

STATE OF ERITREA

MINISTRY OF LAND, WATER AND ENVIRONMENT

DEPARTMENT OF ENVIRONMENT

Opportunities for Synergistic and Cross Cutting Capacity Building in Eritrea

FINAL REPORT

**NATIONAL CAPACITY NEEDS SELF-ASSESSMENT (NCSA) FOR
GLOBAL ENVIRONMENTAL MANAGEMENT IN ERITREA**

**Asmara
ERITREA
December 2006**

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**Submitted
by**

**GLOBAL RESOURCES DEVELOPMENT AND
MANAGEMENT CONSULTANTS**

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ACRONYMS

AIJ	Activities Implemented Jointly
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CCD	Convention to Combat Desertification
CFC	Chlorofluorocarbon
CC	Climate change
CCA	Common Country Assessment
CDM	Clean Development Mechanism
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CMI	Coastal, Marine and Island biodiversity
CZM	Coastal Zone Management
DoE	Department of Environment
EAE	Eritrean Agency for the Environment
ECMIB	Eritrean Coastal Marine and Islands Biodiversity Project
EIA	Environmental Impact Assessment
EIS	Environmental Information System
EINCC	Eritrea's National Communication on Climate Change
EMP	Environmental Management Plan
EMS	Environmental Management System
ENR	Environmental Natural Resource
ER-SLUF	Eritrean Land Use Forum
GCM	General Circulation Model
GEF	Global Environment Facility
GHG	Greenhouse Gases
GoE	Government of Eritrea
GM	Genetically Modified
GWP Eritrea	Global Water Partnership in Eritrea
GWP	Global Warming Potential
HFC	Hydro fluorocarbons
HYV	High Yielding Variety
ICZM	Integrated Coastal Zone Management Plan
IEE	Initial Environmental Examination
IGAD	Intergovernmental Authority on Development
INC	Initial National Communication
IPCC	International Panel on Climate Change
I-PRSP	Interim Poverty Reduction Strategy Process
JI	Joint Implementation
LSMS	Household Living Standard Measurement Survey
MA	Millennium Ecosystem Assessment

MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreements
MoA	Ministry of Agriculture
MoH	Ministry of Health
MOLWE	Ministry of Land, Water and Environment
MOE	Ministry of Education
MOP	Montreal Protocol
MPA	Marine Protected Area
NAP	National Action Program
NAPA	National Adaptation Program of Action
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Needs Self-Assessment
NEAPG	National Environmental Impact Assessment Guidelines and Procedures
NEMP-E	National Environmental Management Plan
NGO	Non Governmental Organizations
NSEO	National Statistics and Evaluation Office
NTFP	Non-Timber Forest Product
NUEW	National Union of Eritrean Women
ODP	Ozone Depleting Potential
ODS	Ozone-Depleting Substances
PA	Protected Area
PPA	Participatory Poverty Assessment
RAP	Regional Action Programme
SEA	Strategic Environmental Assessment
SoE-R	Draft State of Environment Report of Eritrea
SREAP	Sub Regional Environmental Action Plan-Eastern Africa,
SST	Sea Surface Temperature
SWC	Soil and Water Conservation
Zoba	Regional Administration
UNCBD	United Nations Convention on Biodiversity Conservation
UNCCD	United Nations Convention to Combat Desertification
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

I. INTRODUCTION

Natural Resources play a critical role in the socioeconomic development the world over. Since the economies of developing countries are natural resource based, sustainable management of these resources is paramount if sustainable development is to be achieved. Furthermore, the objectives of the Multilateral Environmental Agreements (MEAs) are consistent with sustainable development and hence contribute to national development objectives of the least developed countries. It is against this background that the GEF supported the NCSA project to identify capacity needs for implementation of the Multilateral Environmental Agreements (MEAs), namely, the Convention on Biological Diversity (CBD), United Nations Convention to Combat Desertification (UNCCD) and United Nations Framework Convention on Climate Change (UNFCCC).

As a signatory to the Rio conventions, Eritrea has certain obligations to protect its biodiversity, respond to climate change and minimise land degradation. However, it has limited human and institutional capacities to implement the commitments of these agreements. The MEAs provide an opportunity to achieve national development objectives through promotion of partnerships, technology transfer and capacity building for sustainable natural resource management.

Through GEF's support, Eritrea undertook a capacity needs assessment for the implementation of the MEAs with special focus on Synergy and Cross Cutting Capacity Building in Eritrea under the NCSA project. The objectives of the project were to identify capacity constraints and opportunities for synergistic capacity building among MEAs including UNCBD, UNCCD and UNFCCC and other MEAs ratified by Eritrea.

The NCSA process in Eritrea produced an extremely lengthy list of capacity constraints, making the development of a meaningful strategy very difficult. The focal points for GEF and the three conventions prioritised several strategic areas in need of immediate funding. If and when an opportunity for funding arises, these needs will be developed into fundable projects. This NCSA document has the full endorsement of the Government of Eritrea and will be used to guide future national capacity building efforts as well as requests from the international community for capacity building support.

1.1 Objective of Study

The main objectives of the study are to:

- Identify systemic capacity constraints and opportunities for synergistic capacity building among MEAs including UNCBD, UNCCD and UNFCCC and other MEAs ratified by Eritrea;
- Seek ways of avoiding duplication of efforts;

- Foster efficiency and cost effectiveness and
- Promote an integrated and collaborative approach to the implementation of the conventions.

1.2 Methodology

Various methods were applied to carry out the study, which are listed below:

- Key results of the MEAs action plans including UNFCCC, UNCBD and UNCCD and other related MEAs (e.g., such as NAPA, NAP, Biosafety, etc) studies in Eritrea have been reviewed;
- National policies and action programs, which have relevance to environmental management and related potential capacity building issues have been reviewed;
- Conducted stakeholder analysis of relevant institutions at national level;
- Objectives, goals and strategies of existing national, regional and international development plans have been reviewed;
- Organizational and Spatial Frameworks including Environmental process (Pressure-State-Response), Economic Sector and Ecosystem approaches have been applied to identify Core Program areas for environmental management.

In addition in order to maximize the opportunities to achieve synergies between INC, NAP and NBSAP required careful planning prior to, during and following preparation of NCSA. Researching this goal required identifying potential areas of mutual interest and opportunities for synergy. To achieve synergies the following six issues were investigated:

1. How stakeholders were consulted, the input provided and the outcomes of these consultation processes;
2. The extent on whether the ecosystem approach is appropriate, and how this approach has been integrated into the planning processes used by other MEAs;
3. How priorities for action were determined: When preparing INC, NAP and NBSAP, criteria for determining which issues and measures most urgently need to be addressed have been developed;
4. Pressure-State-Response: An examination of how the Pressure-State-Response approach has been integrated into, for instance, NEMP-E and NAP and its planning process provided national teams with valuable insights and guidance on how to develop NCSA. According to this framework, human beings exert pressure on the environment, such pressures induce changes to the state or condition of the environment, to which society responds with policies and programs to prevent, mitigate or repair environmental damage;
5. Economic Sector approach: This approach uses a human activity classification as the basis of organization. Typical reporting categories included agriculture, forestry, fisheries, mining, tourism, industry, transportation, and energy. The approach takes advantage of the way national governments and statistical systems tend to be organized. Such a framework provides information on the benefits and

- products derived from the environment and the economic consequences of environmental trends.
6. Environmental Component: The use of environmental components as a spatial reference for SOE-R represents a compromise between the organization of available data and the need to interpret a complex environment.

II. STRATEGIC ELEMENTS

The strategic elements of this assessment builds on the existing capacity needs in these cross-cutting areas in order to conform to the principle that Capacity Needs Assessment efforts should be made to ensure that capacity development activities fit within Eritrea's broader capacity development needs.

These strategic elements form the linkage between the objective outlined in the previous section and the activities that will be activated in order to fulfill the objective. Hence the following strategic elements that have been reduced to eight headings or themes are discussed. These are:

- Environmental policy, institutional and legal frameworks;
- Environmental management system;
- Biodiversity, conservation and management;
- Environmental Impact Assessment;
- Global-national-provincial linkages;
- Environmental education and awareness;
- Human resources development and institutional capacity building and
- Gender

2.1 Environmental policy, institutional and legal frameworks

The environmental policy and regulations have been reviewed and are briefly summarized below:

- **Institutional Framework in Environmental Management**
Department of Environment (DoE) is responsible for coordinating environmental actions in Eritrea.
- **The Role of Other Sectors in Environmental Regulation and Management**
The line ministries are attempting to incorporate it into their decision-making and planning system. Nonetheless, technical capacity to develop EIA, environmental policies, guidelines, directives and environmental criteria is very limited. Need to elaborate detailed environmental guidelines in each line ministry for major activities.
- **Decentralization and Environmental Management**

Decentralisation offers the opportunity for environmental management issues to be integrated in the decision-making process of regional and sub regional administrations. However they have critical capacity limitations;

- **Legal Framework in Environmental Management**

The legal framework for environmental management has yet to be formalized.

As an urgent priority Eritrea needs the legal requirements needed to establish legislation on Eritrea's environment, to define the role, function and responsibility of the Department of Environment, and that of other ministries. Aim is to draft and approve an Eritrean Environment Act.

The ongoing national effort to place environmental policies in development plans and projects is promising. However, much work still remains in order to mainstream climate change, desertification and conservation and sustainable use of biodiversity in the broad national development agenda.

2.2 Core Program Areas in Environmental Management and Screening of Strategic elements

An assessment of the Core programmes in Environmental management were carried out and are presented below:

2.2.1 Identifying Core Programmes

The stakeholder analysis (Global Resources: DOE, 2005) demonstrates that the various implemented, ongoing and planned activities fall under the following Core Program areas as identified by ecosystem and environmental process approaches. These are:

- Coastal, Marine, and Freshwater Ecosystems;
- Forest Ecosystems;
- Arid and Semi-Arid Ecosystems;
- Mountain Ecosystems;
- Technical Assessments and Environmental Information Management; and
- Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA).

The first four core program areas were identified by Ecosystem Approach, whereas the last two are identified based on Environmental Process Approach, which is mainly based on the Pressure-State- Response model. The following issues were addressed:-

- Human Impact Concerns (Land Degradation Concern),
- Climate Change Concerns,
- Biodiversity Concerns,
- Socio-economic Impact Concerns.

The six core program areas are described below.

Coastal, Marine, and Freshwater Ecosystems

Land degradation, biological diversity loss and impacts of Climate Change are operating in the shared landscape of the Eritrean Coastal, Marine and Freshwater ecosystem where human actions are playing catalytic role as elaborated in the next sections.

