biodiversity Strategy and Action Plan (NBSAP). Some of these actions include formulation of a National Integrated Coastal Management Strategy, establishment and operationalization of by laws to safeguard conservation and sustainable utilization of aquatic biodiversity, Review and update of the Fisheries legislation - Act. No. 6 of 1970, reviewing of the Agriculture and Livestock Policy to accommodate provisions for conservation and sustainable utilization of agro-biodiversity resources, strengthened the capacity of local communities to administer and manage PAs, Issued policy guidelines relevant for implementation of the Biosafety Protocol, Review and up-date the existing conservation legislation. Generally, the actions taken tried to address the environmental threats identified in the NBSAP. However, several challenges were encountered during the implementation of NBSAP. Some of the challenges encountered were: Inadequate resources to address all activities in the action plan, inadequate mainstreaming of biodiversity issues in sectors and Local Government plans and budgets, low level of awareness of the public on the socio-economic importance of biodiversity; and inadequate participation of communities in the management of biodiversity.

In order to effectively implement NBSAP in future the following interventions are recommended: develop strategies for resources mobilization, develop strategies to enhance awareness, communication and participation of communities in biodiversity management, enhance partnership with the private sector and NGOs; and review the NBSAP to address emerging issues threatening biodiversity.

ACRONYMS

AEWA	Africa - Eurasian Water bird Agreement
ADRI	Animal Disease Research Institute
AMU	Applied Microbiology Unit
ARI	Agriculture Research Institute
CBD	Convention on Biological Diversity
ASDP	Agricultural Sector Development Programme
ASDS	Agricultural Sector Development Strategy
BMUs	Beach Management Unit
CBC	Community Based Conservation
CITES	Convention on International Trade in Endangered Species
CMEAF	Conservation and Management of Eastern Arc Mountain Forest
CMS	Conservation of Migratory Species
EIA	Environmental Impact Assessment
EEZ	Exclusive Economic Zone
FBD	Forest and Beekeeping Division
FMD	Foot and Mouth Disease
FR	Forest Reserve
GCAs	Game Controlled Areas
GDP	Gross Domestic Product
GMOs	Genetically Modified Organisms
ICM	Integrated Coastal Management
KVTC	Kilombero Valley Teak Company
MARI	Mikocheni Agriculture Research Institute
MDGs	Millennium Development Goals
MNRT	Ministry of Natural Resources and Tourism
NAP	National Action Programme
NP	National Park

NSGRP	National Strategy for Growth and Reduction of Poverty
NWSDS	National Water Sector Development Strategy
PAs	Protected Areas
RDP	Rural Development Policy
RDP	Rural Development Strategy
SAP	Strategic Action Programme
SIT	Sterile Insect Technique
TFNC	Tanzania Food and Nutrition Center
WMAs	Wildlife Management Areas
WWF	World Wildlife Fund for Nature

Table of Contents

ACKNOWLEDGEMENT	5
CHAPTER I: OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS	15
1.1.1 Status and Trends of Biodiversity in Forest Ecosystem	16
1.1.2 Biodiversity Threats in Forest Ecosystem	22
1.1.3 Drivers for Biodiversity Loss in Forest Ecosystem.....	25
1.2.1 Status and Trend of Biodiversity in Coastal and Marine Ecosystem....	26
1.2.2 Biodiversity Threats in Coastal and Marine Ecosystem	28
1.2.3 Drivers for Biodiversity Loss in Marine and Coastal Biodiversity	31
1.3.1 Status and Trends of Biodiversity in Inland Water Ecosystem	32
1.3.2 Biodiversity Threats in Inland Water Ecosystems.....	33
1.3.3 Drivers for Biodiversity Loss in Inland Water Ecosystem.....	34
1.4.1 Status and Trends of Biodiversity in Wetlands Ecosystems.....	35
1.4.2 Biodiversity Threats in Wetland Ecosystem	36
1.4.3 Drivers for Biodiversity Loss in Wetland Ecosystem.....	36
1.5.1 Status and Trends of Biodiversity in Agricultural Ecosystems.....	37
1.5.2 Biodiversity Threats in Agricultural Ecosystem.....	38
1.5.3 Drivers for biodiversity loss in agricultural ecosystem	38
CHAPTER II: CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS.....	39
(a) Aquatic Biodiversity	41
(b) Agro-Biodiversity	42
(c) Terrestrial Biodiversity.....	43
CHAPTER III: SECTORAL AND CROSS-SECTORAL MAINSTREAMING OF BIODIVERSITY CONSIDERATIONS.....	53
(a) Lake Victoria Environmental Management Programme	60
(b) Lake Tanganyika Biodiversity Project.....	61
(c) East African Cross-border Biodiversity Project.....	61
(d) The Eastern Arc Mountain Conservation Programme	61
(e) Marine and Coastal Environment Management Project (MACEMP)	61
(f) Nile Transboundary-Environmental Action Project.....	62
CHAPTER IV: CONCLUSIONS:.....	63

CHAPTER I: OVERVIEW OF BIODIVERSITY STATUS, TRENDS AND THREATS

2.0 Geography and physiographic issues

Tanzania is located in Eastern Africa, between 1°S to 12°S and 30°E to 40°E. It is constituted by Mainland Tanzania and Zanzibar with a total area of 945,087 km² of



which 886,037 km² is surface land. It shares borders with Kenya and Uganda in the North; Rwanda, Burundi and Democratic Republic of Congo in the West; Zambia and Malawi in the South-West and Mozambique in the South; and Indian Ocean in the East. Some 40 km offshore are the islands of Zanzibar (Unguja and Pemba) and Mafia (to the South), plus numerous smaller islands (Figure 1).

Tanzania's endowment of unique Biodiversity and natural resources is unparalleled. The natural ecosystems of forests, savannah, pastures and rangelands, wetlands, rivers, lakes and the Ocean with which Tanzania is endowed, form the basis of the

Figure 1: Map of Tanzania showing its position in East Africa and main physical features

natural resource wealth. Measures of biodiversity in terms of

ecosystem types, species richness and endemism show that the country is very rich biologically and is one of the fourteen-biodiversity hotspots in the world. Out of 25 globally known biodiversity hotspots, Tanzania harbours six: the Eastern Arc old Block-Mountain Forests (Usambara, Nguru, Uluguru, Ukaguru and Udzungwa Mountains); the Coastal forests (e.g. Pugu, Rondo); the Great Lakes for Cichlid fishes (lakes Victoria, Tanganyika and Nyasa); the marine coral reef ecosystems; the ecosystems of the alkaline Rift-Valley Lakes (e.g. Natron and Eyasi); and the grassland savannas for large mammals, for example, harboring the famous Serengeti National Park. About a quarter of Tanzania's land area is covered by unique ecosystems in form of forest reserves, national parks and game reserves.

1.1 Forest Ecosystem

1.1.1 Status and Trends of Biodiversity in Forest Ecosystem

Tanzania has two main types of forest namely natural, and plantation forests. Natural forests found in Tanzania are of three main types namely miombo woodlands, montane forests and mangroves. According to the National Forest Programme - NFP (2001) Tanzania possess about 33.5 million hectares (ha) of natural forests as indicated in Table 1. About two thirds of this area consists of woodlands on public lands of which 13 million ha have been gazetted as forest reserves. The forest reserve areas include about 80,000 hectares of plantations, mainly consisting of *Pinus patula* and *Cupressus lusitanica*. Out of the forest reserve area, 1.6 million ha are managed as catchment forests and about 6% is within the National Parks.

Table 1: Distribution of Forest and Woodland Resources by Category and use

Forest Use	Number of Forest Reserves	Area (ha)	% of total Forest Estate	Remarks
Production	394	11,134,558	33.2	
Protection	421	3,956,210	11.8	Mainly protecting critical water sources and fragile land
Sub-Total	815	15,090,798	45	Forests with legal status
Production and protection	No legal status	18,401,231	55	These are the forests and woodlands that exist in general lands
Total Forest Estate	-	33,500,000	100	



Source: National Forestry Policy (URT, 1998)

(a) Miombo woodlands

The Miombo woodlands are the most extensive woodland area in Tanzania covering a large part of the hinterland from the coastal area. There are more than 20 million ha of the miombo ecosystem consisting of both wet and

dry woodlands. The wet Miombo woodlands are found in areas around Lake Rukwa and in most areas in Kigoma region as well as some parts of Biharamulo and Ngara Districts in Kagera region (Plate 1). Furthermore, some parts of Mbeya region especially along Lake Nyasa fall under this category. The areas adjacent to the coastal forests covering greater parts of Morogoro, Coast, Lindi, Mtwara and Ruvuma Regions and some parts of Handeni district in Tanga region fall under the dry Miombo category.

Significant amount of wildlife areas is within the Savannah grasslands characterized by dry miombo woodlands dominated by the genera of *Acacia*, *Combretum* and *Commiphora*. Of the 15% forest cover gazetted in Tanzania, 3% overlap with wildlife protected areas. This signifies the importance of natural forests in wildlife.

Plate 1: A section of Miombo woodland in Western Tanzania

Tanzania has abundant and diverse wildlife resources and is considered having the most wild and pristine wildlife protected areas in Africa. Out of Tanzania's total land surface area, 25% is set aside for wildlife conservation. About 43.7% of the total land area is somehow protected (or conserved) whereby wildlife protected areas (including Game Controlled Areas) cover at least 28% of the total land area of mainland Tanzania, while forest reserves cover around 15.7%. However, most of the wildlife is found outside existing protected areas thus making its survival to be in a race against development. Nevertheless, Tanzania has been practicing community-based natural resource management by encouraging participatory forestry and wildlife management through Wildlife Management Areas and Community Based

Forest Management Associations. Table 2 indicates categories of protected areas under wildlife conservation.

Table 2: Categories of Protected Areas under Wildlife Conservation

S/N	Category	No	Area (ha)	% of total area
1	National Parks	14	4,163,000	4.1
2	Game Reserves	32	12,085,197	10.4
3	Game Controlled Areas	38	5,556,502	9.6
4	Ngorongoro Conservation Area	1	830,000	1
Total			22,634,699	25

National Parks

There are 14 National Parks which cover 4.1% of the country's total land surface. These are areas of high biodiversity values and their main purpose is conservation

of habitats and wild animals, which constitute unique naturally occurring biodiversity of Tanzania (Figure 2). In the National Parks only non-consumptive tourism, education and research are permitted.

Serengeti National Park, one of the world heritages famous for its endless plains signifies the wonders' of nature in Tanzania. In addition to savannah woodlands, some national parks such as Katavi National Park, Gombe National Park and Mahale Mountain National Park are found in the famous wet-miombo woodlands in the Western part of Tanzania.

On the other hand, Udzungwa National Park, which is part of the Eastern Arc chain of Mountain blocks, is an

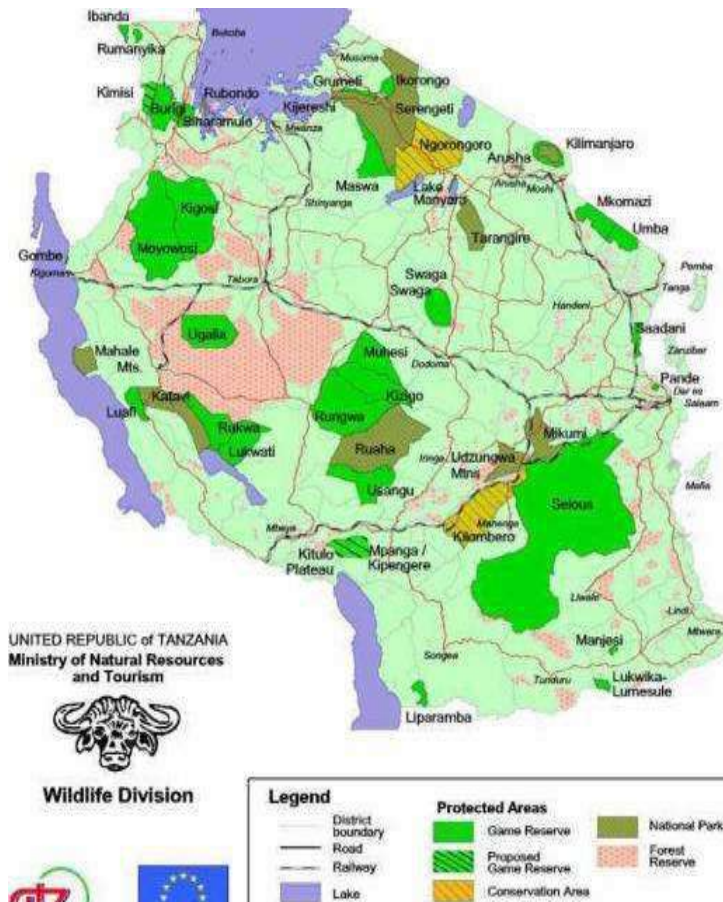


Figure 2: Map of Tanzania showing protected areas

important montane forest park possessing very critical endemic species of flora and fauna. essential habitats to some of the rare and endemic species of primates such as the Sanje Mangabey (*Lophocebus kipunji*). The Highland Mangabey is found within the forests of the Livingstone Mountains. The Udzungwa National Park also is the home for the Iringa Red Colobus monkey. The forests of Udzungwa Mountains are among the top ten important birds' conservation areas in Africa, whereby endemic species like the Udzungwa Partridge and Kufous Winged Sunbird find their refuge.

Game Reserves

There are 32 Game Reserves, all covering 10.4% of the total land surface area. Activities related to consumptive and non-consumptive tourism, research and education are permitted.

Ngorongoro Conservation Area

Ngorongoro Conservation Area covers 1 % of the total land surface area. This is a unique area in terms of conservation of archaeology, culture, wildlife and water catchments. These serve the purpose of its designation. Settlements by the Maasai tribe, pastoralism development, non-consumptive tourism, education and research are permitted.

