

**THE STATE OF ERITREA**

**MINISTRY OF LAND, WATER AND  
ENVIRONMENT**

**DEPARTMENT OF THE ENVIRONMENT**

**NATIONAL REPORT  
ON THE IMPLEMENTATION  
OF ARTICLE 6 OF THE  
CONVENTION ON BIOLOGICAL  
DIVERSITY (CBD)**

**ASMARA, ERITREA**

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## A. EXECUTIVE SUMMARY

Eritrea ratified the Convention on Biodiversity on 9 September 1995.

Eritrea is a country at risk. It's rich biological diversity has been denuded, so that it has now some of the most difficult agricultural conditions in the region. When this is combined with a low and erratic rainfall as well as poor soils, the growth in agricultural production which would be necessary for bringing the majority of Eritreans out of poverty becomes illusive.

Eritrea perceives biodiversity not only as an object of preservation but also to be used in a sustainable manner. There is a great deal of commitment to conserve the existing biodiversity and enhancing it where possible.

It is in recognition of this commitment that:

- The National Environmental Management Plan (NEMP-E) was prepared and adopted in 1995. Within the NEMP-E, Eritrea adopted a "National Code of Conduct on the Environment" which solemnly proclaims a deep respect for all living things and the natural environment upon which they depend and a firm endeavour to make use of the environment in such a fashion that no species will disappear as a result of domestic actions, and in support of this endeavour, to maintain in perpetuity an adequate fraction of both the terrestrial and marine environment in their natural state.
- The draft National Environment Proclamation was prepared in which the role and place of biodiversity is recognized, particularly the principles for the sustainable management of natural resources.
- The draft National Biodiversity Proclamation was prepared setting out the legal framework for conservation and sustainable use of natural resources.
- The draft national guidelines on Environmental Impact Assessment was prepared wherein the role and place of biodiversity, in particular the protection of Environmentally Sensitive Areas (ESA's) is recognized and taken fully into account.

### **Biodiversity as a shared responsibility of the state and the people**

#### **The State of Eritrea:**

- a. is the custodian for the harmonized and integrated management and protection of the national environment and the sustainable use of natural resources,
- b. has sovereign rights over biological resources in areas within the limits of its national jurisdiction,

- c. is responsible for conserving the biological diversity of Eritrea and for using its biological resources in a sustainable manner, pursuant to its own policies as set forth in the National Environmental management Plan and its subsequent revision.

### **The people of Eritrea:**

- a. Bear the duty to maintain, contribute and to enhance the environment individually and collectively.
- b. Maintain a conscious and functional partnership with the Government as the basis for achieving the objectives of environmental protection and sustainable development.

### **Partners**

The principle partners in the formulation of the Biodiversity strategy and action plan are the government agencies such as the Ministry of Land, Water and Environment, Ministry of Agriculture, Ministry of Fisheries and Ministry of Local Government, private organizations, NGOs as well as public and local communities.

Further efforts will be made to involve mass organizations (such as, women, youth and workers organizations) and professional groups (such as, the Association of Eritrean professionals in Agricultural Sciences).

### **Summary of the Nations Biotic Assets**

#### **Terrestrial biotic assets**

Eritrea exhibits a wide variety of natural ecosystems which are well-distributed across the country. Extensive grassland systems, including *Aristida* grasslands in the west and *Sorghum purpueo-sericeum* grassland in the southwest are punctuated by riverine forest and border on large tracts of *Acacia* woodland. The vegetation of the mountainous north is primarily steppe, with patches of semi-desert and riverine woodland. The south-central region hosts several forest systems, including *Acacia* woodland, *Juniperus* forest, and north of Asmara, the last remnant of mixed evergreen tropical forest.

Eritrea's lengthy coastline is a mixture of semi-desert and halophytic vegetation with small patches of mangrove forest. Offshore, Eritrea harbours healthy coral reefs as well as over 350 islands, many of which are home to a variety of wildlife species. There have been reported sightings of oryx and gazelle, but these need to be verified. The island system offers sanctuary to endangered species such as the *dugong* (*Dugong dugon*) and the green sea turtle (*Chelonia mydas*). These ecosystems are under pressure, and current protective measures are insufficient to ensure the long-term survival not only of these habitats, but also the species that occur therein.

Historically Eritrea accommodated a wide range of animal species including elephant, hippopotamus, buffalo, giraffe, greater kudu, wild ass, Nubian ibex, waterbuck, lion, leopard, cheetah and colobus monkey as well as numerous other smaller species. At present, population of a number of these species persist in parts of Eritrea, but they are few in number and are considered threatened.

According to previous studies there are three areas of particular interest for forest biodiversity conservation. These are:

- The Eritrean Escarpment forests (Debubawi and Semenawi Bahri)
- The Riverine forests
- The Forest in the Northern Highlands

### **Marine biotic assets**

The marine environment makes a major contribution to Eritrea's natural heritage and biological diversity. There are many different marine and coastal habitats and ecosystems in Eritrea, such as:

- i) Sabkha ii) Sandy shores iii) Rocky shores and cliffs iv) Intertidal mud flats  
v) Mangroves vi) Seagrass beds and macroalgal hard bottoms vii) Coral Reefs  
viii) Open sea ix) Sea bottom and continental slope

The Red Sea has a very diverse fish assemblage with a total of 1000 species (including non-reef fish). To date 521 species have been recorded from the Eritrean Red Sea. Research carried out by the Ministry of Fisheries indicates that fish assemblages in the south are less diverse but more abundant than those in the north of the Eritrean Red Sea. Fisheries are clearly the Red Sea resource of most immediate interest, in areas in the southern Red Sea are particularly rich. Recent harvests are much lower than in the 1960s, and amount to approximately 4000 tones per annum. Currently, there are great efforts taken to increase production from artisanal and commercial trawl fisheries.

### **Biotic assets in agriculture**

The Russian geneticist N.I. Vavilov first described the highlands of Eritrea (and Ethiopia) as independent centers of crop origin. It is likely that this diversity extends to other plant groups, in particular succulent plant species along the coast. Virtually the entire complex of seed crops from Southwestern Asia and the Mediterranean is represented in Ethiopia and Eritrea, with especially high genetic variability in wheat, barley, sorghum millet taff etc. Landraces of indigenous crops are highly prized for their potential value as sources of variability for crop improvement, and the conservation of these genetic resources is an extremely high priority with global implications.

### **Goals and Objects**

The Objectives of the National Biodiversity Strategy and Action Plan are:

- a. re-establishing and conserving the biological diversity which is the natural heritage of the Eritrean people,
- b. using Eritrea's biological resources sustainably,

- c. Ensuring fair and equitable sharing of benefits arising out of the use of Eritrea's genetic resources.

The strategy and action plan for biodiversity currently under preparation is based on the collaborative management of natural resources, ensuring the joint involvement of local people, line ministries and local authorities concerned with biodiversity.