Proposed Activities for Synergies

Activities should concentrate on the conservation and sustainable use of natural resources in the coastal, wetland, mangrove, estuarine, marine, and freshwater ecosystems. Activities should involve integrated approaches to coastal area development and rivers management, and will strengthen the network of conservation areas, including protected areas, to conserve coastal, marine, and freshwater natural resources. The needs of several island ecosystems in the Dahlak archipelago should receive particular attention.

Forest Ecosystem

The term forest ecosystem is very general and includes all types of forest ecosystems, i) highland forest ii) riverine forest and iii) acacia woodland and since on the other hand Mountain ecosystem have different types of vegetation in it, including highland forest i.e. the coniferous forest and forests of the green belt.

Proposed Activities for Synergies

Activities in this core program area should involve the establishment and strengthening of systems of conservation areas, including protected areas, and demonstration and development of sustainable use methods in forestry as part of integrated land management in agricultural and forest landscapes, focusing primarily on highland forest (Green Belt), Woodland Ecosystem of the South Western Lowlands and the Riverine Forest ecosystem at risk

Arid Ecosystems

These ecosystems, in Eritrea, are found in the northern highlands, northwestern lowlands and northeastern lowlands of the country and are characterised as arid and semi arid and is prone to drought and desertification.

Proposed activities for Synergies

Activities in this core program area should focus on the conservation and sustainable use of endemic natural resources in the dry land ecosystems including grasslands where natural resource is threatened by increased pressure from more intensified land use,

drought, and desertification, often leading to land degradation. National activities should emphasize the prevention and control of land degradation through development of sustainable methods for biodiversity conservation, including the management of freshwater systems, in areas experiencing serious land degradation.

Mountain Ecosystems

This is the most degraded part of the country due to high population density, overgrazing, recurrent drought, torrential rainfall and long-term traditional agricultural practices.

There are many reasons why mountains of Eritrea are our focus. The most important ones are:

- Relatively high precipitation levels;
- Storage and distribution of water to the lowlands;
- The life-sustaining role of water towers;
- Fragile ecosystems; Conflicts over water; and
- Inadequate resource management
- Destruction of the small remnants of highland forests including *Juniperus procera* and *Olea African*.

Proposed activities for Synergies

Activities should address the conservation and sustainable use of natural resources and biodiversity areas under increasing human pressure and imminent threat of degradation. Through these activities, Eritrea should seek to establish sustainable land use practices on mountain slopes in order to protect representative habitats and strengthen the network of representative conservation areas in the highland grassland, highland forest area, and freshwater systems including the various groundwater resources, intermittent rivers, man made ponds and dams.

Technical Assessments and Environmental Information Management

The main objective is to develop the scientific and technical understanding important for comprehensive assessment of the dynamic state of the environment that is critical to environmental management. This program will monitor key environmental indicators.

This program will focus on scientific research and the collection and analysis of environmental information.

Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA).

The main objective is to broaden the understanding and use of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) procedures and guidelines as both a planning and regulatory tool among relevant ministries, regional administrations, NGOs and investors.

The expected output of this program should be:

- Sectoral guidelines for EIA and SEA;
- Trained national SEA and EIA specialists;
- Production of timely and quality SEA and EIA reports by ministries;
- Establishment of a competent compliance monitoring capacity;
- Development of national laboratory.

Proposed activities for Synergies

Generally, the following synergistic issues have to be considered:

- *Prepare and enforce environmental guidelines for all economic sectors*
- *Develop a system of Annual Environmental Audits;*
- *Introduce Environmental Management System in all activities;*
- *Develop and enforce Environmental Standards; and*
- *Improve the existing NEAPG.*

Global-National-Provincial Linkages

Global-national-provincial linkages is a cross-cutting issue in national policies, sectoral legislations, national programs and projects, MEAs, GEF related enabling activities and multilateral and bilateral cooperation in the country. Has potential synergies in all aspects of the strategic elements including environmental management, policies, legal and institutional framework, and gender issues.

Some of the national documents, that address Global-national-provincial linkage, are described. Since part the aims and objectives of institutions such as the Sub Regional Environmental Action Plan (SREAP)-Eastern Africa, the Intergovernmental Authority on Development (IGAD) and Millennium Ecosystem Assessment (MA) include the achievement of regional food security and environmental protection it is considered vital that the implementation of NCSA should use all available resources of such institutions.

III. CONSTRAINTS IN CAPACITY BUILDING

The major constraints identified by the NCSA process were entirely cross-cutting for the three thematic areas and, therefore, merit a synergistic intervention approach. They include:

- Weak inter-institutional coordination and communication,
- Weak policy and legal framework
- Low awareness by the public of MEAs issues
- Lack of baseline data and information exchange

- Unsustainable land use practices
- Inadequate technical capacity to implement the MEAs
- Weak institutional capacity
- Inadequate funding and lack of budget
- Inadequate Monitoring and Evaluation mechanisms
- Inadequate research and training.

IV. CROSS-CUTTING CAPACITY NEEDS ASSESSMENT

Based on the aforementioned analysis the constraints and opportunities for capacity building for the synergistic implementation of MEAs have been identified and cross-cutting capacity needs assessment also revealed eight cross-cutting capacity issues

Cross-cutting opportunities for the above constraints include:

- Existing institutional support
- Few supportive legal and policy frameworks
- Existence of structures to support community level initiatives
- Potential institutions to provide technical and managerial skills
- Conducive environment for awareness and education
- Available policies, institutions and networks supporting data and information exchange
- Potential for mainstreaming and tapping global resources.
- Mainstreaming MEA issues into Sector-Wide Action Plans and District Development Plans.

Capacity needs in a number of cross-cutting areas have also been identified as part of the study. An initial assessment across the thematic areas of biodiversity, climate change and land degradation has determined the following eight areas, where capacity needs are cross-cutting:

- Environmental education, awareness and advocacy
- Environmental policy, institutional and legal frameworks
- Environmental Impact Assessment
- Environmental management system
- Biodiversity, conservation and management
- Human resources development and institutional capacity building
- Global-national-provincial linkages
- Gender

1. BACKGROUND

1.1 Introduction

The global process of environmental change will influence ecological, cultural, social, economic and development activities at the regional and local level in all countries, making it one of the more profound challenges to sustainable development and poverty eradication. This challenge is of particular concern to least developed countries (LDCs) including Eritrea, and led to recognition of the need to immediately prepare national action plans among Multilateral Environmental Agreements (MEAs), especially the United Nations Convention on Biodiversity (UNCBD), United Nations Convention to Combat Desertification (UNCCD) and United Nations Framework Convention on Climate Change (UNFCCC).

In putting forth the concept of environmental change, the government of Eritrea recognized the need for appropriate response measures that Eritrea has already committed through the ratification of MEAs including UNCBD, UNCCD and UNFCCC among others. In fulfillment of its obligations under these conventions, Eritrea has already taken a considerable move in implementing three National Action Plans (NAPs) reflecting the country's policy status in reference to combating desertification and climate change and safeguarding biodiversity resources. Eritrea has developed its Initial National Communication (INC) under the UNFCCC, action plan (NAP) to combat desertification through the UNCCD and strategies and action plan (NBSAP) to preserve and the sustainable use of biodiversity through the UNCBD. The challenge now is how to implement effectively and efficiently these action plans.

Eritrea faces alarming capacity limitations in terms of financial, institutional, technical and human resource capacities. Hence the government put in place the National Capacity Self Assessment (NCSA) project to meet its commitments to global environment management. This project aims to identify key deficits in institutional capacity, institutional linkages and may aid the process of creating synergies among UNFCCC, UNCBD and UNCCD.

The main aim of this study is how to create synergies in reference to environmental management and accompanying capacity needs among UNCBD, UNCCD and UNFCCC in Eritrea.

Synergy in the context of the environmental conventions would help avoid duplication of efforts and promote close collaboration among the implementing institutions thus boosting efficiency and cost-effectiveness at the national and local level. By taking a "complementary approach" and working cooperatively to address climate change, desertification and biodiversity loss it is hoped that synergy- the achievement of results greater than what would occur if efforts to address a common problem were undertaken independently- can be promoted.

Climate change, desertification and loss of biological diversity are intimately connected to one another, they overlap and affect, and are affected by each other. This interconnectedness means that opportunities exist to build on areas of mutual interest in a manner that promotes identifying opportunities for synergistic capacity building for global environmental management. By seeking synergies between MEAs and appropriate capacity building for their effective implementation can help achieve national development objectives while also supporting the achievement of Eritrea's climate change, desertification and biological diversity objectives.

The preparation of synergistic capacity building action plan is the first step towards implementing long-term plans for responding to biological diversity loss, desertification and climate change. Efforts should be made to ensure that capacity development activities in the action plan to meet the needs of solving systemic capacity constraints as well as NBSAP, NAP and INC fit within Eritrea's broader capacity development needs.

1.2 Common Objectives among Multilateral Environmental Agreements (MEAs).

1.2.1 The Rationale for Achieving Synergies

The UNFCCC, UNCCD and UNCBD share a common focus on promoting sustainability- either through the achievement of sustainable development in drought affected areas, the sustainable use of biological diversity and/or the assurance of sustainable economic development through the mitigation of and adaptation to climate change. As well, each convention aims to increase the robustness and resilience of ecosystems, which in turn promotes a reduction in the economic and social vulnerability of a country and its people. This objective is explicitly stated in the UNCCD, which seeks to ensure the rehabilitation, conservation and sustainable management of land and water resources in order to improve living conditions at the community level. Similarly, the UNFCCC seeks to address climate change so as to enable sustainable economic development and continuous food production. By decreasing their vulnerability, countries will be better able to withstand external shocks (ecological, social and economic) and adapt to climate change. Biodiversity is essential to our planet, human well-being and to the livelihood and cultural integrity. This relationship is particularly critical in countries like Eritrea that derive a significant proportion of their economic well-being from activities such as agriculture, which are dependent on the health of local ecosystems.

The common environmental focus, application to shared landscapes and similar underlying objectives of the UNFCCC, UNCCD and UNCBD enabled the NCSA study teams to seek synergistic capacity building in two different areas:

- Through the ecological linkages and relationships between different ecosystems and their functions or equivalently ecosystem approach; and
- In the socio-economic systems that countries have established to manage how to use, control and protect their natural resources. These systems include government administration, education and training, and economic activities.

Achieving systemic synergistic capacity building in these areas can lead to a number of operational benefits.

1.2.2 The Ecological Rationale for Synergy

Climate change, Biological diversity and Desertification can affect and /or are affected by changes in the function and health of the ecosystem. Climate Change, for instance, could alter the functioning of an ecosystem (e.g., a coral reef in Eritrean Red Sea or highland forest in Green Belt), which in turn could lead to the extinction of vulnerable species. Similarly, by removing plants it will reduce soil moisture and make more energy available to increase air temperatures. Desertification can cause micro-climatic changes, which may increase the impact of global climate change at the local level.