Game Controlled Areas

There are 38 Game Controlled Areas, which cover 9.6% of the total land surface area. Licensed hunting, non-consumptive tourism, human settlements and other human activities, research and education are permitted.

Partial Game Reserves

This is a category of wildlife conservation area is a category that is meant for



protection of a species of a national or international conservation importance. A good example is the conservation of the Kihansi Spray Toad (Plate 2), which could be protected by designating the area where it occurs as a Partial Game Reserve. The Wildlife Policy of Tanzania emphasizes, on the intent of the policy to continue maintaining this category so as to conserve endemic, rare and endangered species, and conservation of national game.

Plate 2: Kihansi spray toad
(*Nectophrynoides asperginis*)

Endangered and Endemic Species

Tanzania also possesses important populations of species that are globally endangered and threatened. These include Black rhinoceros Plate 3), Wild dog, Chimpanzee, African elephant, Cheetah and Wattled Crane. In total, Tanzania harbours about 33 species of mammals, 30 species of birds, 19 species of fish and 46 species of invertebrates classified as globally threatened. Tanzania has 293 species of reptiles in 104 genera and 21 families and most species have a wide distribution range. The number of bird species in the country is 1065 of which 25 (2%) are endemic, and mostly being forest-based species.



Plate 3: Rhino in Serengeti Plains

(b) Montane Forests

The Montane forest ecosystem are located in the mountainous areas for instance in the Eastern Arc Mountain forests. Others include forests on the slopes of Kilimanjaro and Meru Mountains in Kilimanjaro and Arusha regions and in the Livingstone and Rungwe mountains in Mbeya Region (Plate 4). The montane forests cover about 2 million hectares of land, mostly possessing high water catchment value, hence being main sources of major rivers such as the Great and Lesser Ruaha, Kilombero, Wami,



Plate 4: A section of Mount livengstone Ranges

Ruvu, Kihansi, Pangani, and Zigi, just to mention a few. Apart from water catchment values the montane forests are also centers of high biodiversity resources of flora and fauna including harboring endemic and near endemic species. The Eastern Arc Mountain forests are of exceptional global importance because of their high biodiversity values. They possess high endemism with about 100 endemic vertebrates (10 mammals, 20 birds, 38 Amphibians, 29 reptiles).

Furthermore, about 1500 plant species including some 68 tree species, are known to be endemic to the Eastern Arc Mountains. The Uluguru Mountains alone has about

135 plant species that are confined to that single mountain block while more than 100 endemic species are known to exist in West and East Usambara Mountains and Udzungwa Ranges. Due to such values, the Conservation International included the Eastern Arc Mountain forests together with the Coastal forests amongst the World's 25 Biodiversity "Hotspots". Recent global classifications by Conservation International have increased from 25 to 34 biodiversity "Hotspots".



Plate 5: A conserved natural forest

(c) Mangrove Forests

Mangrove forests are found in all coastal districts of Tanzania. There are eight



Plate 6: An aerial view of a section of Dar es Salaam City showing protected mangrove trees

species of mangroves in mainland Tanzania. These are *Avicenia marina*, *Bruguiera gymnorhiza*, *Ceriops tagal*, *Heritiera littoralis*, *Lumnitzera racemosa*, *Rhizophora mucronata*, *Sonneratia alba*, and *Xylocarpus granatum*. The largest continuous mangrove forests occur in Rufiji, Kilwa, Tanga, Muheza and Mtwara districts. Rufiji delta has a total of 53,000ha of mangrove forests, which is

equal to 52% of mangrove forests in the country. In addition to Mangroves, there are adjacent coastal forests that possess important species of flora and fauna including

some endemic species such as Reichenow's batis (*Batis reichenowi*), the spotted flat-lizard (*Platysaurus maculatus*) and toads (*Mertensophryne micranotis*). The coastal forests are centers for valuable species such as *Dalbergia. melanoxylon*, which is an exceptional valuable tree species for wood curving and production of other important products like music clarinets.

(d) Plantation Forests

There are 16 government owned industrial plantations covering over 80,000 ha throughout the country. The largest plantation (about 42,000 ha planted) is Sao Hill forest plantation in Mufindi district, Iringa Region. Main species planted in the plantations throughout the country include *Pinus patula*, *Cupressus lucitanica*, *Tectona grandis* and some *Eucalyptus* species. Apart from these government plantations tree planting by the private sector is highly encouraged and considered an important



activity on Tanzania's development agenda. Tree planting by the private sector is encouraged in order to increase supply of wood and other forest produce and at the same time enhance environmental conservation. The private sector initiatives and performance in tree planting is progressively increasing. Plate 7 shows a section of one of the privately owned tree plantation.

Plate 7: A section of one of the Tree plantations

1.1.2 Biodiversity Threats in Forest Ecosystem

(a) Over exploitation of forest resources

Conservation and management of natural forests in montane, miombo and coastal areas has been a challenging task. This is due to increased human population that exerts great pressure on the forest resources. The coastal forests have been subjected to high intensities of forest resources utilization. Some forests like those at Pugu and Kazimzumbwi despite being central government Forest Reserves (FRs) have been highly degraded due to encroachments.

Pressure on coastal forests is due to more demands for cultivation, timber harvesting, production of charcoal to feed the city of Dar-es-Salaam which consumes between 200,000-300,000 bags (average weight of 50 kgs) of charcoal per month. Illegal logging in montane forests and in the miombo woodlands is a big environmental problem throughout Tanzania. Plate 8 shows trees harvested for firewood and charcoal.

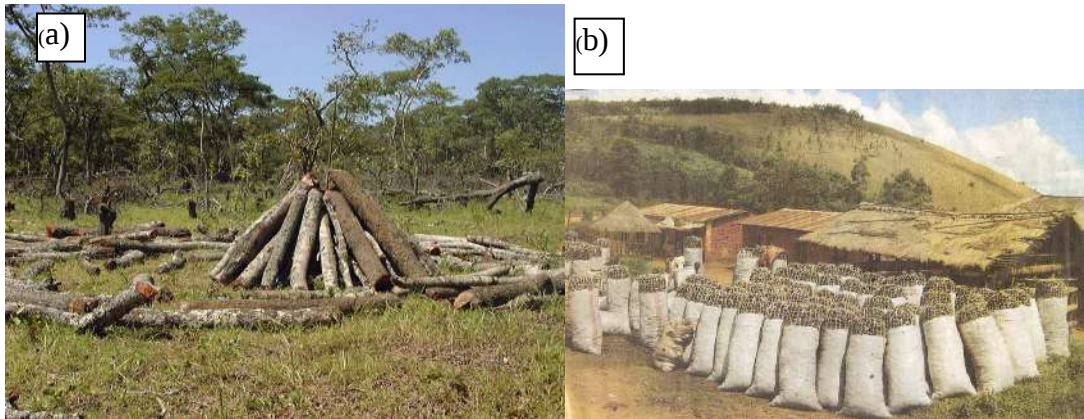


Plate 8: Forest cleared for fire wood (a) and bags of charcoal ready for selling (b)

Degradation of mangroves occurs in many parts of the country. Besides decrease in the area covered by mangroves, there is also a considerable decrease in the density, height and canopy cover of the mangroves within the forests. The areas hardest hit are those near urban centres such as Kunduchi, Mbweni and Mtoni in Dar es Salaam and forests around Tanga. Less accessible areas such as



Plate 9: Destruction of Mangrove forests for paddy cultivation in Rufiji delta

Rufiji remain largely pristine, although some mangrove forests have been cleared for paddy cultivation (Plate 9).

The major immediate causes of mangrove forest degradation were the over-harvesting of mangrove for firewood;

charcoal - making; building poles; and boat construction which

accounted for about 46%, and clear-cutting of mangrove for agriculture, solar salt production, road construction, urbanization and hotel construction which

accounted for about 30%. Mangroves are also harvested for firewood for lime making (Plate 10). Near urban centers, various types of pollution including municipal sewage, garbage and oil pollution also pose threat to mangroves.



Plate 10: Destruction of Mangroves for Lime making in Mtwara region

(b) Bush Fires

Bush fires are another hindrance to sustainable forests management in Tanzania. Thousands of hectares natural forests are set to fire every year thereby reducing their biodiversity values by killing various species of flora and fauna and retarding growth rate to some of the tree species.

(c) Environmental degradation

In Tanzania's context environmental degradation is highly linked to destruction of the country's forest and woodland resources base. Uncontrolled human activities in most forests and woodlands have threatened existence of valuable timber species like Mvule (*Milicia excelsa*) and Mninga (*Pterocarpus angolensis*), *Allanblackia stulmanii*, *Cephalosphaera usambarensis* and *Dalbergia melanoxylon*.

Furthermore, availability of species like sandalwood (*Osyris lanceolata*) has been seriously threatened by high industrial demand. The demand for this species is so enormous to the extent of uprooting the plant and uses the roots. Field stocks of *O. lanceolata* have greatly diminished and currently 80% of industrial uses are obtained as roots with the stems accounting for only 20%. This signals that human pressure over this species is massive to the extent of threatening to wipe out the species unless urgent silvicultural treatments are carried out to enable its

natural and/or artificial regeneration (domestication) to take place and at the same time control harvesting operations aggravated by the sandalwood processing industries.

(d) Competition for land resources between livestock and crop cultivation

Having 80% of its people dependent on subsistence agriculture, competition for land resources between livestock, wildlife and crop cultivation is common. One of the types of farming system mostly practiced is shifting cultivation, which contributes to environmental degradation.

(e) Illegal hunting

Illegal hunting is the result of increasing demand for meat coupled with persistent and widespread poverty among the local communities adjacent to PAs. Poaching for trophies is one of the main threats facing effective wildlife management in the protected areas.

1.1.3 Drivers for Biodiversity Loss in Forest Ecosystem

The underlying causes of biodiversity threats include the following:-

(a) Inadequate alternatives of energy sources

Most communities depend on firewood and charcoal as the main source of energy for domestic uses. This has resulted to high pressure of forest exploitation which contributes to loss of forest biodiversity.

(b) Poverty

Many communities in Tanzania are living below poverty line as such, larger section of communities can not afford to use alternative source of energy like electricity, natural gas and kerosene. Poverty has contributed much for communities to depend on relatively cheaper energy sources particularly from forest resources which lead to high loss of forest biodiversity.

(c) Low level of awareness

There is also low level of awareness on the importance and services that forest biodiversity provides. This has contributed to unsustainable utilization of forest biodiversity mainly on perception that forest biodiversity is unlimited resources.

1.2 Coastal and Marine Ecosystem

The coastal and marine ecosystem has various species that makes this segment of the environment rich in biodiversity. Biodiversity found in this ecosystem include fish resources, coral reefs, sea turtles, marine mammals, sea grasses and plankton.

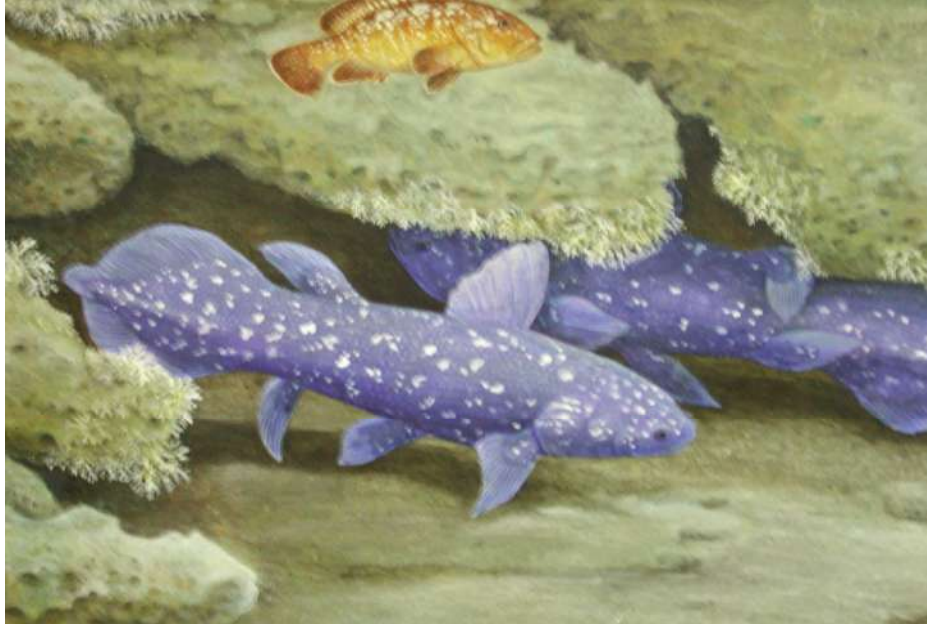


Plate 11: Coelecanth, fish species once believed of been extinct is now seen in Kigombe area in Tanga region

1.2.1 Status and Trend of Biodiversity in Coastal and Marine Ecosystem

(a) Fish Resources

The fish groups that dominate the marine demersal or deeper catch are bream, grouper, parrotfish, snapper, rabbit fish and emperor. Other species include octopus and lobster that are usually collected by hand from reef flats at low tide or by divers. Prawn and shrimps are mainly found in estuaries water particularly in the mouths of large rivers. Sea cucumbers and cockles are usually found gathered at low tide in the intertidal flats. The crab species are dominated by two species, both of which are of commercial importance. These are *Scylla serrata*, commonly known as the mud or mangrove crab and *Portunus Pelagius*, commonly known as blue swimming or sand crab.

(b) Coral Reefs

The greatest concentrations of well – developed coral reefs are along the coast of Tanga, Pemba, Unguja, Mafia, Kilwa (Songo Songo Archipelago) and Mtwara.