### **Strategy and actions**

The strategy for biodiversity preservation will be based, *inter-alia* on:

- The Rehabilitation of degraded ecosystems through natural succession and active human intervention, including afforestation and reforestation.
- Integrated coastal zone management to conserve the environment of nation's marine and coastal areas and to promote the sustainable development of the coastal zone and the optimal use of its resources.
- The conservation and sustainable use of biodiversity *inter-alia* through the establishment of the Eritrean National Protected Areas System (ENPAS).

Elements for biodiversity strategy in agriculture include the following:

1. The conservation and sustainable use of agro-biodiversity should serve / support the economic development policy of the Government.
2. Agro-biodiversity conservation activities should be integrated with the action of Government institutions.
3. Monitoring the introduction and use of high-yielding varieties, crop replacement and changes in cropping patterns.
4. Protecting and conserving landraces of indigenous crops and animals.
5. Encouraging both *in-situ* and *ex-situ* conservation of crop and livestock biodiversity including the wild relatives, micro-flora and micro-fauna of the agricultural system.
6. Combating drought as an agent of genetic erosion through
  - selection and improvement of drought resistant varieties from local landraces
  - improving the management practices that enhance the soil moisture retention of crop fields.
7. Improve the feed availability of livestock (rangeland improvement of forage crops, and improvement of closures).
8. Promote indigenous knowledge in conservation and sustainable use of genetic resources. Involve active participation of farmers in the process.

Elements of strategy for Marine and Coastal areas include:

- The establishment of an Integrated Coastal Zone Management (ICZM).
- The protection of Marine Biodiversity of the Red Sea.

Elements of strategy for Terrestrial Ecosystem include mainly the following:

- Rehabilitation of degraded terrestrial ecosystems.
- Establishment of the Eritrean National Protected Area Systems (ENPAS).
- Enhance the protection of shared national resources and transboundary migratory species.

### **Implementation**

The action plan will be developed and implemented by a number of institutions - a variety of organizations, and line ministries. A core planning team (CPT) consisting of key line ministries, the university and the private sector has been established. Also three working groups have been established to deal with agro-biodiversity, terrestrial biodiversity, marine and coastal area biodiversity.

A series of stages have been identified in the development process of the strategy and action plan. These are:

1. compilation of existing information (7 months).
2. identification of information gaps (4 months).
3. determination of the status and trend and pressure on biodiversity (12 months).
4. elaboration of strategies for conservation, sustainable use and benefit sharing (7 months)
5. economic assessment of Eritreas biodiversity (2 months).
6. assessment of institutional, legal policy framework and identification of future needs (3 months).
7. development of strategy and action plan and review at regional and national levels through workshops and submission for approval (10 months).

### **Budget and Human Resources**

Eritrea has limited human resources capacity in the area of biodiversity protection. This gap will be addressed through intensive training programme and institutional capacity building.

The current budget for the preparation of the Biodiversity Strategy and Action Plan is composed of Government subventions to the key actors in this process. These subventions are estimated at USD 55,000 for the period 1997 - 1998

In addition, a Global Environmental Facility grant of about USD 275,000 is available to the Department of Environment to supplement the Government subventions. The financial resources to implement the entire strategy will of course be determined only when the current process is completed.

### **Monitoring and Evaluation**

Monitoring and Evaluation will have two main features:

- a. Monitoring and evaluating biodiversity will be undertaken within the framework of the Eritrean Monitoring and Assessment Network (EMAN) which will be established as an environmental inspectorate within the DOE. EMAN is descended in some detail in the NEMP-E. The draft Environment Proclamation provides additional information.

- b. The Eritrean Monitoring and Assessment Network shall, in accordance with the provisions of the draft Environment Proclamation:
- 1) conduct inspections and audits
  - 2) take and analyze samples
  - 3) compile and synthesize environmental data from all sectors and from all inspections and audits, including post-EIA monitoring.

### **Sharing of National Experience**

The strategy places emphasis on close collaboration on biodiversity protection with neighbouring countries who share the same type of ecosystem and biotic assets.

## **PREFACE**

### **National Report on Biological diversity to the Conference of the Parties (COP) of the Convention on Biological Diversity.**

By its decision II/7 the Conference of the parties of the CBD

*Decided* that the first national reports by Parties will focus in so far as possible on the measures taken for the implementation of Article 6 of the Convention, “General measures for Conservation and Sustainable Use”, as well as the information available in national countries studies on biological diversity, using as a guide the annex to this decision;

*Decided* that the first national reports will be due at the fourth meeting of the Conference of the Parties in 1998.

This National report is the response of the Government of Eritrea to decision II/7 of the COP.

The preservation of biodiversity is intertwined with the pressing need for development, particularly the attainment of food security in the long term. The ratification of the Biological Diversity Convention on 9 September 1995 is one of the instruments to achieving the dual goals of development and attainment of food security.

Biodiversity is perceived as an important element for sustainable development in Eritrea, hence the central role it was given in the National Environmental Management Plan (NEMP-E) prepared in 1995 and currently being implemented. The national perception of biological diversity is not limited simply to preservation, but also to sustainable use. The national strategy and action plan whose preparation this document describes will be premised on this perception.

## B. INTRODUCTION

Eritrea is a country at risk. Thirty years of armed struggle combined with the persistent drought has impacted on the natural resources of the country. Its rich biological diversity has been denuded, so that it has now some of the most fragile ecosystem and difficult agricultural conditions in the region. When this is combined with a low and erratic rainfall as well as poor soils, the growth in agriculture which would be necessary for bringing the majority of Eritrean out of poverty becomes illusive.

### **Recognition of the importance of Biodiversity**

Eritreans are conscious that development depends on the use of natural resources. They recognize that in the past natural resources were exploited without attention to conservation and sustainability. They are convinced that development which is to last requires the sustainable use of resources. They are conscious of the dynamic inter relationships between terrestrial and marine ecosystems and the importance of human activities on them.

Eritreans believe that all things have their own value. Because of this belief a “*National Code of Conduct on the Environment*” was adopted in February 1995 which solemnly proclaims the following:

1. A deep respect for all living things, and the natural environment upon which they depend for each is a link in the chain that supports life on earth.
2. A firm endeavour to make use of the environment in such a fashion that no species will disappear as a result of domestic actions, and in support of this endeavour, to maintain in perpetuity an adequate fraction of both the terrestrial and marine environment in their natural state, and further to eschew any trade in species of plants or animals threatened with extinction.
3. An unfailing dedication to maintain the national lithosphere (land), hydrosphere (water), and atmosphere (air) at levels of purity conducive to a healthy environment.
4. A steadfast resolve to utilize the national renewable natural resources sustainably, the non-renewable ones frugally, and also to dispose of all wastes sustainably and in support of this resolve to achieve a national population level that is in balance with available national resources and sink capacities, so that both present and future generations can live in dignity, and especially development can be carried out sustainably and with equity.
5. A faithful desire to carry out no activity that would harm the environment beyond national boundaries.
6. A staunch commitment to cooperate as necessary with neighbouring states, and with the world community of nations, to protect and enhance the regional environment, the environment of regions beyond national jurisdiction, and the global biosphere in general and, in support of this commitment, a constant devotion to resolve any environmental or other interstate dispute solely by amicable means.