The inter-connectedness of ecosystem means that actions taken in support of one MEA may affect the ability of a country to achieve its objectives under another MEA. This effect may be negative, neutral or positive, depending on the actions taken. For example, the use of intensive irrigation to cope with increased drought conditions caused by CC may lead to the drainage of important aquifers and damage of biologically diverse river systems, groundwater networks and wetlands. In another example, there are two potential ways in which the phase out of Ozone-Depleting Substances (ODSs) might add to the risk of climate change in reference to Montreal Protocol (MOP) on the Ozone Layer. The first is the use of substitutes of Chlorofluorocarbon (CFC) like Hydro fluorocarbons (HFCs) that have a high Global Warming Potential (GWP) but near- zero Ozone Depleting Potential (ODP). The second is the introduction of less energy efficient technologies that don't use Ozone-Depleting Substances. ODSs are commonly high-energy efficient refrigerants. If energy is supplied from fossil fuels, decreasing energy efficiency would increase emissions of greenhouse gases. Thus, conversion to technology with the least impact on global warming that is technically feasible, environmentally sound, and economically acceptable is critical. On the other hand, measures that conserve biological diversity can increase the ability of an ecosystem to cope with more frequent severe weather events brought about by Climate Change (CC).

Efforts to address Climate Change, Biodiversity and Desertification should be undertaken in a manner supportive of achieving the wider objective of sustainable development. Health, functioning ecosystems are needed to ensure that the goods and services they provide, such as food, water, air purification and the control of pests and diseases remain available to society. Enhancing the resilience and protective capacity of ecosystems will also help ensure the economic and social well-being of a country's people. This statement

is particularly true for the rural poor who earn a living from the land and are highly vulnerable to ecosystem degradation and change.

1.2.3 The Socio-Economic Rationale for Synergy

Opportunities for achieving collaboration and synergies also lie in the social, economic and bureaucratic structures that countries have established to protect, manage and use natural resources and address the issues of Climate Change, Biodiversity and Desertification. These opportunities definitely lead to identification of capacity building issues. These may be in areas such as institutional structures, government administration, academic research, and economic development activities. For instance, a country's MEA focal points may reside in different government departments, yet rely on the same academic expertise or databases for advice and information, and be responsible for meeting similar reporting obligations. Similarly, civil society organizations and local community groups may on different occasions be approached by individuals from each national focal point on issues related to Biodiversity, Desertification and adaptation to Climate Change.

As well, economic activities such as forestry can, if poorly managed, augment the effects of desertification, reduce biodiversity and enhance the process of global warming through the removal of carbon sink. These situations may be avoided through better coordination of the structures that govern how MEA action plans are developed.

As NCSA is being prepared, areas in which to simplify, better coordinate and streamline planning activities may be identified. If capacity gap exists to implement them, synergistic capacity building will be affected. An examination of socio-economic and institutional linkages between efforts to implement the UNFCCC, UNCBD and UNCCD provides a basis from which to determine where the opportunities for achieving operational synergies lie, and forms the basis from which to develop action plans to maximize the potential of these opportunities.

1.2.4 Planning Systemic Synergies in the process of NCSA in Eritrea

Maximization of opportunities to achieve synergies between INC (MLWE, 2001), NAP (MOA, 2002) and NBSAP (MLWE, 2000) required careful planning prior to, during and following preparation of NCSA. According to the GEF guide for self-assessment of country capacity needs for global environmental management (2001)⁴ capacity constraint at systemic level includes the overall policy, economic, regulatory and accountability frameworks within which institutions and individuals operate.

Researching this goal required identifying potential areas of mutual interest and opportunities for synergy. One of the first steps to be taken during the formulation of the NCSA process was the identification of Eritrea's existing commitments under

⁴ GEF (2001), A Guide for self-assessment of country capacity needs for global environmental management, Washington DC.

international and regional environmental agreements, national legislation, and related ongoing programs and policies, such as poverty reduction strategies. A listing of the objectives of these agreements, priority areas of action and key contributors assisted the NCSA process team in identifying key stakeholders with whom to consult during the preparation of the NCSA, or to include as part of the broader NCSA cross-cutting assessment working teams. Complementarities between programs of action were identified and encouraged, overlap between actions reduced, and potential inconsistencies in planning initiatives addressed.

It should be noted that a very careful and cautious approach is needed in order to strike a balance between the **economic sector approach**, which seems to be/appear divisible (since it is sectoral in nature) and the **environmental component**, which implies a holistic approach.

When examining INC, NBSAP, NAP, NEMP-E (DOE, 1995) and Draft State of Environment Report of Eritrea (SoE-R, MLWE, 2005) and reviewing how they were developed, six key areas have been examined:

1. How stakeholders were consulted, the input provided and the outcomes of these consultation processes:

The preparation of NCSA in Eritrea is guided by a participatory and multidisciplinary approach. Reviewed the key stakeholder linkages study on how stakeholder participation was undertaken across sectors, levels of government and from the community to the national level during the development of NAP, NBSAP and other locally driven planning exercise such as National Environmental Management Plan of Eritrea (NEMP-E). This created an insight into the success, possible failure, of these initiatives and how their outcomes could be included (if appropriate) in NCSA. Networks and stakeholder groups established to support the development and implementation of previous regional and national planning process such as Interim-Poverty Reduction Strategy Paper (IPRSP, GOE, 2003) was also relevant for use in the preparation of Eritrean NCSA.

2. The extent on whether an ecosystem approach is appropriate, and how this approach has been integrated into the planning processes used by other MEAs. An ecosystem approach integrates the inevitability of environmental change into planning processes (adaptive management) and is a useful framework for integrating conservation efforts into multipurpose ecosystem management plans. The implementation of an ecosystem approach was undertaken at the local and national level and across economic sectors. An examination of how the ecosystem approach has been integrated into, for instance, NBSAP and its planning process may provide national teams with valuable insights and guidance on how to develop NCSA in Eritrea.

3. How priorities for action were determined: When preparing INC, NAP and NBSAP, criteria for determining which issues and measures most urgently need to be addressed have been developed. Since the process by which these criteria were determined, and the final criteria used, provided NCSA preparation teams with useful insights for determining

priority capacity constraints for in-depth analysis. As well, the urgent needs identified in NAP and NBSAP helped preparation teams identify quickly sources of urgent and immediate capacity constraints, strategies to overcome them and accompanying capacity building options that could be included in Eritrean NCSA strategy and action plan.

4. Pressure-State-Response: An examination of how the Pressure-State-Response approach has been integrated into, for instance, NEMP-E and NAP and its planning process provided national teams with valuable insights and guidance on how to develop NCSA. According to this framework, human beings exert pressure on the environment, such pressures induce changes to the state or condition of the environment, to which society responds with policies and programs to prevent, mitigate or repair environmental damage. The model can use economic sectors to both classify human induced pressures and societal responses.

5. Economic Sector approach: This approach uses a human activity classification as the basis of organization. Typical reporting categories included agriculture, forestry, fisheries, mining, tourism, industry, transportation, and energy. The approach takes advantage of the way national governments and statistical systems tend to be organized. Such a framework provides information on the benefits and products derived from the environment and the economic consequences of environmental trends. However, the sectoral reference is rather narrow in focus and may neglect broader ecosystems linkages and implications. An examination of how the Economic Sector approach has been integrated into, for instance, draft State of the Environment in Eritrea (SOE-R) and its planning process may provide national teams with valuable insights and guidance on how to develop NCSA.

6. Environmental Component: The use of environmental components as a spatial reference for SOE-R represents a compromise between the organization of available data and the need to interpret a complex environment. Environmental factors such as soil type, vegetation, topography, climate, life zones, or drainage basin can be used to determine reporting units. Various environmental regional units, such as watersheds, are used as a means for more integrative ecological assessments. Such surrogates stress one component, however, at the expense of a holistic perspective. The boundaries for each environmental component will be different, and if several are used for reporting it is difficult to cross-reference data to other subject areas. The draft SOE-R of Eritrea utilizes this approach to some extent.

1.3 Objective

The objective of this study is to identify capacity constraints and opportunities for synergistic capacity building among MEAs including UNCBD, UNCCD and UNFCCC and other MEAs ratified by Eritrea. By seeking ways of avoiding duplication of efforts as well as foster efficiency and cost effectiveness and promote an integrated and collaborative approach to the implementation of the conventions.

The study is anticipated to be carried out as follows:-

- By evaluation of the opportunities for harmonised implementation of the conventions and identification of synergies using the revised thematic profiles.
- Elaborate working versions of the National Assessments.
- From the above assessment, highlight or single out those issues and that need strengthening the cost-effective implementation of the conventions, by looking at the commonalities.
- Refine assessments through further interviews, inclusion of new issues, regional/local level consultations.
- Present integrated draft report in a multi-stakeholder consultation process, for technical review, improvement and endorsement in a national workshop by seeking their inputs and finalize the plan accordingly.
- To bring out the most obvious synergies among the conventions.

1.4 Methodology and Approaches

In the review of the capacity constraints and identification of potential opportunities for synergistic capacity building process:

- Key results of the MEAs action plans including UNFCCC (INC), UNCBD (NBSAP) and UNCCD (NAP) and other related MEAs (e.g., such as NAPA, NAP, Cartagena Protocol on Biosafety , etc) studies in Eritrea have been reviewed;
- Literatures having relevance to global environmental management have been reviewed;
- National policies and action programs, which have relevance to environmental management and related potential capacity building issues have been reviewed;
- Conducted stakeholder analysis of relevant institutions at national level, mainly Ministry of Agriculture, Ministry of Justice, Ministry of Land, Water and Environment, Ministry of Energy and Mines, Ministry of Transport and Communication, Ministry of Fisheries, University of Asmara, NGOs, etc consulted to identify their ongoing and planned activities and organizational structure in reference to environmental management;
- Objectives, goals and strategies of existing national, regional and international development plans, which include sustainable development strategies, national conservation strategies, Sectoral development plans, Poverty Reduction Strategy Papers (PRSPs), Millennium Development Goals (MDGs), United Nations Development Assistance Framework (UNDAF), Sub-Regional Environmental Action Plan (SREAP) for Eastern Africa have been reviewed;
- Previous national stakeholder and community consultation processes such as that of NEMP-E, NBSAP, INC, I-PRSP and CCD have been revised to integrate their perspectives; and

- Organizational and Spatial Frameworks including Environmental process (Pressure-State-Response), Economic Sector and Ecosystem approaches have been applied to identify Core Program areas for environmental management and potential add-on synergistic capacity building activities in Eritrea.

II. STRATEGIC ELEMENTS

2.1 Introduction

No detailed capacity needs assessment has been conducted in Eritrea. Nonetheless, a preliminary nationwide assessment across the thematic areas of biodiversity, land degradation and climate change has identified eight areas where capacity needs are cross-cutting.