(c) Sea Turtles

Five species of sea turtles are found in Tanzania waters. These are the Green turtles, Hawksbill turtle, Olive Ridley turtle, Loggerhead turtle and Leather back turtle. Two of the five species Green and Hawksbill are known to nest on the Tanzanian waters.

(d) Marine Mammals

An outstanding diversity of marine mammals exists in Tanzania. The most commonly seen is the dolphin. However, there are other marine mammals such as whales and dugong, which are also known as sea cows or manatees.

Out of the ten species of dolphins found in the Western Indian Ocean, eight species have been reported in Tanzania waters. These are Indo-Pacific bottlenose dolphin (*Tursiops aduncus*), bottlenose dolphin (*Tursiops truncata*), Indo-Pacific humpback dolphin (*Sousa chinensis*), Spinner dolphin (*Stenella longirostris*), Pantropical spotted dolphin (*Stenella attenuata*) Risso's dolphin (*Grampus griseus*), rough-toothed dolphin (*Steno brendanensis*) and *Sousa plumbea* which is a subspecies of the Indo-Pacific humpback dolphin. They are typically found in Mtwara, Bagamoyo and Tanga areas.

(e) Sea grass

Thirteen species of sea grasses have been reported in Tanzania. Sea grass beds are widely distributed in inter-tidal, and sub-tidal mud and sand flats, coastal lagoons, and in sandy areas around the bases of shallow, patchy and fringing reefs. They are also found in creeks exposed to low tide or always submerged, in fine sand mixed with mud and on sand flats and sand bars. They are found in abundance in sheltered areas of the coast around Tanga, and tidal zones fronting the deltas of Ruvu, Wami and Rufiji rivers and around Kilwa. The actual area covered by seagrass beds and the relative species densities have not been established. 3 shows the distribution of sea grass species in the coast of Tanzania.

Table 3: Distribution of Sea Grass Species in Tanzania Coast

Species	Tanga		Dar-es-Salaam/Coast			Lindi	Mtwara
	Tanga	Pangani	Coast	Dar-es-Salaam	Mafia		
<i>Cymodocea rotunda</i>			X	X	X		
<i>Cymodocea serrulata</i>			X	X	X	X	
<i>Enhalus acoroides</i>	X			X	X		
<i>Halodule wrightii</i>	X		X	X	X	X	
<i>Halodule uninervis</i>	X		X	X	X		
<i>Halopohila minor</i>				X			
<i>Halopohila ovalis</i>				X	X		
<i>Halopohila stipulacea</i>			X	X	X		
<i>Halopohila wrightii</i>	X		X	X	X	X	
<i>Syringodium isoetifolium</i>	X		X	X	X	X	
<i>Thalassia ciliatum</i>		X	X	X	X		X
<i>Thalassia hemiprichi</i>	X		X	X	X	X	X

(f) Plankton

About 265 taxa of phytoplankton are found in coastal waters around Dar es Salaam and 41 species of microalgae are found in coastal waters of Bagamoyo . Although Zooplankton is important in the marine food web, very little is known on its existence in the coastal waters of Tanzania.

1.2.2 Biodiversity Threats in Coastal and Marine Ecosystem

Signs of decline in biodiversity are becoming obvious in the coastal and marine environment. The main threats include:-

(a) Decline of Marine and Coastal Living Resources

The artisanal and industrial fisheries in Tanzania have been falling consistently in recent years. For example, the fishery landings have decreased from 52,935 tones in 2001 to 43,459 tones in 2007 (Figure 3). Furthermore, there is evidence that increased commercialization of octopus, sea cucumber and seashell harvest has resulted in declines of these species in a number of areas in Tanzania.

Prawn fishery represent the largest industrial fishery undertaken in the country and has been operating since mid 1980's. Prawn fishery is based mostly in the inshore shallow areas around the mangrove fringed Bagamoyo, Saadani and the Rufiji delta had approximately 21 prawn trawlers. Catches for prawns has shown decreasing trend. Prawns being exported have declined drastically from about 1,360 tones in 2000 to 305 tones in 2007 which led to the Government's decision to temporarily stop the fishery until thorough assessment of prawn resources is undertaken.

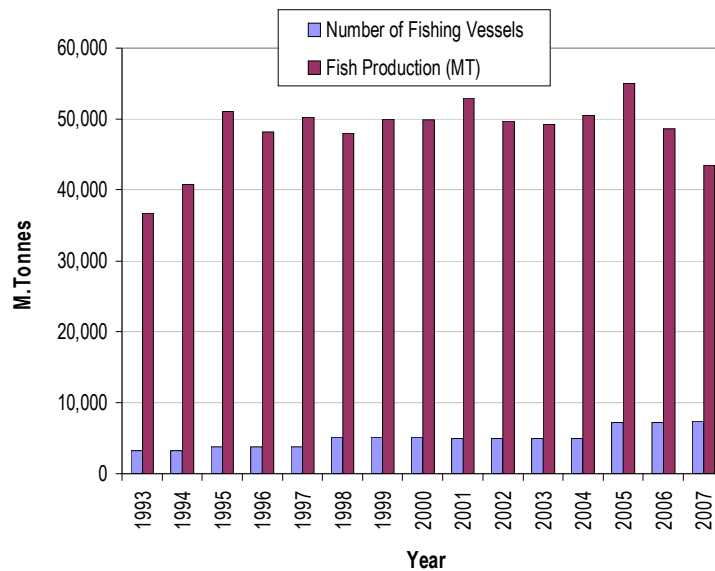


Figure 3: Trend of Marine water Fish Production From 1993 to 2007
(Economic Survey Report, 2007)

(b) 3Destruction of Coral Reefs

Much of the degradation of reef ecosystems has been caused by destructive fishing methods. The most destructive fishing practice is the use of dynamite which has been practiced in Tanzania for over 40 years. For instance, each blast of dynamite instantly kills all fish and most other living organisms within a 15-20 meters radius and completely destroys the reef habitat itself within a radius of several meters. However, dynamite fishing has currently been reduced throughout the country due to strengthened enforcement and public awareness.

The use of small mesh seine nets to capture fish on the bottom and around reefs is almost as destructive as the use of dynamite. The nets are weighted and

dragged through the reef flat or are pulled around coral reefs. Dragging them over the reef flat unavoidably damages coral and other marine resources.

(c) Coastal Pollution

The principal threat to water quality in Tanzania coastal waters is untreated domestic and industrial wastes. The water quality outside urban areas, though largely free from the impact of domestic wastes is under threat from agricultural agro-chemicals, including pesticides and fertilizer residues.

(d) Coastal Erosion

About two thirds of the coastline of Tanzania has fringing reefs, often close to the shoreline, broken by river outlets such as the Rufiji delta, Pangani, Ruvuma, Wami and Ruvu. Coastal erosion is a natural process in which the boundary land and water shifts its position overtime (that is shift towards the land) in which the sea wears away the shoreline. The rate at which both erosion and accretion occur is dependent upon the wind, waves, currents, tides, vegetation, sand composition and geology specific to a particular coastline.

Although coastal erosion is a natural phenomenon, it can also be intensified by human activities. For example, more than 8 million people in Tanzania depend on the resources and ecosystem surrounding the coastal areas. Activities such as dynamite fishing, coral and sand mining, mangrove cutting, seaweed farming, waste disposal, and tourism have a marked effect on erosion of the coast.

Both accretion and erosion occur throughout the coastline of Tanzania. However, based on few studies conducted, it has been revealed that, the shoreline erosion is alarming in the northern part of Dar es Salaam City. Further, increased human activity along the shoreline has increased the rate of erosion. For example the destruction of coral reefs around Maziwi Island off the coast of Tanga has led to severe erosion that the island near to disappear.



Plate 12: Impacts of Coastal Erosion along the Coast of Tanzania

1.2.3 Drivers for Biodiversity Loss in Marine and Coastal Biodiversity

The underlying causes of threats to coastal and marine biodiversity include the following:-

(a) *Poverty*

Most coastal communities depend on fishery as their main sources of livelihood. However, most of these communities are poor and their ability to acquire sustainable fishing gear is limited. This has led to the use of destructive fishing methods in particular dynamite fishing contributing to loss of marine biodiversity.

(b) *Low level of awareness*

Low level of awareness amongst coastal communities on the importance of critical ecosystems has contributed much to the indiscriminate destruction of coral reefs and other biodiversity.

1.3 Inland Water Ecosystem

1.3.1 Status and Trends of Biodiversity in Inland Water Ecosystem

Lake Victoria, with surface area of 68,800 km² and adjoining catchment of 184,000 km² is the largest of all African Lakes, and the second largest freshwater body in the world. Tanzania controls 51% of the lake surface area. Lake Victoria is ecologically sensitive and important biodiversity zone providing habitat for 350 endemic species of fish. Cichlids constitute the important fish family of the lake of which 90% of the species are endemic.

Lake Tanganyika is outstanding for its extraordinary north-south extension (670 km) and depth of about 1,470 m. Its very ancient origin and a long period of isolation resulted in the evolution of a great number of indigenous organisms, including coloured cichlid fishes, well-known gastropods with the appearance of marine snails. Of the 214 native fishes in the lake, 176 are endemic. Out of the endemic genera, 30 are cichlids and 8 are non-cichlid fishes.

Lake Nyasa possesses a number of features that make it unique among the lake of the world. As one of the East African rift valley lakes, it is the ninth largest in the world and the third largest in Africa. The most well known feature is the species-rich assemblage of fishes whose diversity surpasses that of any other freshwater fish community in the world. There are about 700 species belonging to the cichlid family of which all but five are endemic to the lake. This unique biodiversity of the lake forms the basis for economic survival and livelihoods of communities living on the lakeshore, while contributing nutritionally and economically to the communities of the lake catchment areas.

Lake Jipe is situated southeast of Mt. Kilimanjaro in the Coast Province of Kenya and in the Kilimanjaro Region of Tanzania. The open area of the lake water is approximately 10 km long and 3 km wide with an area of about 4047 ha and an average depth of 2 metres. The lake and its wetlands are of both national and international importance as a home to a diverse fauna (including Palaearctic migrant's birds, intra-African migrant birds and large mammals) and flora as well as providing support to many people on both sides of Kenya and Tanzania. Lake Jipe is also well known for its water birds and is one of the few places in this part of Eastern Africa where the Lesser Jacaca and the Purple Gallinule are common and where the Madagascar Squacco Horon, Black Heron, African Darter and African Skimmers are often seen. Many Palaearctic migrant waders visit these wetlands, as do inter-African migrant water birds. The lake shares the endemic tilapia *Oreochromis jipe* with the Pangani river system and has significant fishery based upon this species as a barbell fish and the sardines

(*Rastrineobola argentea*). Hippopotamus are present in Lake Jipe and Waterbuck are present on its margins.

There are other freshwater bodies, which are rich in freshwater biodiversity in particular fish biodiversity including Lake Rukwa, Lake Manyara, Lake Natron, Lake Eyasi, Lake Chala, Mtera dam, and Nyumba ya Mungu Dam.

1.3.2 Biodiversity Threats in Inland Water Ecosystems

Water quality problems in Tanzania are mainly due to natural factors and human activities. Occurrence of high fluoride concentrations and salinity in water in some parts of country is major problem as regards to water supply.

There is an indiscriminate disposal of domestic and industrial wastes into water bodies. These wastes greatly contribute towards environmental pollution of surface and ground water sources. In addition the destruction of catchments areas, deforestation, poor agricultural practices, inappropriate use of pesticides and other agro-chemicals. If this is left to continue it will result in water pollution or drying of water sources with consequences of drought and desertification.

In Lake Victoria, specific environmental challenges facing the lake and its basin are:-

- Exploitative and unsustainable use of fishery resources leading to changes in fish biomass;
- Wetland encroachment and degradation and reduction in biodiversity, including endemic fish species;
- Discharge of untreated industrial and urban solid and liquid wastes leading to deterioration of water quality;
- Discharge of untreated sewage into the lake leading to nutrient increases and resultant phytoplankton bloom and oxygen depletion;
- Infestation by weed and exotic species such as water hyacinth and Nile perch;
- Poor sanitation conditions in the lake side communities leading to human health, environmental and thus economic impacts;
- Deforestation, overgrazing and increased runoff of water and eroded topsoil together with organic matter and nutrients contributing to algal growth and eutrophication of the lake; and
- Lake/water health problems such as bilharzia, malaria and intestinal diseases.

Environmental threats facing Lake Tanganyika, the most immediate which pose threat to the lake environment and its biodiversity are:-

- Excessive loads of sediments and nutrients caused by erosion in the water shade;
- Deforestation in lake basin;
- Industrial and urban pollution; and
- Intensive fishing using inappropriate methods

In Lake Nyasa, development pressures on the lake ecosystem are increasing because population growth and the multi-purpose role of the lake that is becoming increasingly important even as its capacity to cope is being threatened. Near-shore resources are heavily exploited and habitat destruction around the lake and land based pollution represent key challenges for the management of the lake.

Environmental challenges facing Lake Jipe include runoff, increased siltation, decreasing water quality, a shrinking fishery and advancing wetland plants that threaten the existence of the open waters.

The most common environmental challenges facing other small freshwater bodies such as Lake Rukwa, Lake Manyara Lake Babati, Lake Chala, Mtera Dam, and Nyumba ya Mungu Dam are siltation that cause decline in water depth and eutrophication which resulted to massive bloom of aquatic weeds.

1.3.3 Drivers for Biodiversity Loss in Inland Water Ecosystem

Underlying causes of threats to inland biodiversity include the following:-

(a) Population pressure

High population level around inland water bodies in particular around Lake Victoria has resulted to overdependence and high pressure to utilization of freshwater resources.

(b) Low level of awareness

Low level of awareness on the need to utilize freshwater water resources in sustainable manner has resulted to use of illegal fishing methods like the use fishing nets with mesh sizes which are illegal, and the use poison in fishing.