- 7 A thorough acceptance of the need to infuse into all levels of the educational process social and environmental philosophies that would nurture an acceptance of the fundamental rights of both humans and nature.

Eritreans have a deep sense for public participation. Community involvement has always been an indispensable element of any action, both during peaceful time and especially during periods of oppression and struggle. This national mode extends to concerns for biodiversity its preservation and sustainable use both for present and future generations.

In Eritrea both the State and the citizens assume obligations and responsibilities for biological diversity.

**The State of Eritrea:**

- a. is the custodian for the harmonized and integrated management and protection of the national environment and the sustainable use of natural resources.
- b. has sovereign rights over biological resources in areas within the limits of its national jurisdiction.
- c. is responsible for conserving the biological diversity of Eritrea and for using its biological resources in a sustainable manner, pursuant to its own policies as set forth in the National Environmental management Plan and its subsequent revision.

**The people of Eritrea:**

- a. must bear the duty to maintain, contribute and to enhance the environment individually and collectively.
- b. maintain a conscious and functional partnership with the Government as the basis for achieving the objectives of environmental protection and sustainable development.

## C. BACKGROUND

Several documents provide the legal and policy mandates for the preparation of the biodiversity strategy and action plan. First policy documents are described, following that legal documents.

### Policy Framework documents

#### a) The constitution of Eritrea

The constitution of Eritrea contains a relevant Article (10.3) for biodiversity protection. The Article says “The State shall have the responsibility to regulate all land, water and natural resources and to ensure their management in a balanced and sustainable manner, in the interest of the present and future generations and to create the right conditions for securing the participation of the people to safeguard the environment”.

#### b) Macro economic policy

Eritrea’s Macro Economic Policy document adopted in 1994 devotes a section environmental protection directly relevant to biodiversity protection. The protection of the environment is perceived to be a key element in ensuring sustainable development.

#### c) NEMP-E (1995)

The National Environment Management Plan (NEMP-E) is the blueprint for coordinating the protection and enhancement of Eritrea’s natural resources, so that optimal, social and economic developments can be achieved in consonance with the rational and sustainable use of resources for current as well as future generations.

The NEMP-E was developed through an extensive participatory process, under the aegis of an Ad-hoc Ministerial Council on the Environment. A technical committee of 14 Eritrean experts took charge for the drafting. The NEMP-E was adopted at a national conference by a broadly based group of participants.

The NEMP-E has an extensive chapter on biological diversity in section B.2 under the title “*Natural heritage and biological diversity*”. In section C of the NEMP-E six specific programmes and projects have been identified. Some of the programmes and projects have already been complemented. These include:

- Conservation Education and training
- Survey of elephant and wild ass populations (already completed)
- Baseline information on coral reef areas. (currently being implemented)
- The development of a conservation plan.
- The establishment of national parks, botanical garden and animal orphanage.
- Development of coastal and marine protection areas.

The biodiversity strategy and action plan will benefit much from the NEMP - E.

## **Documents Related Legal framework**

The second set of documents providing the legal mandate for the biodiversity strategy and action plan are described below:

### a) Draft National Proclamation on Conservation of Biodiversity (1996)

Following the ratification of the convention, Eritrea needed to adopt national legislation to put the CBD into effect. This was anticipated in the NEMP-E. The elements of the draft for a comprehensive biological diversity conservation proclamation were discussed in two separate workshops held in Asmara in November 1995 and April 1996. The draft proclamation contains in its different sections provisions for area based and species based conservation of biodiversity, access to genetic resources, information, education, training and research, and the institutional mechanisms required to deal with conservation of biodiversity.

The draft proclamation has not been formally adopted. Clearly there is a wealth of material in the draft which can be useful to the current efforts in preparing the biodiversity strategy and action plan.

### b) The Draft Eritrean Environment Proclamation (1996)

Probably the most important document providing the mandate for the biodiversity strategy and action plan is the draft Eritrean Environment Proclamation prepared during 1996.

The draft Environment Proclamation is the most authoritative legal document governing environmental management issues in Eritrea. The draft proclamation contains 90 articles and two annexes. It is divided into six Parts and fifteen Chapters.

In particular Part Four, Chapter II of the draft Environment Proclamation entitled “Natural Resources Management” is directly relevant to the Biodiversity strategy and action plan and to the implementation of Article 6 of the convention. Elements of Part Four, chapter II are described in subsequent sections of this report.

## D. SUMMARY OF THE NATIONS BIOTIC ASSETS

### a) Terrestrial biodiversity

*Definition used:*

*All living organisms in/or over land from the sea shore including fresh water ecosystems.*

Eritrea exhibits a wide variety of natural ecosystems which are well-distributed across the country. Extensive grassland systems, including *Aristida* grasslands in the west and *Sorghum purpueo-sericeum* grassland in the southwest are punctuated by riverine forest and border on large tracts of *Acacia* woodland. The vegetation of the mountainous north is primarily steppe with patches of semi-desert and riverine woodland. The south-central region hosts several forest systems, including *Acacia* woodland, *Juniperus* forest, and north of Asmara, the last remnant of mixed evergreen tropical forest.

Conservation of these varied and unique ecosystems, and the diverse flora and fauna, presents a challenge to the people of Eritrea. Efforts to promote conservation must take into account the need for complete protection for certain species and habitats, and hence for the formation of a system of the protected areas. At the same time, it must be recognized that the vast majority of Eritrea's natural resources and biological diversity will continue to exist outside of parks and reserves. Therefore, protection of natural resources cannot stop with the establishment of conservation areas. Effective land-use planning is recommended as necessary across the entire country, not only to conserve biological diversity, but also to promote the sustainable use of natural resources.

Eritrea was once host to a wide variety of wildlife species. After decades of war, drought and neglect, populations of many species have dwindled, and in some areas have been exterminated. Surprisingly, preliminary observations indicate that wildlife persists in some areas. For example, a small elephant population is known to occur in southern Gash-Setit province. Sommering's gazelle (*Gazella soemmeringii*), Dorcas gazelle (*Gasella dorcas*), ostrich (*Struthio camelus*) and Wild Ass (*Equus equus*) occur in Bura Peninsula of Dankalia province. The Dahlak islands host a wide variety of species, in particular the green sea turtle (*Chelonia mydas*), dugong (*Dugong dugong*), Arabian bustard (*Ardeotis arabs*), osprey (*Pandion haliaetus*), oryx (*Oryx gazella*), gazelle (*Gazella sp.*) and countless species of birds. The area also harbours healthy coral reefs and mangrove forests.

Most of these observations pertain to high profile species. Little is known about the current status of invertebrates, reptiles, amphibians and other organisms. A general survey of the fauna and flora of Eritrea to determine the populations and distributions of a range of species is essential. It will be especially important to include other groups of species in scientific research as well as conservation programmes, as each species presumably has an important role to play in the ecosystem as a whole.