The strategic elements of this assessment builds on the existing capacity needs in these cross-cutting areas to conform to the principle that Capacity Needs Assessment efforts should be made to ensure that capacity development activities should fit within Eritrea's broader capacity development needs.

These strategic elements form the linkage between the objective outlined in the previous section and the activities that will be activated in order to fulfill the objective. Hence the strategic elements that have been reduced to eight headings or themes are discussed in detail below. These are:

- Environmental policy, institutional and legal frameworks;
- Environmental management system;
- Biodiversity, conservation and management;
- Environmental Impact Assessment;
- Global-national-provincial linkages;
- Environmental education and awareness;
- Human resources development and institutional capacity building and
- Gender

The review is arranged under potential eight strategic themes and for each strategic theme the activities, the existing situation and needs are presented.

2.2 Environmental Policy, Institutional and Legal Frameworks

2.2.1 Institutional Framework in Environmental Management

Department of Environment, formerly known as Eritrean Agency for the Environment (EAE), has not been fully and legally empowered as compared to its responsibilities on environmental protection, conservation, and management. It seems to hold lower position relative to the resource exploiting ministries. It is generally much smaller than the conventional ministries and operational departments who have large staff, budgets, and vehicles of their own.

The Department of Environment has passed several steps in the past 15 years. It was once called the Eritrean Environment Agency had considerable statutory authority but virtually no power or ability to influence other actors due in part to its newness and also to its placement under the Ministry of Local Government. However the DoE's placement within the Ministry of Land, Water and Environment gives it both relatively better position from competing priorities as would be the case if it were located in a ministry that also had commercial resource exploitation functions. However, the full potential of the Ministry of Land, Water and Environment has not yet been realized. It has yet to assert its resource management and conservation mandate in appreciable ways, due in part to the relative weakness of the constituent departments, its recent creation as a ministry, the tendency for each department to work independently, and the absence of a coherent strategy or program for integrating the mandates and exploiting the expertise of the land, water and environment departments under its authority.

Department of Environment (DoE) is responsible for coordinating environmental actions in Eritrea. This is stated in the concise mission statement in the NEMP-E as "The Eritrean agency for the Environment is responsible for coordinating the protection and enhancement of Eritrea's environment so that rapid social and economic development can be achieved in consonance with the rational and sustainable use of resources for current as well as future generations." However the DOE has limited institutional, legal, technical capacity to tackle the huge task of dealing with the complex environmental problems and its management.

The statement above implies three fundamental things. First, the environment is not a sector but it is the resource base on which all-sectoral development depends. Second, since the environment is not a sector it follows that it cannot be adequately and sustainably managed through a sectoral approach. Third, each sectoral development effort should have a clearly perceived responsibility to protect and enhance the environment. All the entities responsible for development activities should have primary responsibility for incorporating environmental concerns parallel to their economic activities.

2.2.2 The Role of Other Sectors in Environmental Regulation and Management

Environmental considerations are national priority and the line ministries are attempting to incorporate it into their decision-making and planning system. Nonetheless, the technical capacity to develop EIA, environmental policies, guidelines, directives and environmental criteria is limited. All of the ministries have inadequate environmental personnel to oversee environmental management. In some line ministries an environmental unit is put in their organizational structure as a unit but no staff and plans are assigned. Most of the ministries give priority to their production activities with little concern to environmental protection.

There is a need to elaborate detailed environmental guidelines in each line ministry for major activities, which will have a significant impact on the environment. The guidelines will assist ministries and licensing authorities to integrate environmental considerations into their policy, project preparation and decision-making processes. In order to ensure an

integrated development process, environmental, social, and economic sustainability should be clear objectives. There is a need to assess all impacts of policies and projects.

In principle, DOE is expected to assist line ministries in preparing their own EIA and develop their sectoral environmental legislations. Nonetheless, DOE itself has limited institutional and technical capacity to do these responsibilities.

2.2.3 Decentralization and Environmental Management

Environmental management is one of the issues entrusted to regional and sub regional administration by the government's decentralization policy (GOE, 1996). For example, DOE has regional offices in the six zobas, however few of the zobas do not have environmental officers.

Decentralisation offers the opportunity for environmental management issues to be integrated in the decision-making process of regional and sub regional administrations. Nonetheless, regional and sub regional administrations have critical capacity limitations in planning, baseline data, logistics and institutional and legal frameworks.

Therefore the development of capacity of local administrations should be given higher priority if this decentralization policy is to be implemented. Regional offices of the Department of Environment are expected to assist the local administrations in introducing basic environmental criteria into their planning process by providing technical assistance. However, regional staff should receive training in environmental planning methods in their own right.

2.2.4 Legal Framework in Environmental Management

The legal framework for environmental management has yet to be formalized. This has been identified repeatedly over the years as a serious impediment to the effective functioning of the Department of Environment, yet the process of drafting and redrafting the environmental legislation framework or proclamation continues. While the immediate causes for the delay may not be apparent, it is clear that the lack of consensus on what should be included in the proclamation and the level of detail regarding regulatory procedures and functions included in some drafts have hindered the finalization of the draft before submission to the Ministry of Justice.

A review of the current draft proclamation suggests that a speedy resolution and formal approval may not be attained. This is due to the inclusion of provisions regarding responsibility for protected area system declaration and management that are not fully consistent with existing legislation, notably the Fisheries Proclamation, as well as the Forestry and Wildlife Proclamation (GOE, No. 155/2006). Discussions with senior officials in the Ministry of Justice (MOJ) indicate that the draft proclamation will not be found acceptable in its current form and furthermore, the MOJ stated that it is not responsible for resolving disputes over mandate and authority.

The Ministry of Land, Water and Environment may need to consider initiating a thorough review of existing draft legislation regarding the environment and natural resources management. Such a review would have as its core objective the harmonization of relevant legislation and the preparation of draft legislation in a form that will facilitate the review and timely approval by MOJ specialists. This would also provide an opportunity for focused discussions among relevant stakeholders in regard to cross-sectoral environment and natural resource management issues including capacity building such as coastal zone management and terrestrial biodiversity conservation.

As an urgent priority Eritrea needs the legal requirements needed to establish legislation on Eritrea's environment, to define the role, function and responsibility of the Department of Environment, and that of other ministries in environmental protection and optimal natural resource use. The aim is to draft and approve an Eritrean Environment Act.

The Act should reflect the Government's determination to give environmental protection very serious attention. The Department of Environment should enhance its capacity by employing more staff in different specializations as well as upgrade the level of expertise of existing staff in order to be able to fulfill its mandate. The Act should also include rules for establishing and running an environmental monitoring network, and would cover the establishment and management of national parks and protected areas. The Department of Environment should be given the responsibility to coordinate and insure that the environment and key natural resources are protected. This implies that the Department of Environment would be responsible for standard setting, monitoring, environmental audits and enforcement of compliance, as well as for prosecution in case of violation of the law. There is clearly a significant advantage associated with synergizing monitoring and enforcement within one organization, as this will help to avoid duplication of effort and the potential irritation to the public with having to deal with a number of authorities.

In relation to Multilateral Environmental Agreements (MEAs), the Department should have an International cooperation Unit to assist the Department on negotiations with donors such as GEF/UNEP and others, on the funding of specific action plans and on related policy and project implications. It ought to be responsible for enhancing global and regional environmental cooperation. It is expected to be responsible for coordinating and implementing Eritrea's obligation in terms of international agreements and consultations on the environment.

The Act must also make sure that it covers all the important environmental concerns, including rules for establishing and running an environmental monitoring network, and would cover the establishment and management of national parks and protected areas.

2.2.5 Environmental Policy in Environmental Management

The Government of Eritrea has developed several policy documents aimed at stimulating economic growth and the conservation of environment and natural resources having regional, national and global significance. Institutional structures are also changing constantly to cope with new challenges and demands.

In general, all the different policy documents, in one way or the other, address environmental and sustainable natural resources management issues. However, synergy and complementarities among the different national policies, strategies and action plans are required in order to obtain meaningful outputs, as well as to save financial, material and human resources.

Review of the existing policy documents and their influence on the environment in general and capacity building and synergy in particular, are elaborated below.

2.2.5.1 Macro-policy Document

The Macro-Policy Document (GOE, 1994) outlines the background for Eritrea's national economic growth strategy and pursues the guiding principles of human-centered, efficient, sustainable and equitable development.

As stated in the policy document (chapter 16 and others) proper attention will be accorded to:

- Potential environmental consequences of investment decisions by undertaking appropriate environmental impact assessments before investment decisions are made;
- Land use planning to reduce land degradation and biotic loss;
- Protect environmental hazards;
- Increase industrial and urban waste disposal systems;
- Reduction of the widespread urban and rural poverty and the enhancement of social justice;
- Enhancement of the status and increasing the participation of women;
- Acceleration of human capital formation; and
- Restoration, enhancement and preservation of Eritrea's ecological integrity.

2.2.5.2 National Environmental Management Plan for Eritrea

The National Environmental Management Plan for Eritrea (DOE, 1995) provides the basic policy document for action in the environmental sector and lays out a strategy for action for conservation activities. Its guiding principles include recognition of the strategic importance of conserving natural resources and maintaining environmental quality as a part of national economic growth and development process, to develop

integrated and multiple uses of natural resource use strategies at the same time ensuring local involvement and equity in environmental management.

The NEMP-E has been developed in accordance with the National Macro-economic Policy and tries to address the environmental dimensions of that policy. It also takes into account the negative impact of some development activities on the environment. However this document does not directly specify the issues of capacity building and synergy.

In reference to capacity building issues, NEMP-E recognizes that in implementing the NEMP-E there is a need to mobilize and strengthen Eritrea's human resources, financial abilities, and institutional capacities.

NEMP-E drafted strategies for mobilizing and strengthening these capacities at local and external levels. In the initial phases of implementation, emphasis should be placed upon mobilizing internal resources. The aim is to ensure that the basic minimum capacity is in place and that implementation proceeds almost immediately, addressing priority and selected issues; e.g., preparation of the Environmental Act.

In the subsequent implementation phases, the mobilization of external sources ought to be pursued. It asserts that mobilization of external resources is important for three implementation elements, i.e., institutional capacity, human resources, and financial input, which should be undertaken simultaneously.

2.2.5.3 National Biodiversity Strategy and Action Plan

The National Bio-diversity Strategy and Action Plan (NBSAP, MLWE 2000) is a continuation of the Government's over all environmental conservation efforts and is a step forward with respect to bio-diversity conservation for a sustainable use.

The NBSAP indicates Eritrea's position with respect to bio-diversity conservation and tries to place this policy in the context of the Government's major development objectives. By way of this policy, the Ministry of Land, Water and Environment takes full responsibility in facilitating, promoting and coordinating the implementation process of bio-diversity conservation activities for a sustainable use. Moreover, the preparation of the NBSAP proves Eritrea's readiness to implement the provisions of the Conservation on Biological Diversity.