1.4 Wetlands Ecosystem

1.4.1 Status and Trends of Biodiversity in Wetlands Ecosystems

Tanzania is rich in wetland resources, which include the great lake system, inland drainage systems, major river networks and deltaic mangroves. About 10% of the country's land is covered by wetlands (Figure 4). Wetlands have significant economical, social, cultural and biological values. They are among the most productive ecosystems; they are vital for production of electricity, groundwater recharge, control of floods, water retention, prevention of eutrophication of rivers and lakes, supporting specific biota and traditional uses. Through tourism, wetlands contribute significant amounts to country's GDP.

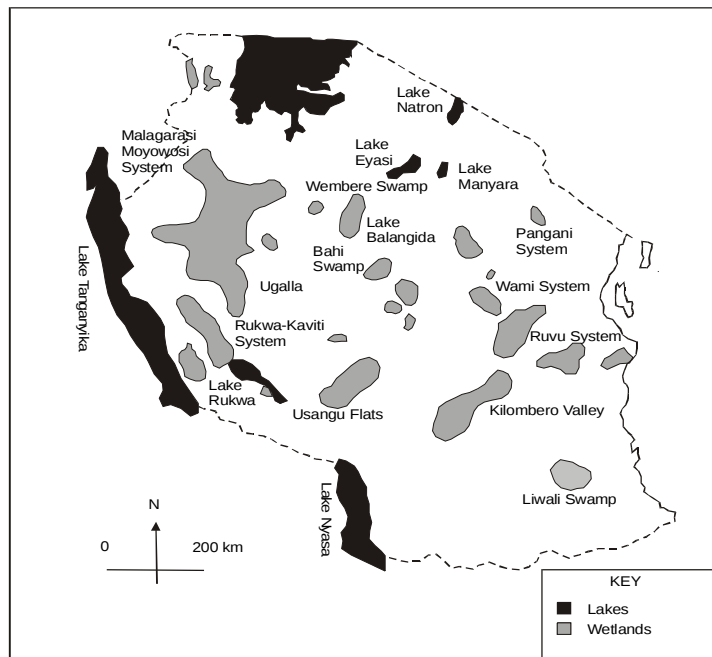


Fig. 4: Wetlands in Tanzania

Tanzania has no comprehensive inventory of wetlands and hence the total area under wetlands is not known. Even detailed information on many of the important wetlands is scanty or completely lacking except for a few which have been studied as discreet projects. This includes areas like Lake Victoria and Lake Tanganyika basins and four areas declared as Ramsar sites which are Malagarasi-Muyovozi Wetlands, Rufiji-Mafia-Kilwa Marine Ramsar Site, Lake Natron Basin and

Kilombero Valley Floodplain. Until some decades ago, many of the wetlands were automatically protected by their remoteness, their vastness and their marginal usefulness for agriculture or other economic activities. However, we have recently witnessed rapid conversions of wetlands in the country as a result of various socio-economic developments.

1.4.2 Biodiversity Threats in Wetland Ecosystem

Activities that pose threats to the integrity of wetlands and its biodiversity in Tanzania include the following:-

- Habitat change due to agriculture, grazing, housing and mining and quarrying;
- Clearing of aquatic and other vegetation for fuel, housing and commercial activities;
- Improper fishing practices;
- Siltation due to deposition of erosion materials that reduce the depth of the wetlands;
- Pollution by domestic sewage, industrial effluent, and agrochemicals;
- Siltation caused by poor agricultural methods;
- Eutrophication leading to oxygen depletion;
- Unregulated hunting of wildlife;
- Introduction of non native or alien species into wetlands, e.g. water hyacinth, is not only a menace to the Lake Victoria ecosystem but there is evidence of it spreading in other critical ecosystems including protected areas e.g. Mikumi National park; and
- Brick making for construction to meet the growing needs of construction which is evident in Morogoro, Kagera and other parts of the country.

1.4.3 Drivers for Biodiversity Loss in Wetland Ecosystem

Drivers of wetlands degradation include the following:-

(a) Population increase

Wetland ecosystems are relatively rich and fertile, and can support a number of economic activities such as farming, fishing and grazing. The fertility and production potential of wetland areas attract farmers and pastoralists which has resulted into large scale migration of agro pastoralists from depleted areas in the north west to wetland areas in central and south western Tanzania. There are several areas that have suffered land degradation as a result of overgrazing. This situation is serious in the Usangu flats and Kilombero valley where the situation is increasingly becoming intense due to high influxes of pastoralists into these

areas with considerable potential for overstocking and wetland degradation. It also exists in Malagarasi-Moyowosi wetlands though the intensity may be lower. In lake Natron the areas around Pinyin, watering points at Gelai Bomba and Ngaresero have been degraded as a result of overgrazing. Other areas in Lake Natron include Wosiwosi, Orkeju Rongai and Monik. Population increase in areas with high agricultural production potential such as wetlands areas has led into resource use conflicts.

(b) Poverty

The source of livelihood to many inhabitants of rural areas and many communities adjacent to the wetland ecosystems is opportunistic, and has been and still is based on direct exploitation of the natural resources in the wetlands, including forests, fisheries, wildlife or agriculture. There is limited capacity to adopt alternative sustainable livelihood approaches and natural resources utilization strategies. There is also low level of awareness, understanding and appreciation of wetland services and benefits. As a result, income poverty forces poor people to subsist in wetlands natural resources utilization, which is considered a free good. The poor small-scale farmers are completely dependent upon harvest of uncultivated natural resources for energy and building materials. In some areas, there is also a major dependence on wildlife, fish and other natural foods as a significant supplement to cultivated crops.

1.5 Agricultural ecosystems

1.5.1 Status and Trends of Biodiversity in Agricultural Ecosystems

The agro-biotic wealth in general includes 47 recorded plant species that are cultivated in Tanzania, which include; 9 cereals [maize, rice, wheat, triticale, sorghum, millets, barley, oats, rye), 11 legumes (groundnuts, soybean, common bean, cow-peas, pigeon peas, green grams, chick peas, bambara nuts, lima beans, etc), 10 oil crops (groundnuts, sunflower, sesame, soybean, castor, coconut, oil palm, etc), 6 roots and tuber crops (cassava, sweet potatoes, round potatoes, yams/cocoyams), 4 fibre crops (sisal, kenaf, cotton and kapok), 3 beverage crops (coffee, tea, and cocoa) and 4 other crops (sugar cane, tobacco, pyrethrum and cashewnut).

There are 79 indigenous plant species that produce edible fruits; forty-eight (48) introduced fruit trees, thirty-seven introduced vegetable crops and forty indigenous vegetable crops. There are also 109 ornamentals and 34 plant species of spices or herbs.

Domesticated animal species in Tanzania, comprise of 18.8 million cattle, 3.5 million sheep, 13.5 million goats, 1.4 million pigs, 0.25 million rabbits, 2,048 horses, and 419,000 donkeys. Also there are 33 million local chicken, 214,330 ducks and geese, 91,136 turkeys, 43,195 guinea fowls, 7,911 water buffaloes and some few camels that were recently introduced.

1.5.2 Biodiversity Threats in Agricultural Ecosystem

The biodiversity in agricultural ecosystem is threatened by human activities:-

- High consumer preferences, introductions of improved varieties, biological use of industrial fertilizers, extensive use of agro-chemicals, deforestation, overgrazing, lack of comprehensive research plans, environmental and health concerns and competition with synthetics.
- Intensive use of agro-chemicals which affect non-target organisms through environmental pollution and massive land movements to meet some agricultural practices have also affected soil micro-organisms.
- Inadequate systematic dissemination of knowledge from one generation to another, changes in food habits, localized consumption of traditional vegetables and fruits, external market for flowers and changes in the ecology of many areas, insufficient germplasm collection and preservation of indigenous fruits and vegetables and increased prices for inputs.
- Indiscriminate use of artificial insemination and cross-breeding to up-grade local breeds which often is affected by poor management and diseases (trypanosomiasis, tick and vector borne diseases, infectious diseases and internal parasites) that result in high mortality rates.

1.5.3 Drivers for biodiversity loss in agricultural ecosystem

Underlying cause that contributes to threat to agriculture biodiversity is mainly due to inadequate knowledge to farmers and livestock keepers on the importance of sustainable practices that improves the conservation of agricultural biodiversity.

CHAPTER II: CURRENT STATUS OF NATIONAL BIODIVERSITY STRATEGIES AND ACTION PLANS

2.1 BACKGROUND

Tanzania signed the Convention on Biological Biodiversity (CBD) in 1992 and ratified the same in March, 1996; thereby committing herself to join other global partners aspiring to conserve biological diversity and enhance development opportunities, banking on more sustainable use of biological resources and promoting more equitable measures of sharing accrued benefits across local, regional, national and global stakeholders.

As a Contracting Party to CBD, Tanzania is obliged to:

- (a) Develop appropriate national strategies, action plans and programmes for the conservation and sustainable utilization of its biological resources; and integration of these into relevant sectoral or cross-sectoral plans, programmes and policies- (article 6 of the Convention);
- (b) Build capacities for research, assessment, identification, evaluation and monitoring of biodiversity at the national level with full support and participation of local communities- (articles 7, 12, 13 and 14 of the Convention);
- (c) Collaborate internationally in transfer of technology, handling of biotechnology and other scientific linkages; (articles 15, 16, 18 and 19 of the Convention);
- (d) Exchange information relevant to conservation and sustainable use of biological diversity as provided under Article 17 and present national reports to the conference of parties- (articles 23 & 26 of the Convention); and
- (e) Provide financial support and incentives for national bio-diversity programmes whereby developed countries shall provide or meet incremental costs as financial topping-up of budgets for biodiversity programmes in developing countries - (articles 20 & 21 of the Convention).

Article 6 of the Convention on Biological Diversity (CBD) requires Parties to develop a National Biodiversity Strategy and Action Plan (NBSAP) as a roadmap for country's fulfillment of the objectives of the Convention. The NBSAP provide the overall framework for national implementation of the three objectives of the Convention, through action for the conservation and sustainable use of biodiversity

and the equitable sharing of benefits arising from the utilization of genetic resources. It form part of the country's overall sustainable development strategy.

Tanzania began to develop a National Biodiversity Strategy and Action Plan (NBSAP) in March 1998. The document is the product of a long consultative process, which included consultations at various levels with the intent of providing a national driven strategy and action plan. The NBSAP has been formulated taking into consideration the country's dependency on biodiversity for socio-economic development in terms of rendered ecological services, provision of food and medicines, building materials and energy. Micro-organisms form part of the biodiversity which act as decomposers of wastes for enrichment of soils and aquatic environment for perpetuation of nature taking into account the provisions of the Convention on Biological Diversity (CBD) to which Tanzania is a party.

The Vice President's Office through the Division of Environment (DoE) coordinated the consultative process which involved various stakeholders to formulate a comprehensive NBSAP, including public institutions, NGOs, CBOs, community leaders, industry and the private sector. The National Steering Committee (NSC) and the Technical Committee (TC) were established in order to co-ordinate the development of NBSAP. Three national consultants were engaged to work on Terrestrial, Agro and Aquatic biodiversity respectively. An international consultant was commissioned to provide technical backstopping throughout the NBSAP formulation process.

Acquisition of basic data for NBSAP was made possible through sectoral consultations (covering over twenty government sectors, several public institutions and NGOs) and five Zonal Workshops (covering coastal and marine, arid and semi-arid lands, wetlands, mountainous and agricultural lands). The Workshops were conducted with a focus on identification and analysis of threats, constraints, challenges, opportunities and strategic choices for conservation and sustainable use of biodiversity.

The National Biodiversity Strategy and Action Plan seeks to:-

- Ensure sustainability, security and equitable use of biological diversity to meet the basic needs of the present and future generations by developing and implementing a holistic NBSAP for the conservation of biological diversity and sustainable use of its components;
- Coordinate the planning and implementation of a biodiversity conservation program at all levels by ensuring that relevant activities harmonize with those of other government and non-governmental organizations, private sector, religious groups, communities and other civic organizations;

- Institutionalize the practice of biological conservation and the sustainable use of resources through legislative, administrative, fiscal and other regulatory measures at all levels;
- Promote public education and understanding of the values and benefits of biodiversity conservation and of the merits of sustainable development;
- Enhance capacity through formal and informal education, training, research and institutional facilitation and financing; and
- Enhance and facilitate collaboration between national and international community for the sustainable utilization and conservation of biological resources.

2.2 Major Elements of NBSAP

The biotic wealth of Tanzania with regard to its conservation and sustainable utilization are examined in three broader thematic areas, namely; Aquatic biodiversity, Agro-biodiversity and Terrestrial biodiversity.

(a) *Aquatic Biodiversity*

Over 10% of the total surface area of Tanzania (945,000km²) (both mainland and Zanzibar) in general, constitute wetlands, which support aquatic biodiversity. The National Biodiversity Country Study (NBCS) report of 1997 identified marine and coastal wetlands, inland wetlands, (lakes, rivers, inland flood plains) and artificial wetlands as major ecological systems in which biological resources thrive. Seagrass beds, seaweeds, coral reefs, salt and mudflats, mangrove swamps, estuarine and deltaic ecosystems are examples of marine and coastal wetlands with diversified habitats to support biological diversity.

Whilst attempts to ensure aquatic biodiversity have been made through initiatives such as the integrated coastal zone management programmes, there is evidence that threats to wetlands are still not adequately covered by current conservation measures. This is particularly true with designated sites for in-situ conservation (Marine Parks and Reserves), temporal and spatial zones whose legislation remains weak. The current most evident threats of wetlands and aquatic biological resources are indicative of inadequacy inherent to the current conservation measures or their implementation modalities.