Undoubtedly, the single most important factor adversely affecting species is loss of habitat. Other threats include depletion caused by over-exploitation for local use, and for commercial harvest and trade. The introduction of exotic species can also have devastating effects on species and ecosystems, as has occurred with the introduction of the cactus *Opuntia vulgaris* on the eastern escarpment.

On a large scale, species are vulnerable because of the lack of protective legislation, lack of specific “safe” conservation areas, and insufficient environmental awareness among the general public about the value of biodiversity.

#### Forest Ecosystems and vegetation cover

There is considerable uncertainty about the extent of forest and woodland cover in Eritrea. The NEMP-E suggests 30% cover only a century ago. By 1986 that value is estimated to be less than 1%. Current estimates indicate a significant improvement in forest and bush land cover as a result of intensified enclosure programs and reforestation activities carried out by the Ministry of Agriculture. Table 1 provides estimates made in 1986.

**Table 1 - types of vegetation cover including forest and wood land**

<b>Vegetation cover</b>	<b>Area (100Km<sup>2</sup>)</b>	<b>Percent (%)</b>
Bush /shrubland	534	42.5
Grassland	257	20.4
Barren	187	14.9
Open Woodland	112	8.9
Agriculture	77	6.1
Closed woodland	46	3.7
Riverine Forest	19	1.5
Mangroves	1	0.1
Others	1	0.1
Not Classified	23	1.8
<b>Total</b>	<b>1257</b>	<b>100.0</b>

Sixty-four permanent and temporary tree nurseries have been established in the highlands with a potential capacity of more than 10 million seedlings of indigenous and exotic species every year.

Hillside closure has been practiced for the last 6 years. About 100,000 hectares have been closed, most of which is located in Semenawi and Debubawi Bahri. In this area, the cutting of trees, grazing, farming and other agricultural practices are prohibited.

Forests in Eritrea are distributed in three different ecological regions.

#### **1. The Eritrean Escarpment forests (Debubawi and Semenawi Bahri)**

The eastern and souther escarpment contains the remnants of the closed forest of Eritrea. It enjoys two rainy seasons (January - August and December - January - February). Its particular interest to the Biodiversity strategy is roughly 77,000 hectares with an ethnically diverse population of 11,000 families. The area is rich in biodiversity and as such represents the most promising ecosystem for *in-situ* conservation. The establishment of a conservation regime coupled with sustainable use will respond to Article 8 of the CBD, particularly the first two paragraphs.

## 2. The Norther and Central Highlands Forests

The forests of the highlands are dominated by the indigenous species *Juniperus procera* and *Olea africana*, both of which are economically and ecologically valuable. In the central highlands, in areas where these tree species are highly depleted pioneer species such as *Calpurnia aurea*, *Carsissa edulis*, *Carissa schimperi*, *Dodonaea viscosa*, and *Euclea schimperi* are emerging. Acacia species that are dominant in this area are: *Acacia abyssinica*, *Acacia albida* and *Acacia etbaica*.

In the central highlands, plantations of *Eucalyptus amygdalina*, *Eucalyptus camaldulensis*, *Eucalyptus cladocalyx* and *Eucalyptus globulus* have been established, especially on the marginal lands and riverbanks. Efforts have also been made to plant *Acacia decurrens*, *Acacia mollissima*, *Acacia saligna* and *Schinus molle*. However, their crooked form has discouraged widespread planting. The total area of plantations in the highlands is estimated to be 10,000 ha.

The northern highland, relatively inaccessible has saved a relatively extensive growth of *Olea* / *Juniperus* forests of Eritrea. Nevertheless, part of it such as Rora Habab has experienced considerable disturbance in recent years. Its preservation should be a prime target of the biodiversity strategy and action plan.

## 3. The Riverine Forests along the Gash Barka and Setit rivers

The riverine forests of the Western Lowlands were considered relatively intact until recently (SOS Sahel 1996). In the last two years the situation has apparently changed dramatically as the exploitation of both the Doum Palm and the rich alluvial land next to river beds has accelerated. SOS Sahel had estimated the existence of Doum Palm forests in the basin of Gash river, 9,000 ha, Barka river, 20,000 ha, and Setit river, 1,000 ha. However, the clearing of the Doum for Agriculture is seriously threatening the stability of these riverine ecosystems. Riverine forest is uncommon forest type in Eritrea, and efforts will be made to conserve the few remaining sites. Loss of this forest will not only lead to a reduction in biodiversity, but may have other consequence as well, such as desertification along river banks, and siltation of water ways. At the same time the legitimate need for Doum Palm fiber for grazing and for local manufacturing is recognized.

### b) Marine Biodiversity

*Definition used:*

*Marine biological diversity encompasses all marine and coastal species of plants, animals and micro-organisms as well as the habitats, biotic communities and ecological processes of which they are part.*

The marine environment makes a major contribution to Eritrea's natural heritage and biological diversity. There are many different marine and coastal habitats and ecosystems in Eritrea, such as:

- i) Sabkha
- ii) Sandy shores
- iii) Rocky shores and cliffs
- iv) Intertidal mud flats
- v) Mangroves
- vi) Seagrass beds and macroalgal hard bottoms
- vii) Coral Reefs

viii) Open sea ix) Sea bottom and continental slope

The major habitats in Eritrea include mangroves, seagrass meadows, macroalgal beds and coral reefs. They will be discussed in some depth below.

### **Mangrove and other coastal vegetations**

Coastal vegetation is an important ecological component of the Red Sea. Salt tolerant vegetation (halophytes), such as mangroves stabilize shorelines and help prevent erosion. Mangroves also provide habitat and/or food for many marine organisms including commercial seafood species (e.g. snappers, shrimp) and birds. Mangrove leaves are used extensively as fodder for camels in some regions. Highly productive bay systems are often fringed with vegetation. Such systems regularly receive new deposits of silt and nutrient with rainfall, plus associated agrochemicals from inland areas. Three species of mangrove occur in Eritrea. Recent surveys indicate that approximately 15% of Eritrea's coastline consists of mangrove habitat, mainly occurring in the southern parts.

### **Seagrass beds**

Seagrass beds resemble underwater meadows and mainly occur in shallow coastal waters. Out of the 11 species that occur in the Red Sea, so far 6 have been reported in Eritrea. Seagrass are important in providing:

1. Stability of the seabed against wave actions
2. A direct source of food for various herbivorous species such as sea turtles, dugong, fish and invertebrates
3. A breeding, refuge and feeding areas for various economically important species e.g. shrimp, pearl oyster

Seagrasses like mangroves are most extensive in the southern part of the Eritrean Red Sea.

### **Macroalgal beds**

In recent study a total of 97 taxa of benthic marine macroalgae were have been identified of which 57 are new records for the area. Most of these are seasonal and abound during the months October - April (cold season).

### **Coral reefs**

There are two major coral reef types found in Eritrea namely patch reefs and fringing reefs. Coral reefs support important reef fish populations and are major repository of biodiversity and endemic species within Eritrea. Recent surveys indicate that 44 genera of stony corals (*Schleactinia*) are present in the Eritrean marine waters. The reefs in the southern Red Sea are less well developed than in the north.