The NBSAP identified a comprehensive grid of actions to be taken in relation to conservation of biological diversity. It recognizes three core areas i.e. terrestrial, marine and agricultural biodiversity. In this document a set of action plans are listed and those that have great relevance to restore the degraded land and to reduce the impact of climate changes and hence the potential for synergized actions are summarized below:

- Gazette protected areas for wildlife and habitat conservation,
- Promote afforestation through community participation,

- Promote public awareness in biodiversity conservation,
- Create linkages among different stakeholders,

In general terms, this document recognizes that there is an urgent need for integrated natural resources management and mainstream it with the overall national development action plans.

In reference to capacity building - policy issues the NBSAP has set priority actions in all of the three of its principal components or core areas as stipulated under its strategic, legal and institutional structure. This policy actions and programs include:

- Capacity building of institutional resources to meet the need of decentralization policy of the government;
- Completion of environmental proclamation, provision of biodiversity information to other sectors preparing legislation, regulation and guidelines;
- Preparation of regulations for managing and administering Protected Area System (National Parks, Nature Reserve, etc);
- Drafting of Biodiversity legislation;
- Preparation and coordination of laws/regulations for Integrated Coastal Zone Management;
- Preparation and coordination of laws/regulations for Coastal, Marine and Island Biodiversity (CMI) Protected Areas;
- Identification of capacity needs for effective enforcement of CMI related laws/regulations; and
- Make assessment studies on how agricultural biodiversity resources, including local knowledge and practice, are better protected and sustainably used through the legal means.

2.2.5.4 National Environment Impact Assessment, Procedures and Guidelines (NEAPG)

The Ministry of Land, Water and Environment in collaboration with other relevant government agencies has done considerable effort in developing a system of National Environmental Impact Assessment Procedures and Guidelines (NEAPG, DOE, 1999) suitable to the Eritrean conditions. However enforcement of EIA is not yet possible, since the Environmental law has not yet been promulgated except in the mining and petroleum sectors. Based on this document, the Ministry of Agriculture has developed procedures and guidelines relevant to forestry, wildlife, agriculture and livestock. Ministry of Public Works has also come up with its own environmental assessment procedures and guidelines.

These documents have categorized projects (considering their type, size, location, and mode of operation) into three levels. These include:-

- Small scale projects having minimal impact on environment,

- Big or large projects with clear potential impact but having cost-effective mitigation measures to minimize these impacts,
- Large-scale projects having major impact on the environment are expected to pass through a full-fledged impact assessment.

NEMP-E identified priorities for preparing and enforcing environmental guidelines for agriculture, construction, chemicals, forestry, quarries, petroleum exploration and exploitation, and industry. The second priority, to be addressed before the year 2000, should have been the tourist, transport, energy, fisheries and shipping sectors. However, the plan has not been yet implemented to date.

Capacity building policy issues are identified in NEMP-E in the EIA area and set as:

- Assessment of the likely environmental impacts of economic policies;
- Assessment of the likely economic impacts of environmental projects; and
- Assessment of the likely equity impacts of both environmental and economic policies.

2.2.5.5 Eritrea's Initial National Communication (INC) on Climate change

Eritrea has acceded to the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and prepared its first National Communication on Climate Change (MLWE, 2001). This document indicated that the country is not a significant contributor to the greenhouse gases. Nonetheless, it is vulnerable to climate changes particularly in terms of precipitation, which has direct effect on the forestry sector and others.

In this document, a number of key action plans and policies are listed in Agriculture, Water Resources, Forestry, Coastal environment and Human health.

This study recognizes that there is information gap, which require comprehensive study. It also strongly recommends the creation of climate change secretariat within the Department of Environment to follow up issues relating to climate change.

2.2.5.6 National Adaptation Programme of Action (NAPA)

As a follow up to the current effort of addressing the adverse impact of climate change, the National Adaptation Program of Action (NAPA) has been embarked during 2005 in the Department of Environment. The objective of the proposed NAPA project for Eritrea is to develop a countrywide programme that encompasses the urgent and immediate adaptation activities (including policy measures, capacity building, technology transfer and project approach) that address the current and anticipated adverse effects of climate change, including extreme events.

The goal of the NAPA for Eritrea is to provide a framework to guide the coordination and implementation of adaptation initiatives in the country, through a participatory approach and building synergies with other relevant environmental and related programmes and at the same time develop a specific priority programme of action for adaptation to climate change.

2.2.5.7 National Action Program to Combat Desertification

The government of the State of Eritrea has signed and ratified the United Nations Convention to Combat Desertification in 1994. One of the obligations of the parties of this convention is to prepare a comprehensive action plan and implement it accordingly. Based on this, the National Action Plan document was prepared and published (MOA, 2002).

As a signatory to the convention, Eritrea is expected to make appropriate legal and institutional adjustments to enable it implement and enforce the provisions of the conventions.

Considering that a number of studies such as the Interim Poverty Reduction Strategy Paper (I-PRSP) and the Household Living Standard Measurement Survey (LSMS) – qualitative survey (NSEO, 2003) and sectoral studies have been carried out since the NAP Road Map, which was meant to help mainstream NAP was finalized during 2001 (Naigzhi, 2002) and was found necessary to update the Document.

In order to accelerate the implementation of NAP and realize and promote its objectives, the process of mainstreaming it into the national development framework of the State of Eritrea is taking place. The various measures that are been undertaken include public awareness, mainstreaming of gender in the NAP, establishment of NGOs/ CBOs, Network for Combating Desertification and Mitigating the Effects of Drought, and formulation of the Regional Action Programmes (RAP).

2.2.5.8 The Cartagena Protocol on Biosafety

The objective of the Protocol is:” to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of LMO’s resulting from modern Biotechnology that may have adverse effects on the conservation and sustainable use of Biodiversity, taking into account risks to human health, and specifically focusing on transboundary movements.”

In order to comply with the Protocol Eritrea launched the national Biosafety Framework by the beginning of the year 2005. New policies will emerge in implementing this protocol in Eritrea. The major expected policy issues will be:

- Draft of legal instruments, including guidelines, as appropriate.

- Systems for risk assessment and management, including audit, which takes into account national and sub-regional/regional needs.
- Administrative system for compliance with the Cartagena Protocol on Biosafety.
- Mechanisms for public consultation in decision-making processes regarding LMOs.
- Establish mechanism for sharing of scientific assessments at sub-regional levels, whilst allowing for decision-making at the national level.
- Identification of country needs and mechanisms for participation in the Biosafety Clearing House.
- Publication of inventories, reports of national meetings, draft and/or final National Biosafety Framework, relevant regulations and guidelines.

2.2.5.9 Interim Poverty Reduction Strategy Paper

The Government of the State of Eritrea has developed an Interim Poverty Reduction Strategy Paper (GOE, 2003) aiming at reducing the incidence of poverty in the country. Among others, this document recognizes the negative impact of forest/habitat destruction. In order to prevent further deterioration of forests/woodlands, and to restore the forest resources of the country, the following modalities of implementation of the strategy are identified in chapter 6 of the document:

- Putting in place an improved forest and wildlife policy and legal framework,
- Protecting and enhancing water, soil and biodiversity conservation,
- Undertaking full forest resources inventory,
- Undertaking an accelerated and sustainable afforestation program in participation with the communities.

The aforementioned implementation modalities for restoring the forest/woodland ecosystem have direct contribution to restore biological diversity and mitigate or adapt the impact of climate change.

2.2.5.10 Land and Forest Tenure Policy

The legal document available in relation to land and forest tenure is the Proclamation No. 58/ 1994 (GOE, 1994), which bestows the government the right of ownership to all land of the state (Article-3), eliminating the old village or family ownership systems. Under this proclamation the government being the ultimate owner of the land, retains the right, to distribute land to the villagers who by right are entitled to a piece of land with a usufruct right for lifetime. The land cannot be sold or transferred and cannot be mortgaged. Article 50 of the proclamation gives the Government the right to expropriate land from usufructaries, with appropriate compensation for a wide range of national reconstruction projects, amongst them, agricultural development, including all land, forestry and animal conservation projects.

Villages also have the right to control forests near them. However, the incentives for sustainable stewardship of the forests, and for lasting reforestation efforts, clearly are not strong enough. The State's ownership of the forest is not accompanied by incentive for villagers to become involved in their protection and management, and within village communities there is a continuing conflict between grazing and forest activities. Therefore, clear regulations and implementation modalities need to be worked out in order to implement the existing proclamation, and to include aspects of land degradation, biological diversity and mitigating climate change as well.

2.2.5.11 National Forestry Strategy and Policy

Considering the seriousness of forest degradation in the country, the government has been using a general policy and strategy framework on forest and wildlife conservation and development, which was adopted from the pre-existing colonial policy and legislation, known as 'Forest and Wildlife Conservation and Development Legislation No. 192/1980. There are also rules and regulations that were used during the liberation war in the then liberated areas.

In order to have a more comprehensive policy and strategy, the Ministry of Agriculture, in consultation with all relevant stakeholders, has promulgated a new 'Forest and Wildlife Conservation and Development Legislation No. 155/2006, law as an integral part of the overall National Agriculture Development Strategy and Policy draft document (MOA, 2005), which is expected to be endorsed by the government at the end of 2006.

The main elements put forward in this document are:

- Inventory of forests and woodlands,
- Wildlife surveys,
- National action plan of forests and wildlife,
- Creation of protected areas,
- Conservation of forests by bringing fuel wood supply and demand into balance, reducing overgrazing and regenerating forests, ameliorating the conflict between agriculture and forests, providing incentives in maintaining forests, developing programs to reduce forest fires as well as promoting non-wood forest products,
- Community and Private forestry, by securing forest tenure rights and promoting afforestation and community participation in forest management,
- Conservation of wildlife,
- Import and export,
- Institutional improvement, and
- Developing conservation education and
- Put in place law enforcement mechanisms.

2.2.5.12 Eritrean National Agricultural Development Strategy and Policy

A new agricultural strategy and policy has been drafted (MoA, 2005) and it is under review by experts from different ministries and government agencies. The drafted development strategy and policy main guiding principles are:

- Basing growth of comparative advantage and competitiveness,
- Achieving sustainability,
- Enhancing the role of rural women,
- Implementing modern approaches to environmental management
- Targeting subsidies,
- Letting markets determine price,
- Decentralizing and developing government: new roles for the state and the private sector in agriculture,
- Controlling the challenge of epidemic diseases,
- Strengthening mechanisms of inter-Ministerial cooperation and coordination.

The drafted agricultural development strategy and policy contains several sub-sector strategic and policies for agriculture as follows:

- Pricing Incentives and Marketing Policy
- Land and Forest Tenure Policy
- Agricultural Technology Policy
- Water and Soil Management Policy
- Forestry and Wildlife Management Policy
- Rural Infrastructure and Energy Development Policy
- Agricultural Financial Policy
- Livestock Development Strategy and
- Crop and Horticulture Development Strategy.