(b) *Agro-Biodiversity*

Arable land cover 44.0 million hectares while 24.0 million hectares is under livestock production. Of the arable land available 10.1 million hectares are used for crop cultivation. Agriculture employs over 80% of the population's work force and accounts for about 50% of Tanzania's GDP. Of this, 18% is derived from livestock, which is about 30% of agriculture GDP.

The arable land is also the main source of food supply and raw materials for the industrial sector.

The available rangeland has a potential carrying capacity of 12 ha to 3.25 ha/beast for Tabora, Singida, Shinyanga, Mtwara, Lindi, Morogoro, Coast, Dodoma, Rukwa and Kagera regions. However almost 50% of this is infested with tsetse flies, mostly in the Miombo Woodlands. Therefore only 50% of the rangeland is available for grazing carrying about 52% of the estimated livestock population. Thus, there is a serious overgrazing problem and land degradation, consequently leading to great loss in forage species diversity.

Principal traditional export crops consist of sisal, cotton, coffee, tea, cashew nuts, tobacco, pyrethrum, whereas the non traditional crops include, sugar, oilseeds, vegetables, cardamoms, cocoa beans, cinchona barks, and nuts, cloves and other types of spices, soybeans, groundnuts, castor and sesame, fresh fruits, sunflower and flowers.

Animal husbandry, for both commercial and subsistence purposes occurs in approximately one-third of the country, which is free of tsetse flies. About 50% of the herd is on agro-pastoral systems in dry sub-humid uplands (Mwanza, Mara, and Mbeya), 40% are on pastoral systems in semi-arid to sub-humid areas (Arusha, Dodoma, Shinyanga and Singida). The remaining 10% include 200,000 exotics and crossbred dairy cattle found in very humid Northern and Southern Highlands and the humid lowlands around Tanga and Dar es Salaam.

Sheep and goats are found in large concentration in Arusha, Shinyanga, Mwanza, Singida, Dodoma and Kilimanjaro regions and account for two-thirds of the total. They produce about 12% of the national meat supply. On the other hand, over 70% and over 90% of the production of poultry and piggery respectively, are in the traditional free ranging systems.

Conservation of agro-biodiversity is through in-situ and ex-situ methods. For in-situ conservation, genetic materials such as sisal, forage crops and tree crops, are conserved in the field as field gene banks. There are several hectares of land in different research institutions and farms used for this purpose. In case of ex-situ

conservation, genetic materials are conserved as dry seeds and frozen tissues (plants), and frozen semen (livestock). There are about 107 different plant species, making about 1700 accessions in the gene bank at the National Plant Genetic Resources Centre (NPGRC) at the Tanzania Pesticides Research Institute (TPRI), Arusha. Ex-situ conservation strategies, particularly for plants have been limited by inadequate sampling during field collection and lack of representation in gene banks of the whole range of diversity of a given crop and its close genetic relatives.

(c) *Terrestrial Biodiversity*

Attempt to conserve terrestrial biodiversity has been made through programmes and initiatives like wildlife and forests protected area networks, establishment of different levels of legal status, administration and protection, and imposition of restrictions with regard to hunting, grazing and tree felling. Access and activities are by special permission only (e.g. Game reserves). Restrictions apply specifically to hunting animals in the area (Game controlled areas) and management under multiple land use as in the Ngorongoro Conservation Area. The threats of terrestrial ecosystems and biological resources are indicative of inadequacy inherent to the current conservation measures or their implementation modality.

Tanzania's network of protected areas consists of National Parks (14) where all consumptive exploitation such as hunting, grazing and tree felling are prohibited; Game Reserves (32) such as Selous where access and activities are by special permission only; Ngorongoro Conservation Area (1) managed for both wildlife conservation and legally agreed resident Masai herders; Forest Nature Reserves (543); Biosphere Reserves (1); World Heritage sites (3) and Game Controlled Areas (43) where restrictions apply specifically to hunting animals in the area.

2.3 Priority Activities

In order to achieve the goals, the following broad category activities have been prioritized:-

2.3.1 Policy, regulatory issues and international co-operation

- (a) Strengthen and facilitate regional and international collaboration in sustainable exploitation, management and conservation of biodiversity;
- (b) Provide support services including the institutional and legal framework to ensure sustainable utilization and conservation of biodiversity resources;
- (c) Develop mechanism for technological and financial co-operation;

- (d) Develop and strengthen sectoral and cross-sectoral linkages for harmonization of management and regulatory decisions, affecting biodiversity; and
- (e) Facilitate economic growth through formulation and enforcement of appropriate policies and regulatory services including important assessments for the management of biodiversity resources

2.3.2 Planning and Co-ordination

- (a) Develop and strengthen sectoral and cross-sectoral institutional co-ordination for harmonization and mainstreaming of biodiversity concerns in planning and management;
- (b) Ensure national welfare by sustainable increasing output, quality and availability of biodiversity resources;
- (c) Improve community standard of living through equitable sharing of income generated from the sustainable utilization of biodiversity resources at national and international levels; and
- (d) Promote national biodiversity resources at both national and international markets.

2.3.3 Education and Information

- (a) Establish and promote appropriate, education and awareness programmes to facilitate proper community participation in conservation and sustainable utilization of biodiversity resources,
- (b) Improve availability, accessibility and exchange of information pertaining to sustainable utilization of biodiversity resources, and
- (c) Establish and maintain information centers for biodiversity

2.3.4 Research and Development

- (a) Establish and promote research and development programmes with a view to building the capacity to efficiently conserve and sustainable use the biodiversity resources;
- (b) Develop and introduce new technologies that increase the productivity of biological resources in various ecosystems including rangelands and agricultural ecosystems;
- (c) Ensure fragile ecosystems such as dry lands, mountainous and wetland ecosystems have specific and well-tailored development programmes; and
- (d) Undertake thorough research before exotic genetic materials including genetically modified organisms.

2.3.5 Ecosystems and Species Conservation and Sustainable Utilisation

- (a) Increase production and yield of biological resources for nutritional and socio-economic development,
- (b) Protect, regulate and manage biodiversity resources productivity through prevention of habitat destruction, pollution and over-exploitation,
- (c) Adopt community participation approaches at all levels of planning, development and management of biological diversity and,
- (d) Promote sound utilization of biotechnology.

2.3.6 Biodiversity Monitoring and Evaluation

Develop a reliable and sustainable monitoring and evaluation system for sustainable use and conservation of biodiversity resources.

2.3.7 Capacity Building (personnel, institutional, facilities, and financial capacities)

- (a) Establish and promote appropriate training programs to build capacity and technological innovations for identification, conservation and sustainable use of biological diversity of the various ecosystems,
- (b) Promote specifically the access of women, youth and marginalized communities to land, credit, education and information to facilitate their effective participation in development, conservation and sustainable utilization of biological resources.
- (c) Establish and/or strengthen research and training institutions for encouraging ex-situ conservation of biological resources within the country.

2.4 Actions taken to implement National Biodiversity Strategy and Action Plan (NBSAP) and impacts

BIODIVERSITY COMPONENT	PRIORITY ACTION(s)	IMPLEMENTATION STATUS	IMPACTS/OUTCOMES
1. Aquatic Biodiversity	Develop a National Integrated Coastal Management Strategy	The Strategy was prepared in 2003	Reduced pressure on coastal resources through alternative income generating activities such as sea weed farming, paprika farming, fish farming and beekeeping
	Develop contingency measure for management and containment of environmental adverse impacts to aquatic resources	A draft Marine Contingency Plan has been prepared	
	Establish Regional fisheries management bodies for the Great Lakes.	• Lake Victoria Fisheries Commission was established • Regional protocol for Eastern Africa countries on Environment was developed • Lake Tanganyika Authority (Tanzania, DRC, Zambia, Burundi) was established • Convention on Sustainable Management of Lake Tanganyika was ratified	• Enhanced cooperation between riparian states (setting standards of fishing gear, water use) • Increased awareness on transboundary environmental management issues

	Establish operational by laws to safeguard conservation and sustainable utilization of aquatic biodiversity.	District by-laws have been prepared under the coordination of Local Government Authorities	Improved management of aquatic biodiversity
	Develop policy guidelines for aquaculture /mariculture and sports fishing.	• Mariculture development Guidelines have been developed • Seaweed Development Strategy has been developed	Enhanced planning for mariculture development
	Review and update the Fisheries legislation - Act. No. 6 of 1970	Fisheries Act was reviewed in 2002	• Increased focus of fisheries sector in environmental and aquatic biodiversity issues • Improved fish farming activities • Established fish quality control and standards
	Integrate biodiversity conservation in national economic planning.	Biodiversity issues mainstreamed in National Strategy for Growth and Poverty Reduction (NSGRP)	Enhanced linkage between aquatic biodiversity and improvement of peoples livelihoods
	Establish environmental legislation.	Environmental Management Act was prepared in 2004, taking on board biodiversity issues	• Enhanced coordination across all stakeholder in environmental management • Increased awareness on environmental management issues
	Establish national, institutional and regional biodiversity	Tanzania Biodiversity Information Facility was established	Enhanced networking and information exchange of biodiversity issues

	database /information centers.		
	Integrate biodiversity conservation in national economic planning	Guidelines for mainstreaming environment into Local Government plans was prepared	Improved environmental planning at Local Government Authorities
	Establish Environmental Impact Assessment guidelines for aquatic biodiversity	EIA guidelines was prepared covering aquatic biodiversity related projects	Enhanced incorporation of environmental issues in development projects relevant to aquatic biodiversity
	Assess biodiversity base potential in marine and freshwaters of Tanzania to govern exploitation and avoid depletion of stocks	Resources assessment is being undertaken in marine and fresh waters.	Improved planning and management of aquatic biodiversity
	Prevent and control illegal fishing practice through inspectorate services/surveillance	• Surveillance of illegal fishing practice particularly dynamite fishing and the use of illegal fishing gear has been strengthened • Beach Management Units are being established	Reduction of illegal fishing practices
	Revisit and establish sustainable land use plans and coastal zoning for multiple-use management	Guidelines for zoning mariculture areas are in place	Improved land use planning in coastal areas

	Monitor and evaluate biodiversity status and trends	• State of the Coast Reports (2001, 2003, 2009) have been prepared • State of the Environment Report (2009) has been prepared	Improved informed decision making for aquatic biodiversity
	To enhance research and strengthen research institution	Various Research activities are being undertaken by Tanzania Fisheries Research Institute, Institute of Marine Science, University of Dar es Salaam and Sokoine University of Agriculture	Improved decision making based on sound scientific evidence
2. Terrestrial Biodiversity	Cooperate with any party including neighbouring countries in the conservation of transboundary ecosystem and migratory species	Cooperative arrangements have been in place through • East African Community, • Lake Victoria Environmental Management Programme, • Lake Tanganyika Environmental Management Programme • Nile Basin Initiative	• Enhanced management of transboundary resources • Improved community livelihoods
	Participate in relevant international treaties and conventions	National positions regarding international treaties were developed and various programmes under international agreements were implemented	• Enhanced implementation of environmental programmes and projects • improved bilateral and multilateral cooperation in environmental management
	Enforce EIA process for	• EIA Regulations and	Increased attention on environmental

	proposed developments in Protected Areas in order to minimize potential damage to the protected areas environment	Guidelines were prepared EIA is mandatory for all proposed development projects	impacts in proposed development projects
	Review and up-date the existing conservation legislation	- The Forest Ordinance has been reviewed to address environmental issues - Wildlife Act has been reviewed - Water Act is being reviewed	Improved regulatory regime of environmental/biodiversity issue in terrestrial ecosystems
	Issue policy guidelines relevant for implementation of the Biosafety Protocol	National Biosafety Framework; National Biosafety Guidelines; and Biosafety Regulations have been prepared	Increased awareness of relevant sectors on Biosafety issues
	Strengthened the capacity of local communities to administer and manage PAs	16 Wildlife Management Areas (WMAs) have been established and 12 of them have been gazetted	Improved management of wildlife and participation of local communities
	Recognize user rights	Through Participatory Natural Resources principles, communities have been empowered to conserve natural resources	Increased participation in the management of Biodiversity by local communities
	Add, upgrade and extend Protected Area	Two Game Reserves (Mkomazi and Saadani)	Improved management of biodiversity protected area system

	(PA) network	have been upgraded to National Parks, • Usangu Game Reserve has been annexed to Ruaha National Park	
	Ensure the local communities benefit from living adjacent to PAs	Natural resources legislation (Forest Act, Fisheries Act and Wildlife Act) have been reviewed to take on board access and benefit sharing principles	Improved peoples livelihood through sustainable utilization of resources in Protected Areas
3. Agro-biodiversity	Establish Environmental Units within the Ministry of Agriculture	• Sector Environmental Coordination Units has been established • Sector Coordinator in the Ministry has been appointed	Enhanced governance and mainstreaming of environmental/biodiversity issues in the agricultural sector
	Review the Agriculture and Livestock Policy to accommodate provisions for conservation and sustainable utilization of agro-biodiversity resources	Livestock Policy (2006) has been prepared	Increased focus of environmental/biodiversity issue in the livestock sector
	Adapt appropriate EIA for agro-biodiversity resources use and conservation	Environmental Management Act, EIA legislation and EIA guidelines are in place to address development projects livestock and agriculture sector	Improved consideration of environmental/ biodiversity issues in livestock development projects

2.5 Challenges encountered during NBSAP implementation

Generally, the actions taken tried to address the environmental threats identified in the NBSAP. However, the following challenges were encountered:-

- (i) Inadequate resources to address all activities in the action plan;
- (ii) Inadequate mainstreaming of biodiversity issues in sectors and Local Government plans and budgets;
- (iii) Low level of awareness of the public on the socio-economic importance of biodiversity; and
- (iv) Inadequate participation of communities in the management of biodiversity.