The Red Sea has a very diverse fish assemblage with a total of 1000 species (including non-reef fish). To date 521 species have been recorded from the Eritrean Red Sea. Research carried out by the Ministry of Fisheries indicates that fish assemblages in the south are less diverse but more abundant than those in the north of the Eritrean Red Sea. Fisheries are clearly the Red Sea resource of most immediate interest, in areas in the southern Red Sea are

particularly rich. Recent harvests are much lower than in the 1960s, and amount to approximately 4000 tones per annum. Currently, there are great efforts taken to increase production from artisanal and commercial trawl fisheries.

There are endangered species in Eritrea which require special consideration. These are:

### **Sea turtles**

Five species of sea turtles are reported to occur in the Eritrean Red Sea. These are the endangered species which need conservation measures. Eritrea became a party to the 1973 CITES Convention on 22 January 1995. Under the CITES convention sea turtles are among the species in which trade is completely banned. Turtle harvesting takes place in some fishing villages of the coastal communities.

### **Waders and seabirds**

Among the avifauna of the Red Sea are hundreds of species of wintering and migratory coastal and sea birds. In the Dahlak Islands alone, 109 bird species from 41 families have been recorded. It is now evident that the Eritrean coast and islands are regionally important for population of birds.

### **Cetaceans (large marine mammals)**

Marine mammals of conservation importance include whales, dolphins and dugongs (Sea cows). The overall population status of marine mammals is not yet know.

### **Endemic species and bio-geographic patterns**

The Red Sea contains a high proportion of endemic species. This has arisen as a result of varying degrees of isolation over the past 2.5 million years, combined with the region's unusual environmental conditions.

### **c) Agro-biodiversity**

*Definition used:*

*Agro-biodiversity includes crop plants and their wild relatives of actual and potential value, livestock and the micro fauna and flora in the agricultural environment.*

The Russian geneticist N.I. Vavilov first described Eritrea and Ethiopia as independent centers of crop origin. It is likely that this diversity extends to other plant groups, in particular succulent plant species along the coast. Virtually the entire complex of seed crops from Southwestern Asia and the Mediterranean is represented in Ethiopia and Eritrea, with especially high genetic variability in wheat, barley, sorghum, millet, taff etc. Landraces of indigenous crops are highly prized for their potential value as sources of variability for crop improvement, and the conservation of these genetic resources is an extremely high priority with global implications. At the same time it is possible that intensive agriculture and forestry activities have in many areas diminished this diversity through loss of unique habitats and general vegetation distraction.

The principal agents of genetic erosion include drought, the introductions of high-yielding varieties, crop replacement, and changes in cropping patterns and landuse. The first two of these pose perhaps the greatest threat. *In situ* conservation, and the household selection and improvement of local crops has historically played an important role in conserving and developing the crops genetic resource base in Eritrea.

The livestock diversity in Eritrea is also of considerable value. Among the indigenous breeds are the Barka, Arado and Arebo cattle, the Barka, Orit, Hamle, Akleguzai and Rashaida sheep, the Hasan, Adal, Tsada and Barka goats, and the Rashaida, Dankel and Keyhtay camels.

The main constraints in the livestock production and threats to genetic diversity are drought and lack of feed.

Appropriate strategies and action plans needed to address the agro-biodiversity conservation and use have been developed.

## E. OBJECTIVES

The Objectives of the National Biodiversity Strategy and Action Plan are:

- a. re-establishing and conserving the biological diversity which is the natural heritage of the Eritrean people,
- b. using Eritrea's biological resources sustainably,
- c. Ensuring fair and equitable sharing of benefits arising out of the use of Eritrea's genetic resources.

The decision of COP at its Second session regarding the National Reports includes a request to the Parties to the Convention to provide, under the section "Objectives" information on their perception regarding "protection", "Scientific understanding" and "Sustainable use". Here under is a description on these items.

Protection and conservation have always been central to Eritrean society's perception on use of natural resources. The Tigrigna word *Hezatti* implying "protection or limitation" of use is a common vocabulary in peasant agriculture. A less frequently used term *Herum Hezatti* involves the absolute protection, rather like the category 1 protection concept that is contained in IUCN's system of protected areas. The concern for protection has however been greatly compromised for two principle reasons.

First, as population grew and demand for arable land increased, more and more of the protected areas came under pressure.

Second, the traditional and colonial (Dimaniale) land tenure systems based on the redistribution of land (wareda) tended to encourage consumption and use of the more substantially dimensioned plants, trees and woody biomass prior to the commencement of the next round of redistribution. In addition, the Dimaniale system lead to unregulated access to biological resources and extended further pressures on the natural resources.

The new land reform law No. 58/1994 based on the usufruct principle has cleared away some of the obstacles that had confounded protection measures in Eritrea. The land reform proclamation is likely to improve the propensity for protecting biodiversity by local people. However the delay in implementing it due to *inter-alia*, lack of institutional and human resources continues to pose problems.

Scientific understanding of the concept of biodiversity needs to be further expanded and enhanced. This requires broader research and documentation efforts related to the nature and dynamics of species loss, the robustness of endemic species, the loss of habitats, etc.

The Department of Environment (DOE) together with relevant line ministries and relevant faculties of the university of Asmara will need to address the issue of scientific understanding of biodiversity in greater detail.

One particular challenge that needs to be faced is the presentation and elucidation of biodiversity issues even issues of a highly technical nature in local vernaculars, such as Tigrigna. Some efforts are under way in respect to preparing bio-diversity documents in the Tigrigna language. A basic primer on bio-diversity is underway. Eritrea's draft proclamation on Biological Diversity as well as the text of the Convention were translated into Tigrigna and Arabic earlier. The Convention on Biological Diversity is also expected to be translated into local languages such as Tigrigna.

Eritrean vision on sustainable use of biodiversity are encapsulated in two elements: *optimization*, and the *(needs and aspirations of future generations)*.

Optimization is the fundamental principle for the use of natural resources, rather than maximization. This principle is enshrined both in the NEMP-E and the draft Environment proclamation.

Sustainable use is perceived as the use of the components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

## F. STRATEGY

The followings are elements of importance to be incorporated in the biodiversity strategy.

### Collaborative Management of Natural Resources and Preparation of regulations on Conservation and Sustainable Use of Biodiversity

- a. The DOE intends to promote collaborative management i.e. between the people and the government and for multiple use of natural resources, so as to ensure in real terms the involvement of local people in the management of natural resources.
- b. The DOE jointly with the line ministries and local authorities concerned, intends to prepare and adopt regulations establishing procedures for collaborative management of natural resources.
- c. Conservation and sustainable use of biological diversity shall be based on a comprehensive, systematic, and consistent approach in consonance with international agreements to which the State of Eritrea is Party.
- d. The DOE jointly with the line ministries concerned intends to prepare regulations providing that practices, consistent with the principles of collaborative management shall be established to manage natural resources so as to ensure conservation of biological diversity and the sustainable use of its components, including ecosystems, species, and genetic resources whether within or outside protected areas.
- e. The DOE jointly with line ministries shall also take appropriate steps, including regulatory measures, to regulate access to genetic resources which are an integral part of the natural wealth of the State of Eritrea.