2.2.5.13 Fisheries Proclamation

To safeguard the sustainability of fisheries resources and protect the country's marine and coastal biodiversity the Ministry of Fisheries has the jurisdiction over most rights on the marine resources base. The first 'Gazzete of Eritrean Laws' has been promulgated in order to be used as a governing tool. The laws incorporate guidelines pertaining to fisheries management principles and development plans, fisheries product and national and foreign fishing vessel regulations (GoE, 1997; 1998 and 2003).

2.2.5.14 National Water Policy/Development Strategy

The Government of Eritrea, along with donors and community groups, is committed to address water resources development and management with the context of increasing self-reliance. The draft National Water Policy (WRD, 1997) provides a framework for developing the nation's precious water resources in ways, which are sensible, sustainable and economically and socially responsible.

Recently the Water Resources Department (WRD, 2001) has issued an Emergency Action Plan to be followed by all sectors and development partners involved in the water sector. WRD in its action plan document has indicated its commitment to integrate the Millennium Development Goals (MDG) and other environmental concerns in the long-term water development programs. This action plan document also stressed chronic droughts frequently facing the country, the rapid falling of water tables in many urban and rural water supplies and irrigated agricultural areas, excessive extraction of groundwater, the negative impact of unregulated exploitation of water and gaps in hydrological and hydro geological data. Based on this the WRD has emphasized the need for research on methods and technologies to better manage and conserve existing water reserves (with a "total efficiency" framework), as well as on recharge and protection method for critically needed and vulnerable aquifer.

Similarly, the Water Supply and Sanitation Sector Assessment (WRD, 2004) laid a framework that addresses the broader sector constraints that need to be addressed for sustainable development of the water resources of the country. These are:

- Industrial productivity;
- The need to raise institutional capacity through capacity building and training; and
- The need to emphasize the participation of community in all aspects of water and sanitation projects from the initial planning to the implementation, monitoring and evaluation process.

2.2.5.15 Health Sector Policy

So far there is no published health sector policy, however it is under preparation. The Ministry is applying directives to special problems until the sector policy paper is published.

Nonetheless, the Macro Policy paper has set objectives and policy issues for the Health sector as stated below:-

Objectives:

- To reduce and eventually eliminate deaths from easily controllable diseases.

- To enhance awareness of good health practices in order to improve the productivity of the working force.

Policies:

- Basic health services will be made available to both the urban and rural populations. Priority will be given to primary health care and immunization programs.
- Major health hazards will be given special attention for containment and control.
- The private sector will actively participate in the provision of health services following rules, regulations, and operational modalities provided by the Ministry of Health.
- Community and beneficiary contribution in financing health services will be promoted
- National health insurance schemes will be introduced
- Information dissemination on healthy practices will be actively promoted.

2.2.5.16 UNDP's CCA and UNDAF

The next 5-year Common Country Assessment (CCA) and UN Development Assistance Framework (UNDAF) elaborations are underway. Implementation of the UNDAF (UNDP, 2005) has started during 2006.

UNDAF has prioritized environmental issues as follows:-

- Land use planning, reclamation and land policy;
- Resource assessments and mapping;
- Energy and alternative energy sources;
- Nature conservation including wildlife conservation and biodiversity;
- Soil and water conservation; and
- Development of resource mobilization

The UNDP-Eritrea recommended three main issues that need to be prioritised:

- Land policy review should be undertaken;
- Priority areas be clearly identified and implementation phased out
- Priority programmes/projects be fully elaborated for donor consultative forums

The mainstreaming of several action plans including NAP, NBSAP and NAPA currently underway in the country overlaps with UNDP's CCA/UNDAF and the development of a new policy and strategy for agriculture in the country. Review of the PRSP is also anticipated to start in the near future. The mainstreaming activities should effectively utilize these opportunities.

2.2.5.17 Policies on Environmental forums

Though, there are no policies that encourage environmental forums, several environmental initiatives including UNCBD, UNCCD, UNFCCC and many others are used to sensitize and consult people to help draft and finalize the action plans such as NAP, NBSAP, NEMP-E, and PRSP. For example, National Forum on Land Degradation is to be held every 3 years (NAP, CCD). Similarly, Environmental Forum on NEMP-E had being planned to be held every two years but so far has not been done. Many others will also follow the same pattern to update their respective action plans.

The consultations with people are extremely effective in sensitizing local people and development issues and hence these consultative processes should thus be retained as a permanent feature of the nation's environmental protection efforts. Accordingly, there should be policy commitment for conducting regular environmental forum and establish the necessary administrative mechanism to hold national and regional seminars in a synergized fashion for various environmental issues and projects. At the conclusion of the forum, a national report should be prepared indicating the people's views on what needs to be done to protect the environment.

2.2.5.18 Conclusion

The ongoing national effort to place environmental policies in development plans and projects is promising. However, much work still remains in order to mainstream climate change, desertification and conservation and sustainable use of biodiversity in the broad national development agenda. For example several socio-economic sectors have not yet developed their environmental legislations and Environmental Impact Assessment Procedures and Guidelines for their respective development agenda. Identification of detailed capacity building needs to develop each sectoral environmental legislations, policies and Environmental Impact Assessment Procedures and Guidelines is critical.

Although the on-going NCSA study and the follow up implementation plan will encourage the identification of synergy of the three conventions and the MEA's nevertheless till, such time that these are implemented there will be policy constraints for mainstreaming synergy across the conventions. Nevertheless the Ministry of Agriculture and Department of Environment of Ministry of Land, Water and Environment can capitalize on this situation to mainstream synergistically desertification, climate change and biodiversity issues, which will help to conduct cost effective capacity building programs at national level with broad participation of the stakeholders with clear mandates and goals.

However, there is an urgent need for an umbrella environmental law to be put in place, which will harmonize the various sectoral environmental legislations together with the

mandate and responsibilities of sectors in reference to environmental protection and capacity building needs.

2.3 Environmental Management System

2.3.1 Background

Environmental management is one of the cross-cutting issues identified in UNCCD, CBD and UNFCCC as part of the preparation stage of NCSA proposal. The first step to identify capacity building needs for efficient environmental management significant to both national and global environment is to identify core program areas that synergize these conventions and provide environmental institutions for long-term planning in their areas of interests taking into account that environment cannot be conserved and protected by short-term programs. These core program areas will be mechanisms framed to achieve not only global environmental benefits but also support to attain country driven national development goals including poverty alleviation and sustainable development. Hence, capacity building needs assessment in these areas is very critical.

The first approach applied to come up with these core program areas is broad analysis of the current national effort in reference to poverty alleviation, food security, environmental management and sustainable development. These national efforts have also linkages in one way or the other to global environmental management including CBD, CCD and FCCC. The second approach is a mix of approaches including ecosystem and environmental process approaches.

There are compelling scientific reasons for addressing environmental management within the framework of ecosystems. Ecosystem management allows the integration of scientific knowledge of ecological relationships with that of sociopolitical conditions and values to achieve environmental protection and sustainable development. Protection and sustainable management of ecosystems require a long-term commitment and a range of coordinated policy program and project interventions at local, national level, and regional level, or both, as well as successful integration into the wider economic, social, and cultural contexts.

Environmental process is applied here as a complementary to the ecosystem approach. It captures environmental problems and solutions, which may not be adequately addressed by ecosystem approach. It is based on the assessment of the impact of human activities on the physical and biological processes of ecosystems, such as the circulation and bio-accumulation of contaminants, alteration in community structure, and decrease in system stability. The concentration on dynamic relationships reflecting both cause and effects provides systematic and comprehensive coverage in a cross-sectoral and integrative manner. Such a framework facilitates the development and evaluation of policy responses to environmental problems. The approach used is shown in figure 1.

Synergistic activities are then analyzed between UNCCD, UNCBD and UNFCCC under the framework of these core program areas.

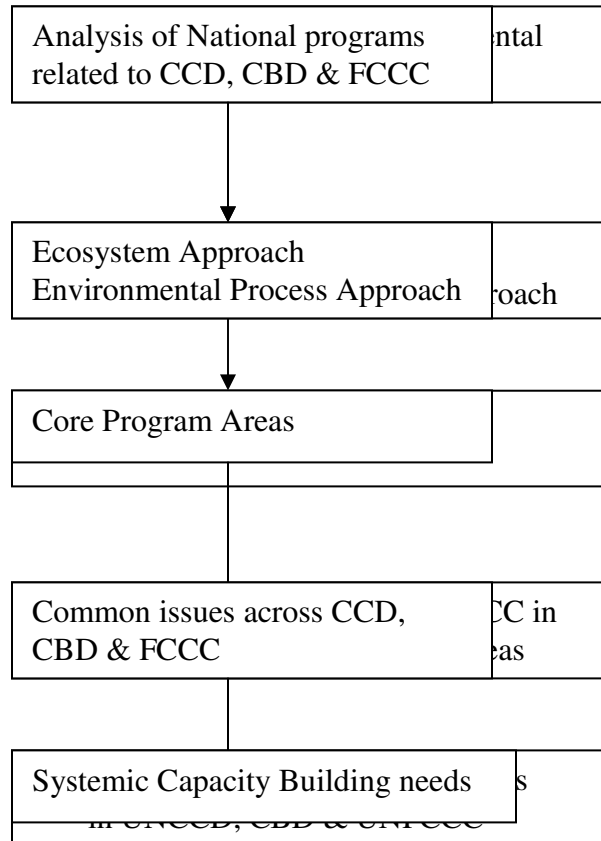


Figure 1. The approach used in identifying Systemic activities (Capacity Building needs) in UNCCD, UNCBD and UNFCCC

2.3.2 Core Program Areas in Environmental Management and Screening of Strategic elements

2.3.2.1 Identifying Core Programmes

Several implemented, ongoing and planned activities have been elaborated in the study Stakeholder analysis and Developing Linkages, (Global Resources, DOE 2005). However it is difficult to estimate how many of these projects have/had concern for environmental management and environment on which they are taking place. It is a well-

known fact that few socioeconomic sectors have put in place at least minimum EIA procedures and guidelines in their day-to-day work. Moreover, most of their projects are short-term, whereas those related to environmental conventions tend to be long-term. It is also a proven fact that environmental conservation and protection cannot be achieved by short-term planning.

National long-term planning and commitment framework for environmental management should be identified, which could strongly coordinate the various stakeholders to focus their environmental management efforts to achieve national and global environmental benefits while addressing their individual development goals. It should also provide a framework for systematic monitoring and evaluation of environmental management.