2.6 Recommendation on the Future NBSAP

In order to effectively implement NBSAP in future the following interventions are recommended:-

- (i) Develop strategies for resources mobilization;
- (ii) Develop strategies to enhance awareness, communication and participation of communities in biodiversity management;
- (iii) Enhance partnership with the private sector and NGOs; and
- (iv) Review the NBSAP to address emerging issues threatening biodiversity.

CHAPTER III: SECTORAL AND CROSS-SECTORAL MAINSTREAMING OF BIODIVERSITY CONSIDERATIONS

3.1 Mainstreaming biodiversity into sectoral and cross-sectoral plans and strategies

Various measures have been taken to ensure mainstreaming of biodiversity into sectoral and cross-sectoral strategies, plans and budgets as follows:-

3.1.1 National Strategy for Growth and Reduction of Poverty (NSGRP)

The National Strategy for Growth and Reduction of Poverty (NSGRP) is an organizing framework for putting the focus on poverty reduction high on the country's development agenda. Biodiversity issues in the NSGRP have been reflected in the Cluster II – Improvement of Quality of Life and Social Well Being and the goal of promoting sustainable and broad-based growth. The operational target related to biodiversity in this goal is to reduce land degradation and loss of biodiversity. Strategy outlined in the NSGRP to achieve the target is to improve land management including tree planting, establishment of village land forest reserves on land and maintaining integrity of protected area network.

3.1.2 Strategy for Urgent Actions on Land Degradation and Water Catchments

Cognizant of the fact that the country is faced with widespread environmental degradation particularly degradation of land and water catchments, the environmental problem due to unsustainable agricultural activities in water catchments, on mountain tops, mountain slopes and in other fragile sections of mountain ecosystems. Recognizing this challenge the Government developed A Strategy for Urgent Actions on Land degradation and Water Catchments to address this challenge after a wide range of consultation with various stakeholders. The Strategy was developed in 2006 with the overall objective of halting the environmental degradation particularly degradation of land and water catchments. The Strategy has identified twelve challenges which need to be addressed in order to halt this degradation. The conservation of biodiversity and sustainable use of its resources is one of the issues being addressed under this Strategy. It is being implemented at all levels from the central government, Local government, private sector and local communities.

3.1.3 (iii) National Wetlands Management Strategy

The wetlands of Tanzania constitute a wide range of inland, coastal and marine habitats that share a number of common features. Wetlands in Tanzania can be classified broadly under six categories, namely highland headwater wetlands,

freshwater estuarine wetlands, internal drainage wetlands, rivers and inland floodplain wetlands, man-made wetlands and marine and coastal wetlands.

Wetlands ecosystems in Tanzania, with exception of those under natural resources protected areas network, face immense use pressures. Cognizant of the threats facing wetlands in Tanzania, National Wetlands Management Strategy was formulated in 2007. It is a ten years Strategy (2007 - 2017) aimed at conserving wetlands ecosystems so that they can continue to provide ecological services and support sustainable livelihoods. The Strategy therefore is intended to implement relevant Government Statements contained in the Wildlife Policy of Tanzania in conjunction with other relevant national policies.

3.2 Sectoral Policies and Laws

The major policies and strategies that cover the integration of other sectors activities on environment and biodiversity in the country include: the National Forest Policy (1998) and Forest Act (2002); the Fisheries Sector Policy and Strategy Statement (1998); the Water Policy (2002); the Wildlife Policy (1998); the Land Policy (1999); Village Land Act (1999); Land Act (1999); National Agriculture and Livestock Policy (1997); Livestock Policy (2006); Wildlife Act (2009); Agricultural Sector Development Strategy (2001); and Rural Development Strategy (2001).

3.3 National Environmental Policy

The National Environmental Policy states that Programmes for the conservation and utilisation of biological diversity shall be pursued to prevent and control the causes of significant reduction or loss of biological diversity. Strategic measures shall be put in place for the development of biotechnology, especially to ensure fair and equitable sharing of the results and benefits arising out of utilisation by foreign recipients, of genetic resources originating from Tanzania, and biosafety.

The Policy further states that Biodiversity policies, strategies and programmes are only meaningful in relation to other national policies, strategies and programmes. Therefore, policies, strategies and programmes for the conservation of biological diversity and sustainable use of biological and genetic resources shall be integrated into relevant sectoral/cross-sectoral policies, strategies and programmes.

The National Environmental Policy calls for intensification of wild and domesticated plant genetic conservation programmes in the Agriculture Sector and implementation of animal genetic resource conservation programmes in the Livestock sector. In the Forestry Sector, it also states that in the, Natural forests with biological diversity value and genetic resources shall be conserved; account will be taken of the dangers of monoculture and to the extent possible natural forests will not be replaced by exotic species.

3.3.1 Agricultural Sector

Agricultural sector is the leading sector of the economy of Tanzania and accounts for overall GDP and export earnings. Over 80% of the poor are in rural areas and their livelihoods depends on agriculture. Moreover, about 80% of the population live and earn their living in rural areas with agriculture as the mainstay of their living.



Plate 13: The Government emphasizes on good agricultural practices such as terracing and tree planting in the agricultural land

Agricultural Sector Development Strategy (ASDS) aims at creating enabling and conducive environment for improving profitability of the sector as the basis for improved farm incomes and rural poverty reduction in medium and long term. The strategic options available for ASDP are largely constrained by Government's priority objectives, recent policy pronouncements and the on-going reform programmes. The overarching government objective is poverty reduction and this calls for strategies that are capable of raising the incomes and living standards of a large proportion of the rural population of the relatively near future. In this regards the Strategy among other things addresses the importance of conserving biodiversity especially the agro-biodiversity for sustainable development and poverty reduction. Likewise, the National Agricultural Land Use Master plan puts in place strategies of sustainable utilization of Agricultural land that takes into consideration biodiversity conservation issues.

3.3.2 Livestock Sector

The government has adopted a strategy for range development by formal recognition of associations and organizations of livestock keepers and actions are taken to ensure that livestock keepers obtain formal legal recognition of traditional grazing rights as envisaged in the Land Act (1999).

In 2006 the government issued a Notice to evict all grazing animals which invaded Ihefu wetland and the protected forests in Kagera region. Today, regeneration of vegetation cover in Ihefu wetland has improved considerably and some migratory bird species and wild animals including hippos, buffaloes, ostriches, antelopes and zebra which were in the area before are returning back.

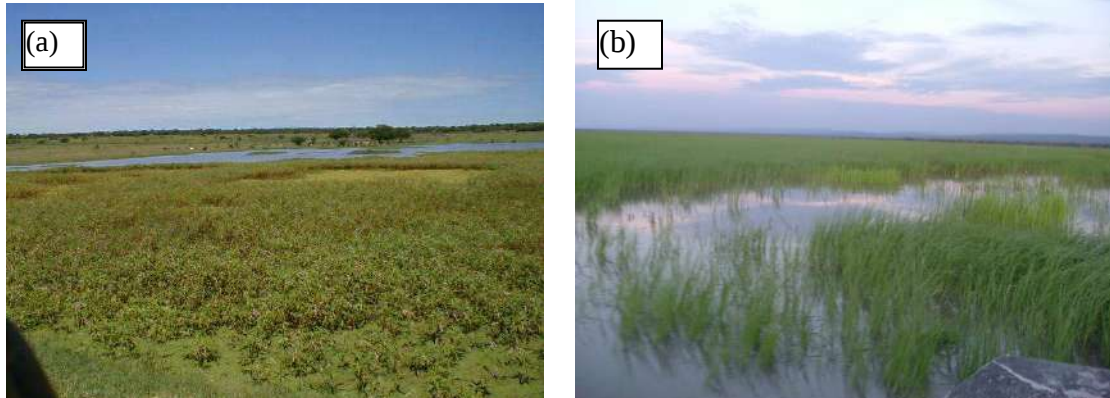


Plate 14: Ihefu wetland before and after eviction of livestock from the area



Plate 15: Sustainable livestock keeping is highly emphasised in order to get out of poverty and safeguard biodiversity

3.3.3 Forestry Sector

In order to ensure ecosystem conservation and management of biodiversity, the National Forest Policy spells a number of strategies including the following:-

- New forest reserve biodiversity conservation will be established in areas of high biodiversity value;
- Biodiversity research and information dissemination will be strengthened in order to improve biodiversity conservation and management;
- Biodiversity conservation will be incorporated in the management regimes of natural production forests and plantations;
- The replacement of natural forest by exotic plantation will be minimized;
- EIA will be required for investments which convert forestland to other land use or may cause damage to the environment and biodiversity.



Plate 16: Miombo woodlands being cleared for tobacco cultivation



Plate 17: Nursery for trees suitable in water sources: Such initiatives are highly encouraged

Guidelines on harvesting of forest products have been prepared in order to ensure sustainable utilization of forestry resources in the country. The Guidelines directs each district to have a Forest Harvesting and Monitoring Committee that will coordinate harvesting activities within the district and update harvesting plans. Furthermore, as a measure to enhance environmental and biodiversity conservation in the country, the Government is steering a national tree planting campaign. This Campaign has been running for more than ten years whereby each

district is obliged to plant 1.5 million trees annually. However some districts have surpassed this target due to awareness and participation of the communities in those districts.

Currently the government has upgraded about 24,000 ha of Uluguru forest reserves to be nature reserves as an effort to conserve biodiversity in these ecosystems. Furthermore, the process of upgrading the Rungwe and Livingstone forest reserves which in total covers about 13,652 ha to nature reserve is in the final stages.



Plate 18: Use of alternative sources of energy such as coal briquettes and energy efficient stoves will highly reduce deforestation for fire wood and charcoal, hence conservation of biodiversity

3.3.4 Wildlife Sector

A number of strategies are in place for the integration of biodiversity in the wildlife sector. The major ones are:-

Wildlife Policy (1998)

Recognizing the plight of wildlife and the need to use wildlife to alleviate poverty amongst the rural people, the wildlife policy adopted strategies that integrate rural development with wildlife conservation and therefore, recognize the intrinsic value of wildlife to rural communities. Some of the strategies adopted by the policy are:-

- Establishing Wildlife Management Areas (WMAs) on village land in order to affect Community-based Conservation (CBC);
- Adopting measures that bring equitable sharing of revenue from tourist hunting to the rural communities;
- Compelling licensed dealers in wildlife based products to employ workers from areas where wildlife utilization activities are conducted;
- Working in partnership with rural communities; and

- Initiating formation of Authorized associations for sustainable management of Wildlife outside core protected areas.

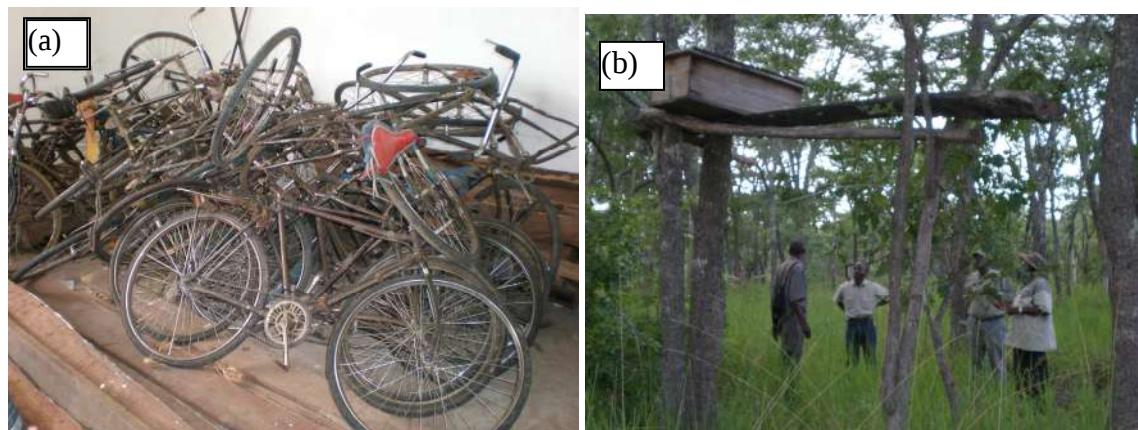


Plate 19: Seized poaching facilities (a) and alternative economic activity (beekeeping) (b) in the WMAs

3.3.5 Fisheries Sector

Tanzania has great potential of fishery resources in marine, lakes, rivers and dams. However, these sources are subjected to a number of environmental challenges including unsustainable fishing practices, coral reef destruction, mangrove destruction, unsustainable agriculture activities, and deterioration of water quality, sea level rise, and pollution, deterioration of water quality, decrease of oxygen levels in shallow waters, disappearance of certain fish species, water hyacinth infestation, wetland degradation, land degradation in catchments, and sedimentation.

In order to address these challenges, the Government in 2008 formulated a Strategy on Urgent Actions on the Conservation of Coastal Marine, Lakes, Rivers and Dams. The main object of this Strategy is to ensure conservation, to improve water quality, and the environment at large so that the resources in these areas are utilized in a sustainable way and hence contribution to the improvement of people's livelihood and poverty reduction.

Furthermore, the National Integrated Coastal Management Strategy (2003 - 2013) provides a framework under the National Environmental Policy that links sectors at district level, and creates partnerships among them towards sustainable use of coastal resources and development. The goal of this Strategy is to conserve coastal resources for use by the people of today and succeeding generations, to ensure food security and to support economic growth.

3.3.6 Mining Sector

Mining industry broadly impacts on environment by degrading the basic resources including biodiversity. Some measures taken by the mining sector in minimizing environmental impacts includes a requirement to conduct Strategic Environmental Assessment (SEA) of small scale mining areas and requirement to prepare environmental management plan for everyone engaged in mining activities.