### Elements of Agro-Biodiversity Strategy

Elements for biodiversity strategy in agriculture include the following:

1. The conservation and sustainable use of agro-biodiversity should serve / support the economic development policy of the Government.
2. Agro-biodiversity conservation activities should be integrated with the action of Government institutions.
3. Monitor the introduction and use of high-yielding varieties, crop replacement and changes in cropping patterns.
4. Protecting and conserving landraces of indigenous crops and animals.
5. Encouraging both *in-situ* and *Ex-situ* conservation of crop and livestock biodiversity including the wild relatives, micro-flora and micro-fauna of the agricultural system.
6. Combating drought as an agent of genetic erosion through
  - selection and improvement of drought resistant varieties from local landraces
  - improving the management practices that enhance the soil moisture retention of crop fields.

Improve the feed availability of livestock (rangeland improvement of forage crops and improvement of closures).

8. Promote indigenous knowledge in conservation and sustainable use of genetic resources and Involve active participation of farmers in the process.

### **Elements of Strategy for Marine and Coastal area Biodiversity**

Marine biodiversity will be the primary focus of national conservation and sustainable use efforts. While action related to terrestrial biodiversity will not be compromised, it is in the relatively uncharted area of marine biodiversity that national action will be concentrated. Such special attention to marine biodiversity is warranted both for substantive and technical reasons. While the condition of marine resources in the Red Sea is presently in very good condition, there is little room for mistakes, because the potential for damage is very great due to limited circulation and water replenishment. In the circumstance, it is wise to be prudent, for example in maintaining the historical low density of population in the coastal area. It is also necessary to create an appropriate balance between resources and population particularly in the coastal area given the fragile nature of the ecosystem.

#### **Integrated Coastal Zone Management**

- a. The DOE in consultation with the Ministry of Fisheries and other line ministries intends to adopt the Integrated Coastal Zone Management (ICZM) approach to conserve the environment of the national marine and coastal areas and to promote the sustainable development of the coastal zone as well as the optimal use of its resources.
- b. The DOE, jointly with the line ministries concerned intends to prepare regulations for implementing the principles of Integrated Coastal Zone Management in Eritrea including provisions for:
  1. conservation and sustainable use of flora, fauna, marine and coastal habitats
  2. fishers
  3. coastal zone development
  4. water security
  5. control of land-based sources of pollution
  6. mining, and oil and gas exploitation
  7. regulation of land-based and marine waste disposal
  8. prohibition of pollution by shipping industry
  9. development and promotion of tourism
  10. compliance with international standards and conventions acceded to or ratified by the State of Eritrea

## **Elements of strategy for Terrestrial Ecosystems:**

### **A. Rehabilitation of Degraded Terrestrial Ecosystems**

- a. The DOE intends to co-ordinate with line ministries the adoption of practices to promote rehabilitation of degraded ecosystems through:
  1. natural regeneration,
  2. active human intervention, including afforestation and reforestation,
  3. establishment and growth and viable wildlife populations.
- b. The DOE jointly with the line ministries concerned intends to prepare and propose for adoption regulations providing for rehabilitation of degraded ecosystems, consistent with the characteristics of the eco-regions defined in the National Environmental Management Plan.

### **B. Establishment of the Eritrean National Protected Areas System (ENPAS)**

- a. The national protected areas policy and practice of the Eritrean Peoples Liberation Front will be integrated into the Eritrean National Protected Areas System (ENPAS).
- b. Existing protected areas are integrated into the Eritrean National protected Areas System.
- c. The DOE shall:
  1. jointly with relevant line ministries identify and establish new protected areas, taking into account the need to protect Eritrea's natural and cultural heritage and use the natural resources sustainably,
  2. prepare the Eritrean National Protected Areas System Plan,
  3. coordinate with relevant line ministries to prepare management plans for each protected area,
  4. coordinate the implementation of the Eritrean National Protected Areas System Plan,
  5. jointly with relevant line ministries where appropriate, prepare any regulations necessary for implementing the objectives of this ENPAS.

### **C. Enhance the Protection of Shared Natural Resources and Transboundary Migratory Species**

- a. The State of Eritrea intends to actively promote bilateral and multilateral cooperation in the management of shared natural resources and transboundary migratory species.

b. The DOE shall coordinate with the Ministry of Foreign Affairs to develop policies and, where authorized, negotiate bilateral multilateral agreements for the effective protection and optimal use of shared natural resources and transboundary migratory species.

While the stated objectives and vision on biodiversity may be clear, in the current situation two major gaps need to be narrowed or closed to make the vision a reality and achieve the desired objectives.

The first major gap is related to limited local capacity. A response to this major gap consists of enhancing local capacity in biodiversity planning *inter-alia* through:

- a) Training of key personnel of various groups including members of the Core Planning Team (CPT) and the working groups.
- b) Establishment of three working groups related to the special sectors i.e.
  - Agro-biodiversity
  - Marine biodiversity
  - Terrestrial biodiversity
- c) Promotion of conservation ethics through education and awareness programmes.

The second major gap related to lack of assessed data on biodiversity will be addressed through the establishment of EMAN's nodes for collection and collation of data.

A systematic framework for the collection and analysis of data will be prepared and tested prior to the submission of the second National report. The framework envisages the development of key indicators or statistics on the status, trends and pressures on components of biodiversity. The framework will also provide quantitative and or qualitative data on objectives or measures taken to alleviate pressure on biodiversity. Finally, the framework will also indicate target dates by which such objectives or measures are to be achieved.

Environmental issues pertaining to biodiversity should be included in schools and university curricula. Mass action groups, like the people's Forum for the Environment, also play a vital role in conservation education programmes.

The wealth of information and knowledge of local people on biodiversity should be preserved and utilized extensively.

## **G. ACTION PLAN**

In the preparation of the strategy and action plan the DOE in collaboration with its partners intends to take the following actions:

### **First: Compile existing information**

Where sources of information have already been identified e.g. Ministry of Fisheries for Marine biodiversity; Ministry of Agriculture and FAO for Agro-biodiversity and Terrestrial biodiversity, the information will be collected from the sources. Where sources have not been identified the DOE intends to utilize the system of rapid assessment to collect the information.

Time frame for action - 7 months

### **Second: Identify information gaps**

The DOE intends to utilize existing mechanisms such as the CPT and the three working groups to identify information gaps. IUCN will supplement DOE's efforts.

Time frame for action - 4 months

### **Third: Determine the status and trend and pressure on biodiversity**

In determining status and trends and pressures or threats, consideration will be given to collecting and utilizing in matrix format the type of information that is presented in the annex. The challenge will be to develop a set of key indicators that could be used not only for the first report but also for all subsequent national reports on biodiversity.