The stakeholder analysis (Global Resources: DOE, 2005) demonstrates that the various implemented, ongoing and planned activities fall under the following Core Program areas as identified by ecosystem and environmental process approaches. These are:

- Coastal, Marine, and Freshwater Ecosystems;
- Wood land and Riparian forest ecosystems;
- Arid and Semi-Arid Ecosystems;
- Mountain Ecosystems;
- Technical Assessments and Environmental Information Management; and
- Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA).

The first four core program areas were identified by Ecosystem Approach, whereas the last two are identified based on Environmental Process Approach, which is mainly based on the Pressure-State- Response model.

The ecosystem approach has demonstrated best practices for environmental management in several countries. **It integrates environmental and socioeconomic data** and reveals ecosystem linkages and consistent method of environmental reporting based on common units. **Nonetheless, Ecosystems have no boundaries and are not always easily defined.** As a result, data generally is not well organized by ecosystem boundaries.

On the other hand, Environmental Process approach examines dynamic ecosystem relationships and illustrates cause-effect associations. It facilitates development of societal response to environmental problems. Nonetheless, it is more complex to use because of incomplete understanding of ecological processes. For this process, suitable data may not be readily available.

Thus the core program areas are identified by two complementary environmental approaches. These core program areas are not stand alone or independent grouping, since findings for one program may contribute to a certain activity in another program. For example, data collected and analysis performed under the technical studies and environmental information management will be inputs to the other four ecosystem

management programs. Some of the regulatory instruments developed under the EIA and SEA program will be necessary for the other programs.

The above six program areas in environmental management take into account the following considerations:

- Making systematic progress in securing global environmental objectives on the basis of a set of representative and complementary ecosystems of global significance;
- Providing a practical organizing framework for the design and implementation of cohesive systems of national actions in reference to national programs, UNCCD, UNFCCC and UNCBD involving coordination of international, inter-sectoral, and interagency activities to achieve global environmental benefits;
- Providing a basis for the further development of synergistic activities that will yield strategic and programmatic impacts; and
- Providing a workable basis for programmatic monitoring and evaluation of the effectiveness of UNCCD, UNCBD and UNFCCC activities in Eritrea.

When referring to the eight strategic element of this assessment, Biodiversity, conservation and management and Environmental Impact assessment are found to be core program areas (tools) under Environmental Management System. Biodiversity, conservation and management distribute itself among the four ecosystem core program areas including Coastal, marine and freshwater ecosystems, Forest ecosystems, Arid and semi-arid ecosystems and Mountain ecosystems. It will also be noted that strategic elements such as ***environmental education and awareness and human resources development and institutional capacity building*** are cross-cutting issues in the six core program areas under environmental management rather than being core program areas in their own right. These are support measures and investments planned to support an institution than a coherent set of programs that an institution implements in support of environmental management. For example, human resource development and institutional capacity building does not need to take place, but it will be done as a separate activity in response to identified deficiencies within the core program areas. Environmental education and awareness and human resources development and institutional capacity building are also cross-cutting issues in environmental policy, institutional and legal frameworks, Global-national-provincial linkages and Gender strategic elements.

Thus the strategic elements reduce themselves to four strategic elements including **Environmental policy, institutional and legal frameworks, Environmental management, Global-national-provincial linkages and Gender.**

2.3.2.2 Environmental management and synergies between and among UNCCD, UNCBD and UNFCCC

Comparison of the objectives of UNCCD, UNCBD and UNFCCC shows that four issues are common as set forth by Article 2 of UNCCD, Article 1 of UNCBD and Article 2 of UNFCCC. These are:

- Long-term conservation and sustainable use of natural resources;
- Ecosystems are central to all of them;
- Achieving food security and
- Achieving sustainable economic development.

“The objective of **UNCCD** convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and / or desertification, particularly in Africa, through effective action at all levels... with a view to contributing to the achievement of sustainable development in affected areas.

Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the local level.” Article 2, UNCCD.

“The objective of **UNCBD** Convention are the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources...” Article 1, CBD

The components of biodiversity are ecosystems, species and genetics.

“The ultimate objective of the **UNFCCC** Convention and any related legal instruments that the conference of the parties may adopt is to achieve stabilization of green house gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to Climate Change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” Article 2, UNFCCC.

Therefore identifying synergies between and among UNCCD, UNCBD and UNFCCC in the Framework of Ecosystem approach is a mandatory strategy.

2.3.2.2.1 Coastal, Marine and Fresh Water Ecosystems

Introduction

These ecosystems coincide with the semi-desert agro-ecological zone of Eritrea housing and bordering the Coastal, marine and freshwater natural resources in the Northern and Southern Red Sea Zones.

Eritrean total coastline extends to some 1,720 km, comprising 1,155 km along the continental shore and roughly 565 km around the numerous islands, Eritrea's Coastal, Marine and Island area covers more than 121, 000 Km² of the Red Sea and includes more than 350 offshore islands. Eritrea has a continental shelf of about 52,000 km² in the 0 to 200m-depth interval of the Red Sea, while the Dahlak archipelago plateau occupies about 25% of the shelf, in the 0-35 depth interval (Ministry of Fisheries' information leaflet, 2005).

The Eritrean coastal zone broadly defined as near coast waters and adjacent land area, forms a dynamic interface of land and water of high ecological diversity and critical economic importance. Coastal ecosystems include: fisheries, coral reefs, mangroves, sea grass beds, beaches, intertidal and near shore zones, which support a diverse range of marine and terrestrial species that play an important role in tourism, whilst coastal infrastructure are essential for trade and transportation.

Land degradation, biological diversity loss and impacts of Climate Change are operating in the shared landscape of the Eritrean Coastal, Marine and Freshwater ecosystem where human actions are playing catalytic role. The human impact, climate change, biodiversity and socio-economic impact concerns are elaborated in Table 1.

Proposed Activities for Synergies

Activities in this core program area should concentrate on the conservation and sustainable use of natural resources in the coastal, wetland, mangrove, estuarine, marine, and freshwater ecosystems. Activities should involve integrated approaches to coastal area development and rivers management, and will strengthen the network of conservation areas, including protected areas, to conserve coastal, marine, and freshwater natural resources. The needs of several island ecosystems in the Dahlak archipelago should receive particular attention.

Based on the implemented, ongoing and planned activities in the country and the objectives of UNCCD, UNCBD and UNFCCC, the following activities are recommended. Each of the recommended activities addresses either two or three of the environmental conventions under discussion and may give clue to synergized capacity building activities. These measures help anticipate, prevent or minimize the causes and effects of land degradation, biodiversity loss and climate change in the marine, coastal and fresh water ecosystems. The synergies to implement the proposed activities are shown in Table 5.

2.3.2.2.2 Wood land and Riparian Forest Ecosystems

Introduction

The forest ecosystems, in Eritrea are found in the sub-humid eastern escarpment, moist lowlands, and moist highlands and along river basins in the arid lowlands. The term forest ecosystem is very general and includes all types of forest ecosystems, i) highland

forest ii) riverine forest and iii) acacia woodland and since on the other hand Mountain ecosystem have different types of vegetation in it, including highland forest i.e. the coniferous forest and forests of the green belt. Hence in order to minimize this overlap the “forest ecosystem” in the text has being limited to “Wood land and Riparian forest ecosystems” and by so doing the highland forest has being excluded.

Based on FAO (1997), system of classification three main forest/woodland types were identified in Eritrea: highland forests, Acacia woodlands and Riverine forests. Small remnants of highland forests including *Juniperus procera* and *Olea europea* sub.sp. *cuspidata* now survive. Acacia woodlands occupy about 25 % of the country in the lowlands. Riverine forests and Doum palm (*Hyphaene thebaica*) distribute along the river systems of the Gash/Mereb, Setit and Barka in the lowlands. On the coastal plains, tree cover becomes increasingly sparse towards the sea. In places mangroves border the coast, the main species being *Avicennia marina* and *Suaeda monoica*.

Following international methodology, the forest cover of Eritrea has been classified to six main vegetation types. These are:

- Highland forest, (closed to medium closed and open forest) composed of a mixture of coniferous species (*Juniperus procera*) and broad-leaved species African olive (*Olea africana*) and associated species;
- Mixed woodlands of *Acacia* (closed, medium closed and open woodlands) and associated species, occurring mainly in the south western lowlands, but also in restricted areas elsewhere in the country;
- Bush or shrub vegetation, which is the dominant cover in Eritrea;
- Grasslands to wooded grasslands, which occur in many parts of the country;
- Riverine forest, composed essentially of Doum palm, which is common in the western lowlands and is frequent in the eastern lowlands; and
- Mangrove occurring in many spots along the coast and concentrated mainly around Assab and between Tio and Massawa.

Based on this classification and relating to the categorization by White (White, 1983) the natural vegetation of the country constitutes 0.8% highland forest, 11.3% close, medium and open woodland; 63.8% grassland/wooded grassland/ and bushland; 1.6% riverine and mangrove forests.

Although the highland forest is mentioned here it has being included with the Mountain ecosystem.

The human impact, climate change, biodiversity and socio-economic impact concerns are elaborated in Table 2.

Proposed activities for Synergies

Activities in this core program area should involve forest assessment, the establishment and strengthening of systems of conservation areas, including protected areas, and demonstration and development of sustainable use methods in forestry as part of integrated land management in agricultural and forest landscapes, focusing primarily on highland forest (Green Belt), Woodland Ecosystem of the South Western Lowlands and the Riverine Forest ecosystem at risk. Particular attention should be given to demonstration and application of techniques to conserve wild relatives of domesticated plants and animals for the sustainable use of biodiversity, conservation of areas of importance for migratory species, strengthening of conservation area networks, and development of sustainable use methods in forestry. Regional and sub regional projects involving international cooperation should also be supported. Currently sizable funds from sources of multilateral, bilateral, and NGOs are devoted to protection and management of forest ecosystems.

Based on the implemented, ongoing and planned activities in the country and the objectives of UNCCD, UNCBD and UNFCCC, the following activities are recommended. Each of the recommended activities addresses either two or three of the environmental conventions under discussion and may give clue to synergized capacity building activities. These measures help anticipate, prevent or minimize the causes and effects of land degradation, biodiversity loss and climate change in the Forest ecosystem.

The synergies to implement the proposed activities are shown in Table 5.

2.3.2.2.3 Arid Ecosystems

Introduction

These ecosystems, in Eritrea, are found in the northern highlands, northwestern lowlands and northeastern and southwestern lowlands of the country.

Eritrea is characterised as arid and semi arid. Rainfall, dominated by monsoons, varies from below 200 mm a year in the coastal areas, through 500-700 mm in the highlands and southwest of the country. The maximum rainfall of 1100 mm is received in the Greenbelt of the eastern escarpment. The highlands represent about 14 % of the country and are of mild to cool climate with mean annual temperature of 21.5 °C, while about 72 % of the country is hot where the mean annual temperature exceeds 36°C. Eritrea faces harsh climatic conditions and also has shallow highly erodable soils, especially when poorly managed for agriculture or overgrazed by domestic livestock.