3.4 Implementation of Biodiversity-related Multilateral and Regional Environmental Agreements

In recognition of the responsibilities in the conservation of the shared ecosystems, Tanzania has been cooperating with its neighbours in the conservation of the same. Further, Tanzania is a member to the Lusaka Agreement, which has an aim of combating illegal trade wildlife across the borders in the region. Tanzania also is signatory to other and global Conventions, notably the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS), African-Eurasian Migratory Water Bird Agreement (AEWA), the Convention on Wetlands (Ramsar) and the Convention on Biological Diversity (CBD). Tanzania is also a member of the East Africa Protocol on Environment and Natural Resources Management. The Protocol aims at developing and adopting common policies, laws and measures to ensure sustainable utilization of natural resources.

3.5 Biodiversity related programmes and projects

Tanzania has been implementing various programmes and projects that are geared towards conservation of biodiversity and sustainable use of its components. Some of these programmes and projects include:-

(a) Lake Victoria Environmental Management Programme

This Programme was implemented by three riparian states of Tanzania, Kenya and Uganda. The overall objectives were:

- To maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water, and sustain a disease-free environment;
- To conserve biodiversity and genetic resources for the benefit of the riparian communities and the global community; and

- To harmonize national management programmes in order to achieve to the maximum extent possible, the reversal of increasing environmental degradation.
- The programme had the following components: Fisheries development, Water hyacinth control, Land use and wetland management and Institutional Strengthening.

(b) Lake Tanganyika Biodiversity Project

This project focuses on pollution control and other measures to protect biodiversity in Lake Tanganyika. It is implemented by four countries namely Tanzania, Burundi, D. R. Congo and Zambia. The overall objective of this project is to create capacity in the four participating countries to manage the lake on a regional basis as a sound and sustainable environment.

(c) East African Cross-border Biodiversity Project

This was a cross border project involving Kenya Uganda and Tanzania. The overall objective was to reduce the rate of biodiversity loss resulting from human activities at the four cross-border sites and it has four components namely: To address biodiversity at decentralized community and district levels; To build regional linkages at cross border levels between communities as well at national level and to look at central government policy issues which influence the conservation of biodiversity at local levels.

(d) The Eastern Arc Mountain Conservation Programme

In recognition of biodiversity and water catchment values the Eastern Arc mountain forests, the Government of Tanzania through the Ministry of Natural Resources and Tourism (MNRT), in 2003 formulated a project "Conservation and Management of Eastern Arc mountain Forests"- CMEAMF, with the view "to develop and implement conservation strategies that ensure the sustainable conservation of the Eastern Arc Mountain forests, both for the conservation of forests and biodiversity.

(e) Marine and Coastal Environment Management Project (MACEMP)

This project covers 14 districts in Tanzania mainland and 6 regions in Zanzibar. The project among others, aims at conservation of marine and coastal environment in which biodiversity conservation is also addressed.

(f) Nile Transboundary-Environmental Action Project

The Nile Transboundary-Environmental Action Project (NTEAP) is one of the projects in the Nile Basin Initiative (NBI). This project is implemented in collaboration with Burundi, DR Congo, Rwanda, Uganda, Kenya, Ethiopia, Egypt, and Sudan. Among other things, the project aims at basin management as well as wetlands management in which biodiversity conservation issues are also addressed.

3.6 Overall assessment of the level of integration of Biodiversity

(a) Positive incentives for environmental management

In order to enhance participation of the communities and private sector, the government has created incentives measures such as:

(i) Presidential Award on Leadership and Excellency in Mining Activities

The Presidential Award on Leadership and Excellency in Mining Activities is been awarded to mining company on recognition of its efforts in conserving the environment including biodiversity in its mining activities.

(ii) Presidential Award on Conservation of Water Catchments, Tree Planting and Management

The Presidential Award on Conservation of Water Catchments , Planting and Management of Tree aims at enhancing participation of the public and private sector in the conservation of the environment and water catchments in efforts to combat desertification and drought, loss of biodiversity which are major threats to the country.

(iii) Establishment of Wildlife Management Areas

Communities are encouraged to set aside areas for wildlife conservation and undertake different wildlife related enterprises for their- own benefits.

(iv) Implementing Participatory Forest Management/Joint Forest Management

Participatory Forest Management which is contained in the Forest Act, 2002 provide legal basis for communities to own, manage or co-manage forest under wide range of conditions, including benefits from the forest resources.

CHAPTER IV: CONCLUSIONS:

Tanzania has three categories of Biodiversity namely; aquatic, terrestrial and agro-biodiversity. These categories consist of high number flora and fauna species and a considerable percentage of them are endemic. However, human interventions are seriously threatening sustainable utilization of existing biodiversity, although the government is taking various interventions and actions aimed at reducing threats on biodiversity so as to achieve the 2010 target. Various actions towards achieving this target have been addressed and implemented.

The National Environmental Policy, and the Environmental Management Act and its subsequent regulations and guidelines recognize the importance of implementing biodiversity conservation actions by various actors from the local level to the national level. Also, recognizing that environment has no boundaries between countries, the Policy has directed the Government to join the international community in the environmental management efforts. In response to this, Tanzania is Party to various multilateral Environmental Agreements, including the Convention on Biological Diversity, United Nations Framework Convention on Climate Change, United Nations Convention to Combat Desertification, etc.

At the national level, the Government has been implementing various environmental management related policies, legislations, strategies, Programmes and Projects addressing among others, biodiversity conservation issues in aquatic, terrestrial, and agro-biodiversity environments. These initiatives are implemented by respective forestry, Agriculture, Livestock, Mining, Energy, Health, Wildlife, Tourism, Transport, Urban and Human Settlements, just to mention some. The Vice President's Office through the Division of Environment coordinates environmental management issues in the country.

The Environmental Management policies and legislations provide opportunities for the Tanzanian community to equally benefit from environmental resources and stipulates penalties for persons who do not comply with the stated requirements. For example, the strategy for Urgent Actions on Land Degradation and water Catchments requires any person who sets fire to forest areas and grasslands to be convicted. It provides incentives for individuals or organizations that provide information on forest or rangeland fires, and assist in extinguishing such fires to be awarded by the district leadership. However, it requires to hold responsible local area leaders for failure to prevent or control such fires in their areas of jurisdiction and that they should provide to the Vice President's Office reports/information on incidences of wild fires and steps taken, monthly.

Hand in hand with enforcement and compliance to the existing legislations, the government through its Sectors, various Institutions and Non Governmental Organisations has been implementing a number of Programmes and Projects that are aimed at reducing the rate of environmental degradation, particularly loss of biodiversity. A number of public environmental management awareness programmes are being conducted to various stakeholders for the same purpose. This has to a great extent encouraged the local communities to participate in Community Based Environmental management activities such as Joint Forest and Wildlife Management aspects. Capacity of local communities to participate in the protection of forests and wild animals through joint forest management and wildlife management areas has been strengthened. Already, local communities adjacent to the WMAs have started to benefit from hunting and photographic tourism as well as from sustainable projects in the protected areas such as bee keeping projects, while those residing around the forest protected areas are benefiting from the forest biodiversity resources.

Through implementation of the aquatic, terrestrial and agro-biodiversity related strategies, programmes and plans there have been some considerable achievements in terms of biodiversity conservation. For instance, implementation of the Strategy on National Integrated Coastal Management has reduced pressure on coastal resources through alternative income generating activities such as sea weed, paprika and fish farming, and beekeeping projects. This has also enhanced planning for mariculture development.

Realizing the need for sustainable utilization in the country, biodiversity issues have been integrated in the National Strategy for Growth and Poverty Reduction (NSGRP), and in the local governments' plans and budgets. This has enhanced linkage between biodiversity and improvement of people's livelihood. Also, implementation of the environmental related legislations and district by-laws has increased coordination, focus and management of the aquatic, terrestrial and agro-biodiversity across all stakeholders. For example, surveillance of illegal fishing practice particularly dynamite fishing and use of illegal fishing gear has been intensified, resulting in reduction in illegal fishing practices.

Apart from declaration of some areas for biodiversity conservation, the government has taken further initiatives of protecting some endemic and threatened biodiversity even if they are not in the protected areas. Some tree species such as Mangroves, *Milicia excelsa*, *Pterocarpus angolensis*, *Allanblackia stulmanii*, *Cephalosphaera usambarensis*, and *Dalbergia melanoxylon* are protected by law and no one is allowed to harvest them without special permission from relevant authorities. Also, the government ensures that all development projects are subjected to Environmental Impact Assessment (EIA) to make sure that, among others, biodiversity issues are addressed.

In order to enhance decision making on environmental issues based on sound scientific evidence research activities addressing biodiversity issues are being undertaken by various Research institutions in the country. In line with this, two Reports on the State of the Coast were prepared. Also, a National State of the Environment Report was prepared in 2008. The Environmental Management Act requires the Director of Environment to prepare a National Report on the State of Environment to be tabled before the National Assembly every after two years.

Despite the fact that the country has been implementing International environmental commitments as well as national environmental policies, legislations and strategies, achievement of such efforts have been constrained by various factors, including inadequate environmental management awareness among key stakeholders, insufficient resources to adequately address environmental issues as well as lack of efficient and effective alternative sources of energy to reduce dependency of forest resources as the main source of energy. Farmers and livestock keepers have continued to practice unsustainable agriculture and livestock keeping practices despite the fact that the government has been insisting on sustainable use of the existing natural resources. Awareness raising among the local communities regarding environmental management is of crucial importance.

Appendix I - Information concerning reporting Party and preparation of national report

A. Reporting Party

Contracting Party	UNITED REPUBLIC OF TANZANIA
NATIONAL FOCAL POINT	
Full name of the institution	<i>VICE PRESIDENT'S OFFICE</i>
Name and title of contact officer	<i>ERIC MUGURUSI DIRECTOR OF ENVIRONMENT</i>
Mailing address	<i>VICE PRESIDENT'S OFFICE P.O.BOX 5380 DAR ES SALAAM TANZANIA</i>
Telephone	<i>+255 22 2113983/2118416</i>
Fax	<i>+255 22 2113983/2118416</i>
E-mail	biosafetytz@vpdoe.go.tz ; info@vpdoe.go.tz
CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	<i>VICE PRESIDENT'S OFFICE</i>
Name and title of contact officer	<i>STEPHEN NKONDOKAYA Ag. ASSISTANT DIRECTOR OF ENVIRONMENT</i>
Mailing address	<i>VICE PRESIDENT'S OFFICE P.O.BOX 5380 DAR ES SALAAM TANZANIA</i>
Telephone	<i>+255 22 2113983/2118416</i>
Fax	<i>+255 22 2113983/2118416</i>
E-mail	biosafetytz@vpdoe.go.tz ; info@vpdoe.go.tz
SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	

B. Process of preparation of national report

Please provide information on the process used to prepare this report, including information on stakeholders involved and material used as a basis for the report.

This report was prepared by gathering information from relevant sectors on biodiversity status, trends and initiatives on biodiversity conservation. The information was then compiled and a draft report was prepared by a team of experts and circulated to sectors for review. Finally, the report was subjected to wider consultative stakeholders workshop for final review.

Appendix II - Further sources of information

If Parties so wish, sources of information on national implementation, such as website addresses, publications, databases and national reports submitted to other related conventions, forums and organizations, may be provided below.

Sources of Information TO BE PROVIDED HERE

- **Budget speeches**
- **Policies**
- **Legislations**
- **Programmes**
- **Strategies**
- **State of environment**
- **State of the Coast Reports**
- **NBSAP**
- **NEAP**
- **NAPA**
- **Project documents**
- **Third CBD Report**
- **Guidelines for mainstreaming**
-

Appendix III - Progress towards Targets of the Global Strategy for Plant Conservation and the Programme of Work on Protected Areas

A. Progress towards Targets of the Global Strategy for Plant Conservation

Overview of progress towards the 16 targets contained in the Global Strategy for Plant Conservation, adopted by decision VI/9 and reproduced in annex IV of these guidelines.

- (1) Parties are invited to:
 - (a) List any national targets (including global targets adopted), as appropriate, established to achieve the targets of the Global Strategy for Plant Conservation;
 - (b) Provide an overview of progress towards these targets, focusing on:
 - (i) National targets established (global targets adopted);
 - (ii) Incorporation of targets into relevant strategies, plans and programmes;
 - (iii) Actions taken to achieve the target;
 - (iv) Obstacles encountered;
 - (v) Needs and future priorities identified.
- (g) Some efforts for developing a comprehensive list of plant species have been initiated. Already, two books on common trees and fruit trees in the country have been published.
- (h) There has been some efforts towards conservation of plant species in the country. Such efforts include:-
 - 1. Protection by law of some tree species such as Mpingo and Mzambarao. No one is allowed to harvest these tree species without a special permission from relevant authorities.
 - 2. Establishment of Participatory Forest Management Programmes.
 - 3. Development of a Strategy for Urgent Actions on Land Degradation and Water catchments, which outlines some measures for forest protection such as halting wild fires; rampant tree felling for fire wood, charcoal, building materials and expansion of agricultural land; promoting use of alternative sources of cooking energy by reducing taxes on kerosene and liquefied petroleum gas.

There are some measures taken to protect, recover and restore forest biological diversity at regional, national, sector, local authority levels and higher learning

institutions (SUA and UDSM) as well as NGOs. These efforts vary from legislation, sector policies, programmes to projects.

At sector level there are projects such as:-

1. The Forest Resource Conservation and Management (Participatory Forest resource management and Gender aspects); Forest Biodiversity Conservation and Management; Land use Planning; Forest Resources Information and Management Planning and Forest Resource Utilisation. These are implemented through Participatory forest management that includes, sharing management responsibilities and coordination among stakeholders.
2. Legal and Regulatory Frameworks i.e. Forest Act of 2002 and its regulations of 2004; EMA 2004 provides provisions for EIA and measures to protect and restore biological diversity.
3. Forestry based industries and sustainable livelihoods
 - The National Tree Seed Agency is in place and operational.
 - The Management of forest protected areas has been intensified to be in line with the Forest Regulations of 2004.
 - Higher learning institutions provide additional knowledge on forest management and conservation. Research findings are disseminated to stakeholders.
 - At local level there are efforts made to conserve forest biodiversity through programmes such as HIMA, HASHI, HADO etc.