Time frame for action - 2 months

### **Fourth: Identify strategies for conservation, sustainable use and benefit sharing**

Time frame for action - 7 months

### **Fifth: Economic assessment of Eritrea's biodiversity**

Time frame for action - 2 months

### **Sixth: Assess institutional, legal policy framework and identify future needs**

Time frame for action - 3 months

### **Seventh: Develop strategy and action plan, review at regional and national levels through workshops and submit for approve**

Time frame for action - 10 months

## H. SCHEDULE

The following table provides the sequence and the schedule for the preparation of the strategy and action plan.

Action	Man months							
	5	10	15	20	25	30	35	40
1. Compile information		(7)						
2. Identify information gaps		(4)						
3. Determine, Status, trend and pressure			(12)					
4. Conservation, use, benefit sharing.					(7)			
5. Economic assessment					(2)			
6. Legal/institutional/policy framework						(3)		
7. Strategy and action developed and approved.						(10)		

(2) = Total Number of man-months

### Procedures for Environmental assessment of biodiversity

The Department of the Environment will initiate procedures for environmental assessment of all development projects including biodiversity projects. In so far as biodiversity is concerned the guidelines recognize the term “Environmentally Sensitive areas” (ESA), defined as:

*“areas whose characteristics make them likely to present a significant increased risk to normal project implementation and operation”.*

When an area has been designated as an ESA [by the DOE] the procedure requires:

- (a) that any project within that area is assigned to Category B,
- (b) that the project is subjected to a mandatory environmental evaluation. A change of category (from B to A) may result from initial mandatory evaluation, particularly if the project is located in a site that is specially sensitive for biodiversity concern.

The DOE has produced a preliminary list of Environmentally Sensitive areas which it intends to review regularly. Amongst the list of ESA’s of particular significance to biodiversity conservation are the following:

- all high and medium potential agriculture lands
- all land considered to be high potential natural or productive forest and wood lands
- all protected areas or areas proposed for protection, including national parks and other (IUCN) categories of protected areas, including watershed and forest reserves, plus permanent and temporary woodland enclosure.

## I. PARTNERS

The principal partners in the formulation of the biodiversity strategy and action plan are the following:

### **Government agencies**

- The Department of Environment of the Ministry of Land, Water and Environment is the lead agency for co-ordinating and catalyzing the whole exercise.
- The Ministry of Agriculture has primary responsibility for Agro-biodiversity, forests and wildlife and for research in these areas. Eritrea's Gene Bank is operated under the aegis of the MOA.
- The Ministry of fisheries has primary responsibility for the assessment and management of Marine biodiversity and Coastal zone management.
- University of Asmara and its various faculties - (Biology/Botany, Geography Agriculture, Aquatic and Marine sciences) has primary responsibility for higher level training, education and research in these areas.

### **Private organization and NGO's**

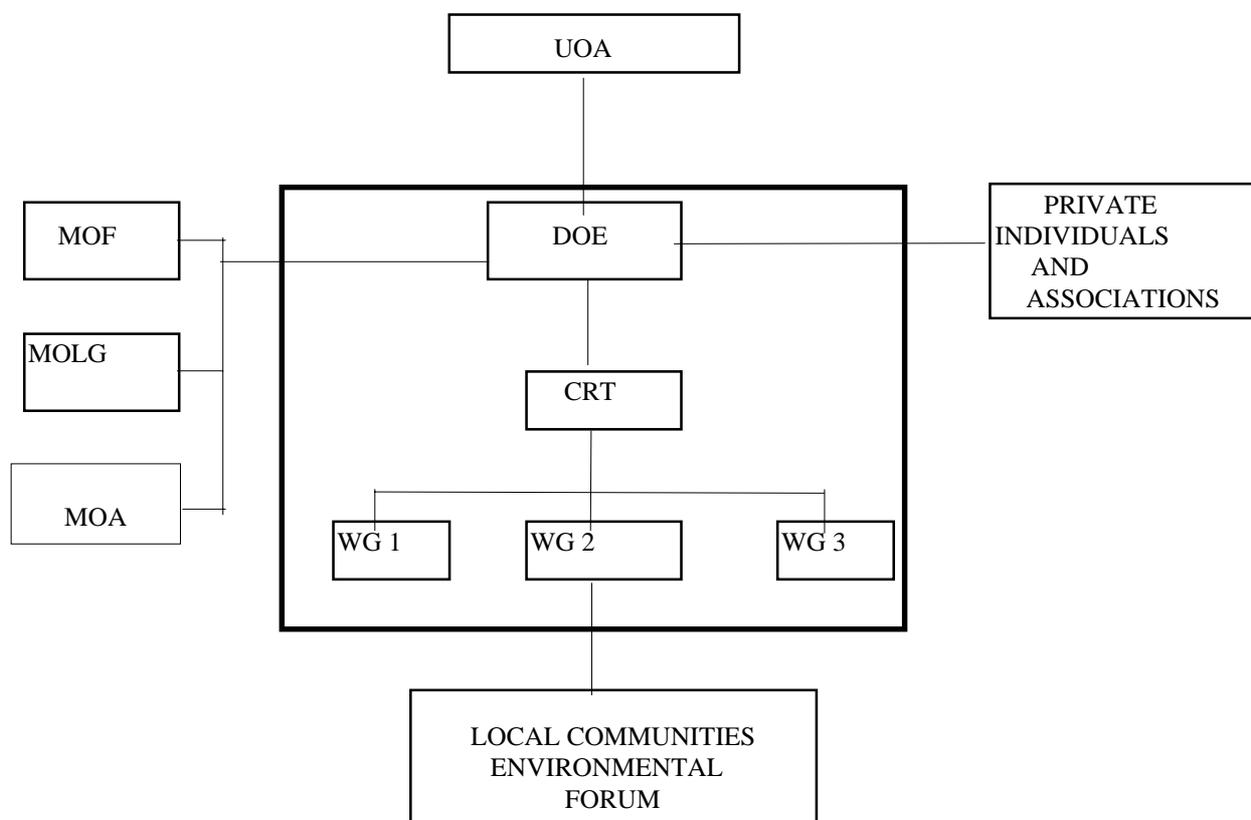
- A number of private individuals and local NGO's participate in the process.

### **The Public and Local Communities**

Local communities, particularly in the farming areas bring to the process unique indigenous knowledge on preservation of biodiversity. The participation of local communities will be co-ordinated within the Eritrean People's Forum on the Environment, a mechanism under development. The Forum will co-ordinate and catalyse a more intense popular participation in the development of the biodiversity strategy and action plan.

Further efforts will be made to involve mass organizations (such as, women, youth and workers organizations) and professional groups (such as the Association of Eritrean professionals in Agricultural Sciences).

The diagram attached herewith shows the principle partners in the development of the biodiversity strategy and action plan.



DOE = Department of Environment  
 CPT = Core Planning Team  
 WG = Working Groups  
 MOA = Ministry of Agriculture  
 MOF = Ministry of Fisheries  
 MOLG = Ministry of Local Government  
 UOA = University of Asmara

Diagram showing partners in the development of Eritrea's Biodiversity strategy and action plan

## J. HUMAN RESOURCES CAPACITY AND BUDGET

### NATIONAL CAPACITY RELATED TO BIODIVERSITY PROTECTION

#### Human and Institutional Resources

Eritrea has limited human resource and institutional capacity to cope with biodiversity protection. While more accurate figures may need to be collected and analyzed further the principal institutions where expertise is likely to be found are University of Asmara, Ministry of Agriculture, Ministry of Fisheries and Ministry of Land, Water and Environment. The table below summarizes the national capacity in biodiversity.

#### Human and Institutional Resources at the Formal level.

	Skilled (BA) +	Others (Diploma) +
University of Asmara		
- Department of Biology	10	3
- Department of Geography	4	1
- Department of animal Science	5	1
- Department of Marine Biology & Fisheries	10	2
- Department of soil and water conservation	8	1
Ministry of Land, Water and Environment	3	-
Ministry of Agriculture		
- Department of Animal Resources	43	97
- Department of Research (including National Gene Bank)	34	21
- Department of Land Resources and Crop Production	73	217
Ministry of Local Government	3	-
- Environmental units at Zoba level		
Ministry of Fisheries		
- Division of Research and Training	36	20
- Division of enforcement	3	20

#### **Funding for on going programmes in biodiversity protection**

Funding for biodiversity protection and for on going programmes consist of Government subvention to the Ministries and departments dealing with biodiversity and the grant from GEF provided through its enabling activity programme. In November 1996 the World Bank as Implementing Agency for the Global Environment facility (GEF) trust fund, entered into an agreement with the Government to enable the Government of Eritrea to develop a Biodiversity Strategy in compliance with articles 6 and 8 of the Convention on Biodiversity consistent with the objectives and plans outlined in the *National Environmental Management Plan for Eritrea*, and as a means of identifying priority actions for biodiversity conservation and management.

Specifically, the project will support:

- a stocktaking and inventory of existing information with regard to Eritrea's biodiversity resources,
- the identification and analysis of options for conserving Eritrea's biological diversity, based in part on a series of participatory and community-based local workshops and seminars designed to engage communities in conservation planning,
- the consolidation of the findings from these workshops and from a series of regional and a national workshop into a strategic plan leading to the conservation of biodiversity, and the incorporation of these plans across sectors into national development plans,
- to provide resources for Government to prepare its first national Report to the Conference of the Parties.

The current budget for the preparation of the Biodiversity Strategy and action plan is composed of Government subventions to the key actors in this process. These subventions are estimated at USD 55,000 for the period 1997 - 1998

In addition a GEF grant of about US\$ 275,000 is available to the DOE to supplement the Government subventions. The financial resources to implement the entire strategy will of course be determined only when the current process for the preparation of the strategy and action plan is completed.

The Human Resources Capacity to develop the Strategy and Action Plan consist of the following.

1. The staff members in the DOE devoting full and part time work to this task  1 full time Staff member 2 part time staff members local consultants	Total man months  12 man months 10 man months 10 man months
2. The part time service of staff members from the Ministry of Fisheries (5 staff members)	10 man months
3. The part time services of staff members from the Ministry of Agriculture (2 staff members)	4 man months
4. The part time services of faculty members from Asmara University (6 faculty members)	12 man months
5. Other private individuals	4 man months

### **International Technical Co-operation**

The International Union for the Conservation of Nature (IUCN) is providing under the GEF grant, consultants for short periods of time essentially for the following:

- a) capacity building in Biodiversity planning and Environmental Economics
- b) provision of overall advice to the preparation of Strategy and Action Plan

UNEP and the World Bank are also collaborating with the DOE in various technical aspects in this preparatory process.

## **K. MONITORING AND EVALUATION**

- a. Monitoring and evaluating biodiversity will be undertaken within the framework of the Eritrean Monitoring and Assessment Network (EMAN) which will be established as an environmental inspectorate within the Department of Environment. EMAN is described in some detail in the NEMP-E. The draft environmental proclamation provides additional information.
- b. The Eritrean Monitoring and Assessment Network shall in accordance with the provisions of the draft Environment proclamation:
  - 1) conduct inspections and audits,
  - 2) take and analyze samples
  - 3) compile and synthesize Environmental data including biodiversity data from all sectors and from all inspections and audits, including post-EIA monitoring.

### **Monitoring and Assessment Procedures**

The Department of Environment shall establish operating procedures for the Eritrean Monitoring assessment Network, which shall include provisions for:

- a) Monitoring environmental quality,
- b) Monitoring the status of biodiversity,
- c) Environmental audits,
- d) Post-EIA auditing,
- e) Inspection.

### **Monitoring and Enforcement Responsibility**

- a) In their respective sectors, line ministries will assume responsibility for inspection, enforcement, monitoring of compliance with environmental quality standards, conduct of environmental audits, and monitoring of the status of biodiversity.
- b) The DOE is responsible for coordinating overall monitoring of environmental quality and of the status of biodiversity, particularly in cases where two or more line ministries are involved.
- c) Where a line ministry does not adequately monitor in compliance with environmental quality standards and the status of biodiversity in its sector, the DOE is empowered to carry out all necessary sectoral monitoring, inspections and enforcement.

## **L. SHARING OF NATIONAL EXPERIENCE**

Eritrea shares with Ethiopia a long tradition of innovation in biodiversity. It is this genius that Vavilov quickly recognized the creative element in crop domestication of the Eritrean highland population. The contributions of Eritrean and Ethiopian farmers in this field has been a major gift to all humanity. The common ecosystem between the two countries still offers an opportunity to further expand joint activities in the interest of conserving biodiversity. Endemic species are most likely to be common to both countries, and therefore both countries have the joint responsibility for threatened or endangered species.

- The extensive Ethiopian Herbarium can be of mutual benefit to both countries.
- Joint strategy can be applied with respect to the management of migratory species. The survey of elephants grazing across the border of the two countries jointly undertaken by Eritrea and Ethiopia is a good example of concrete collaborative action.
- It will be recalled that both the Convention on Biological Diversity (CBD), and the Convention on International Trade of Endangered Species and (CITES), require the establishment of scientific authority and management authority. Indeed the draft of the Eritrean biodiversity protection proclamation has envisaged the establishment of both institutions. Clearly while the establishment of a biodiversity management authority will need to be further discussed given the possibility of the DOE fulfilling of the task of the management authority, the question of the establishment of the scientific authority needs to be given special and urgent attention.
- In this regard consideration could be given to establishing a joint Eritrean - Ethiopian Scientific committee advising both governments on conservation and sustainable use of biodiversity resources for mutual interest.
- With respect to the protection of the biodiversity of the Red Sea, there is ample opportunity to co-operate in sharing information with the neighbouring coastal states.
- Eritrea is an active member of the coral reef network and has participated in scientific work on coral reefs with the members of the network. This collaboration is likely to continue.