B. Progress towards Targets of the Programme of Work on Protected Areas

Overview of progress towards selected targets contained in the Programme of Work on Protected Areas, adopted by decision VII/28 and reproduced in annex V of these guidelines.

Tanzania has adopted the National guidelines for the selection, establishment and management of the protected areas. This is well stipulated in the Forest regulations of

year 2004, Wildlife Act 2009, declaration of environmental protected areas as per the EMA 2004 Section 47 – 50, the National Integrated Coastal Management Strategy, and the Marine Protected Areas Act, 1994. The country has also undertaken measures that promote development activities in areas adjacent to protected to be environmentally sound and sustainable. e.g. of some regulations are in Wildlife, Forestry and Fisheries sectors through their respective Acts. In EMA 2004, section 67 (2e) states that regulations made under this section may prescribe the promotion of environmentally sound and sustainable development in area adjacent to protected areas with a view of furthering protection of these areas. The progress is shown below.

Goal: To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to Globally agreed goals
Target: <i>Establish a global network of comprehensive, representative and effectively managed national and regional protected area Systems.</i>
<i>The existing national protected area system comprehensive, ecologically representative and effectively managed (provide number of existing protected areas, total area covered, and type and percentage of biomes covered)?</i>
• The national protected area system is comprehensive, ecologically representative and effectively managed • There are 800 Forest Reserves covering an area of about 13 million hectares • There are 13 Marine Protected Areas covering an area of about 2000 km² namely, Mafia island Marine Park (822km²), Mnazi Bay Ruvuma Estuary Marine Park (650km²), Dar-es-salaam Marine Reserves System – North (Mbudya, Bongoyo, Maziwe , Pangavini and Funguyasini Marine Reserves) (350km²), Dar-es-salaam Marine Reserves System – South (inner and outer Kendwa, Makatumbe, inner and Outer Sinda - (58km²), Mbarakuni, Shungimbili and Nyororo Archipelago (120km²) • There are 14 National Parks with total area of 41,631km²; 1 Ngorongoro Conservation Area covering 8,300 km²; 33 Game Reserves with total area of 121,151.97 km²; and 41 Game Controlled Areas covering 58,565.02 km² • Percentage of biomes covered not documented • Categories of IUCN protected areas included are National Parks (category 2); Game Reserves (category 6)
<i>New protected areas established since COP-7 cover underrepresented ecosystem and biomes (number of new protected areas since COP-7, area covered by them)?</i>
• Currently there is a process of gazetting 3 new nature reserves within the eastern arc mountains blocks wit a total area of 160,500 hectares, gazetting 2 National Forest Reserves covering 7,500 hectares and acquiring two forest corridors of about 2,000 to reduce fragmentation of mountain forest blocks

<i>Plans for the establishment of additional protected areas by the year 2010 (terrestrial) and 2012 (marine)?</i>
• 6 Marine Protected Areas covering about 1950 km² will be established to reach the national target from the current 4% to 10% MPAs by 2012 • It is expected that by 2010, 3,672 hectares of forest will be protected under Participatory Forest Management approach • Two additional National Parks on the process to gazetted • Strategies for gazettment of more marine protected areas in place
Goal: To integrate protected areas into broader land and seascapes and sectors so as to maintain ecological structure and function.
Target: <i>All protected areas and protected area systems are integrated into the wider land-and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks.</i>
<i>Measures that have been taken for developing enabling environment (legislation, policies, tools) for integrating protected areas into broader land and seascapes and sectoral interests(i.e. agriculture infrastructure, energy)?</i>
• Tanzania has revised its National Forest Policy, and Forest Act, and developed a National Forest Programme to ensure ecosystem stability through conservation of forest biodiversity. • Forest protected area systems are integrated into wider land-and seascape by applying ecosystem approach, example the Eastern Arch Mountain Forest Ecosystem starting from Taita hills in Kenya to Southern Highlands of Tanzania; Albertine Rift Valley Conservation Area covering great lakes states; Lake Victoria basin covering the lake basin and catchments of Kenya, Tanzania and Uganda; East Africa Coastal Forest Ecoregion covering the coast of Kenya, Tanzania and Mozambique; East Africa Cross-border biodiversity covering cross-border biodiversity of Kenya, Tanzania, and Uganda • In collaboration with the UNDP/GEF and the World Bank through Marine and Coastal Environmental Management Project (MACEMP), the government is on the process of preparing Trans frontier Marine Protected Area network (between Kenya and Tanzania, and Between Tanzania and Mozambique). • Integrated coastal management (ICM) strategy is in place to address the engagement of various sector activities like gas to electrification project currently carried out in Mnazi Bay Ruvuma Estuary Marine Park by Artumus Company of Canada.
Goal: To establish and strengthen regional networks, transboundary protected areas (TBPAS) and collaboration between neighbouring protected areas across national boundaries..

Target: Establish and strengthen by transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.
<i>Collaboration across national boundaries in relation to protected areas?</i>
• Process is underway on the establishment of Trans-frontier marine conservation area between Mnazi Bay and Ruvuma Estuary Marine Park in Tanzania and QURIMBAS in Mozambique • Cross-border collaboration in wildlife protection operations are done for Serengeti and Mkomazi National Parks bordering with Kenya • Consultations has been initiated with regard establishment of wildlife corridor for the Selous Game Reserve (Tanzania) and Niassa Game Reserve (Mozambique)
Goal: To substantially improve site-based protected area planning and management.
Target: All protected areas have effective management using participatory and science-based site planning processes that incorporate Clear biodiversity objectives, targets, management strategies and monitoring programmes, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement.
<i>Percentage of protected areas (area and number) that have up-to-date science-based management plans</i>
a) Under development • 9% - 178 km² covering 6 Marine Protected Areas have up-to-date science based management plans that are under development • General Management Plans for 3 proposed National Parks (Kitulo, Saanane and Mkomazi) are under development
b) Under effective implementation? • 91% - 1822 km² covering 7 Marine Protected Areas have up-to-date science based management plans that are under effective implementation • 500 km² covering 150 Forest Reserves have up-to-date science based management plans that are under effective implementation • 5 National Parks are implementing science-based management plans • 1 Game Reserve has a management plan
Goal: To prevent and mitigate the negative impacts of key threats to protected areas.
Target: Effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas are in Place.

<i>Measures have been put in place to identify, prevent and/or mitigate the negative impacts of threats?</i>
• Participatory Forest Management is been practiced • Forest encroachers are been evicted • Export of logs has been banned • National Forest Inventory has been carried out in 11 potential districts • Guidelines on harvesting of forest products are in place • Country assessment of sawmills was undertaken • Establishment of forest surveillance Units • Strengthening of checkpoints • Forest database has been established • National Forestry Resources Monitoring and Assessment project is being developed • Marine Parks and Reserves Act in place • Strategic Plan for Marine Protected Area is in place • General Management Plan for the Mafia Marine Park and Mnazi Bay and Ruvuma Estuary Marine Park in place • Investment Guidelines on Marine Protected Areas in place • Environmental Impact Assessment (EIA) Guidelines for Marine Protected Area developed • Community Based Surveillance and Enforcement conducted in the existing Marine Protected Areas • EIA is mandatory for any development activity in wildlife protected areas • Surveillance in National Parks is a permanent undertaking
Goal: To promote equity and benefit sharing.
Target: <i>Establish mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas.</i>
<i>Legislative or policy framework in place to establish frameworks for the equitable sharing of costs and benefits arising from the establishment and management of protected areas?</i>
• National Forest Policy, 1998 • Forest Act, 2002 • Marine Parks and Reserves Act No. 29 of 1994 • Marine Protected Areas General Management Plan and related regulations • Marine Protected Areas Five - year Strategic plan • Wildlife Policy, 1998
Goal: To enhance and secure involvement of indigenous and local communities, and relevant stakeholders.
Target: <i>Full and effective participation of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international</i>

<i>obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas.</i>
<i>Mechanisms that have been implemented to ensure full and effective participation of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, in the management of existing, and the establishment and management of new, protected areas?</i>
• The National Forest Policy and the Forest Act provides framework for and promotion of equity and benefit sharing and participation of local communities in sustainable forest management • The Marine Parks and Reserves Act provides for community participation in the management of Marine Protected Areas through Village councils • Outreach programme including benefit sharing is being implemented in National Parks and Game Reserves
<i>Mechanisms that have been put in place to ensure the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas?</i>
Participatory Forest Management which has been passed in the Forest Act provides clear legal basis for communities, groups, or individuals across the country to own, manage or co-own forests under a wide range of conditions. The Act recognize two different types of Participatory Forest Management which are:- - To enable local communities to declare and ultimately gazette village, Group or Private Forest Reserve (commonly known as Community Based Forest Management). - Allow communities to sign joint forest management agreements with governments with government or other forest owners (commonly known as Joint Forest Management) General Management Plans for existing Marine Protected Areas ensure participation of relevant stakeholders in the management of existing Marine Protected Area, stakeholders consultation of relevant stakeholders is done in the establishment of new protected areas
Goal: To provide an enabling policy, institutional and socio-economic environment for protected areas.
Target: <i>By 2008 review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected area systems.</i>
<i>Appropriate policy, institutional and socio-economic framework in place to value goods and services and enable more effective establishment and management of protected areas?</i>

• Appropriate policies and institutional frameworks are in place for the management of protected area
• <i>What kind of social and economic valuation methods and incentives for more effective establishment and management of protected areas are developed and incorporated into national policies, institutional and socioeconomic structures?</i>
• EIA guidelines and Investment guidelines for protected areas
Goal: To build capacity for the planning, establishment and management of protected areas.
Target: <i>comprehensive capacity building programmes and initiatives are implemented to develop knowledge and skills at individual, community and institutional levels, and raise professional standards.</i>
• <i>Has a comprehensive capacity-needs assessment for protected areas management been carried out?</i>
• Comprehensive capacity-needs assessment has been carried out for marine and terrestrial protected areas management
• <i>What capacity building programmes have been undertaken or are being undertaken. How successfully have the completed programmes been?</i>
• Comprehensive training programmes were developed and being undertaken in marine and terrestrial protected areas • The Forestry and Beekeeping Division is currently being transformed into an Executive Agency to be known as (Tanzania Forest Service) which will be an autonomy body • Capacity building at Local Government Authority level is being carried-out by the Forestry and Beekeeping Division through the 7 established zonal extension offices
Goal: To develop, apply and transfer appropriate technologies for protected areas.
Target: <i>development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas is substantially improved, taking into account decisions of the Conference of the Parties on technology transfer and cooperation.</i>
<i>New innovative approaches and technologies have been identified, developed and implemented for protected areas establishment and management on the national and regional level?</i>
• Broader consultations of relevant stakeholders in establishment of protected area • Participatory management of protected areas, and benefit sharing arrangements

• Collaborative mechanisms for trans-boundary protected areas	
Goal: To ensure financial sustainability of protected areas, and national and regional systems of protected areas.	
Target: <i>Sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States.</i>	
Key evaluation questions and national considerations	Response to key questions
<i>Financial needs identified? What are the results of this needs assessment (quantitative and qualitative)?</i>	
• Yes, through regular annual work plans and budgets. • Financial needs higher compared to funds allocated by the Government on Protected Areas e.g the management of Marine Parks and Reserves alone, requires about Tanzania shillings 1.5 billion per annum.	
<i>Strategies that are in place to meet these needs, and in particular to secure long-term funding for the national protected areas system?</i>	
• Establishment of National MPA systems through Networking at local, regional and international levels. This may help to raise more funds through donor grants. • Diversification and expansion of revenue base.	
Goal: To strengthen communication, education and public awareness.	
Target: <i>Public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased.</i>	
<i>Review of mechanism for public education programmes to measure if they have been effective in communicating the basic biodiversity values of protected areas?</i>	
• The need for public education programmes is provided for in Protected Area Acts, Regulations, General Management Plans, and Strategies	
Goal: To develop and adopt minimum standards and best practices for national and regional protected area systems.	
Target: <i>Standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted..</i>	
<i>Standards, criteria and best practices for a) site selection, b) management, c) governance, and d) long-term monitoring of outcomes been applied and documented?</i>	
• Yes, as provided for in various Acts, Strategic Plans, General Management Plans, and EIA guidelines.	
Goal: To evaluate and improve the effectiveness of protected area management.	
Target: <i>Frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented by</i>	

<i>Parties.</i>	
Key evaluation questions and national considerations	Response to key questions
<i>Country evaluation and management on effectiveness of protected areas in a systematic way? If yes, a) what percentage of national protected area system surface area has been evaluated? b) What are the conclusions for the national protected areas system, and to what extent were results incorporated into management plans and strategies?</i>	
• In Marine Protected Areas, whereas 91% of Marine Protected Areas, covering an area of 1822 km² for 7 MPAs have been evaluated • The protected area system coverage need to be increased through gazettment of more protected areas	

Appendix IV - National indicators used in the report (optional)

(1) In this Appendix, in addition to listing the indicators used in the report, Parties may wish to provide relevant technical information concerning:

- (a) what these indicators are measuring;
- (b) quality of these indicators;
- (c) quality of data used for development of these indicators.

(2) In addition, Parties are encouraged to submit some case studies, if available, on:

- (a) how these indicators help communicate the trends or changes in trends of biodiversity;
- (b) how the use of these indicators fits into the planning and decision-making processes for national implementation of the Convention.



This document was created with Win2PDF available at <http://www.win2pdf.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.
This page will not be added after purchasing Win2PDF.