Cultivation and pastoralism are major economic activities despite the climatic and soil conditions and contribute much to the national economies. Crop cultivation is widespread in the country, although cultivation in the highlands is getting restricted due to increasing human population and greater needs for food production. As most of the population in Eritrea is rural based, subsistence agriculture is common although there is also limited commercial farming. Pastoralism is widespread in the eastern and western

lowlands with nomadic herdsmen keeping flocks of cattle, sheep, goats, camels, donkeys and horses.

The land in Eritrea is prone to drought and desertification experiencing two severe droughts during the 70s and the 80s. The historical oral record and published material contains abundant references to wet seasons, which arrived late or not at all. With a rapidly increasing population there is a lot of pressure on the land through overgrazing, deforestation and land fragmentation in an effort to feed the people. A lot of vegetation is also being cleared to make way for more cultivation of land leading to exposure to wind and water erosion with subsequent siltation in the rivers and lakes. This, combined with a variable climate, frequent drought and a shortening of fallow periods has opened the land to degradation, soil erosion and desertification with eventual negative impacts on the people, livelihoods, development and biodiversity.

The country due to its physical features has several micro-climates with different vegetation types. The vegetation type in arid and semi-arid ecosystems are 1) dry savanna and 2) wooded grassland (steppe thickets).

The impact of climate change on the arid lands described above is at present not predictable in any detailed way. However there is increasing evidence that the expected changes in the climate will mostly affect dry lands of Eritrea more so than wetter areas such as the Green Belt.

The human impact, climate change, biodiversity and socio-economic impact concerns are elaborated in Table 3.

Proposed activities for Synergies

Activities in this core program area should focus on the conservation and sustainable use of endemic natural resources in the dry land ecosystems including grasslands where natural resource is threatened by increased pressure from more intensified land use, drought, and desertification, often leading to land degradation. National activities should emphasize the prevention and control of land degradation through development of sustainable methods for biodiversity conservation, including the management of freshwater systems, in areas experiencing serious land degradation. Activities should demonstrate integrated approaches to the conservation of representative natural habitats and ecosystems through effective systems of conservation areas, including protected areas, introduction of sustainable land use systems, and strategic interventions to rehabilitate degraded areas. Special attention should be given to the demonstration and application of techniques, tools, and methods to conserve traditional crops, animal species and traditional management systems in their original habitats.

Each of the following recommended activities addresses either two or three of the environmental conventions including CBD, UNCCD and UNFCCC and may give clue to synergized capacity building activities.

The synergies to implement the proposed activities are shown in Table 5.

2.3.2.2.4 Mountain Ecosystems

Introduction

This ecosystem coincides with the Sub-humid, moist highland and arid highland agro-ecological zones of Eritrea, which includes the Northern, Central and Eastern escarpment areas of the country. This is the most degraded part of the country due to high population density, overgrazing, recurrent drought, torrential rainfall and long-term traditional agricultural practices.

The Highland forest, (closed to medium closed and open forest) are composed of a mixture of coniferous species (*Juniperus procera*) and broad-leaved species African olive (*Olea africana*) and associated species. The highlands are covered by small remnants of highland forests including *Juniperus procera* and *Olea African* in the coniferous forest belt as well as the forests of the green belt.

There are many reasons why mountains of Eritrea are our focus. The most important ones are:

- Relatively high precipitation levels;
- Storage and distribution of water to the lowlands;
- The life-sustaining role of mountain waters;
- Fragile ecosystems;
- Conflicts over water; and
- Inadequate resource management
- Destruction of the small remnants of highland forests including *Juniperus procera* and *Olea African*.
- Population pressure.

Mountains form a barrier to incoming air masses. Forced to rise, the air cools and precipitation is triggered. This phenomenon is known as the orographic effect. Rainfall thus generally increases with altitude (from 5mm/100m to 750mm/1000m elevation (Mountain agenda, 1998) depending on the climatic zone, reaching maximum values between 1500 and 4000 m altitude. In semi-arid and arid regions like Eritrea, mountains are the only areas with sufficient precipitation to generate runoff and groundwater recharge. In the surrounding lowlands, with less precipitation and high evapotranspiration rates, the water balance is frequently negative. This imbalance is smoothed by rivers such as Anseba and Gash-Mereb, which connect the highlands with the lowlands during the wet seasons.

Mountain waters in Eritrea captured at high altitudes are carried under gravity via the stream network or groundwater aquifers to the lowlands, where the water demand from population centers, agriculture and small-scale agro-industry such as Alligidir is high. Thus mountains in the highland of Eritrea naturally help to distribute water resources in space. In the Green belt area which is humid, the proportion of water generated in the

mountains can comprise as much as 60 % of the total fresh water available in the watershed especially in areas including Shieb, Wokiro, etc, while in semi-arid and arid areas such as Dankalia, this proportion is much higher (up to 95%).

Fresh water flowing from mountains also sustains many natural habitats, both in the mountains and the lowlands, thus contributing to the conservation of biodiversity. Mountain parks and protected areas not only support the preservation of these habitats and their biodiversity, but also safeguard natural, undisturbed headwater catchments and thus the provision of clean, dependable water supplies.

Mountains of Eritrea are highly fragile ecosystems. Torrential rainfall, and steep slopes can induce high surface runoff, soil erosion, and landslides. High-velocity Rivers such as Gash-Mereb and Anseba in headwater catchments can carry large amounts of sediment and deposit them downstream. Eroded sediments are the major pollutants of surface waters in the case of Eritrea. Long lasting deforestation of mountain woodland, land use change, construction of infrastructure; agriculture and sand mining in Eritrea significantly affect the quantity and quality of Gash-Mereb, Anseba and Barka rivers. These human activities may increase surface runoff and lead to accelerated soil erosion and floods. Thus, careful management of the mountainous part of watersheds must have highest priority with regard to global freshwater resources.

Mountains deliver water to wide areas in the surrounding lowlands, or, in the larger basins, which often has to be shared by many countries. Transboundary water flows can create political tensions, as exemplified by the Nile, Jordan, and Euphrates and Ganges rivers. Conflicts over water can also arise at a smaller scale, between regions or highlands and lowlands within national boundaries.

In general, waters from mountains in Eritrea to date have been treated as a resource to be used with little restriction. There has been inadequate hydrological monitoring and poor dissemination of the little data that do exist. This gap was reflected during the vulnerability assessment of the Mereb-Gash basin in the initial national climate communication of Eritrea. This, together with an inadequate knowledge of mountain hydrology, insufficient consideration of highland-lowland interactions, and poor or lacking basin water resource management, can result in serious degradation of water quantity and quality. There is thus a great need to improve the current monitoring and management of mountain water resources.

The human impact, climate change, biodiversity and socio-economic impact concerns are elaborated in Table 4.

Proposed activities for Synergies

Activities in this core program area should address the conservation and sustainable use of natural resources and biodiversity areas under increasing human pressure and imminent threat of degradation. Through these activities, Eritrea should seek to establish sustainable land use practices on mountain slopes in order to protect representative habitats and strengthen the network of representative conservation areas in the highland grassland, highland forest area, and freshwater systems including the various groundwater resources, intermittent rivers, man made ponds and dams.

Each of the following recommended activities addresses either two or three of the environmental conventions including CBD, UNCCD and UNFCCC and may give clue to synergized capacity building activities. Most of these activities are similar to the activities identified in the Forest ecosystems because mountains in Eritrea have been denuded for generations. It is logical to rehabilitate the natural vegetation of mountain ecosystems so as to get back their full-fledged environmental goods and services.

The synergies to implement the proposed activities are shown in Table 5.

Table 1. Coastal, Marine and Fresh Water Ecosystems

Concerns	Human Impact	Climate Change	Biodiversity	Socio-economic Impact
Capacity Building	<ul style="list-style-type: none"> Coastal development, particularly involving land reclamation, around Massawa enormously threatens reef development; 			
Management Plan/ Monitoring and Assessment	<ul style="list-style-type: none"> Degradation of soil by salt, which makes it unable to support vegetation; Degradation of land moisture by increased evapotranspiration; Degradation of freshwater by salinization; Accelerated erosion of beaches and coastal dunes; Recurrent drought; Expansion of desertification; Degradation of agricultural land and vegetation; and Degradation of coastal wetlands. Uncontrolled diving tourism, with boats anchoring close to corals, which cause some damage from divers; Sedimentation from Massawa cement dust; Municipal sewage and solid waste disposal; Cooling effluent from Hirgigo power plant; Discharge from oil terminal (e.g. Agip oil depot); Oil exploration activities that damage / pollute the environment; Shell, ornamental fish and beche-de mer collections; 	<ul style="list-style-type: none"> Sea level rise; Changes in air temperature and precipitation; Anomalous increase in Sea Surface Temperature (SST); Changes in frequency and severity of weather events such as flooding and hot spell; Change in dissolved oxygen; Coastal inundation; Higher storm surge flooding; and Increased sedimentation of habitats. 	<ul style="list-style-type: none"> Loss of Fisheries and other marine species; Loss of coastal ecosystems including: <ul style="list-style-type: none"> Coral reefs; Sea grasses; and Mangroves Loss of habitat for water birds. 	<ul style="list-style-type: none"> Damage of coastal infrastructure including human settlements, transportation and recreation facilities; Increased property loss; Increased flood risks and potential loss of life; Social instability related to land-island and inter-island migration; Changes in renewable and subsistence resource and food insecurity (e.g. Fisheries, Fresh water); Loss of cultural resources and values; and Loss of income resulting from negative effects on tourist industry.

	<ul style="list-style-type: none"> • Deforestation of mangroves by human and animals; and • Untreated ballast water discharges from ships. 			
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Table 2. Woodland and Riparian Forest Ecosystems

Concerns	Human Impact	Climate Change	Biodiversity	Socio-economic Impact
Capacity Building				
Management Plan/ Monitoring & Assessment	<ul style="list-style-type: none"> • Clearing of trees for firewood and house construction, mainly in the eastern and western lowlands and in the eastern and western escarpments. On average, 1.1 million tons of firewood is consumed every year at national level; • Setting fire to fumigate honeybees; to produce palatable and juvenile grasses; and to clear woodland/bushland for crop production etc. In the last 10 years, 102,000 ha of forest/woodland or wooded grassland have been burned in the Green Belt and south western lowlands; • Clearing woodlands to settle refugees from the Sudan, internally displaced people because of border conflict with Ethiopia and for demobilizing ex-combatants. On average, 1,200 ha of woodland is cleared every year under this program mainly in the southwestern lowlands; • Clearing of riverine forest for irrigated agriculture development mainly in the Gash and Barka river basins 	<ul style="list-style-type: none"> • Shortage of rainfall; • Recurrent droughts; • Long dry season (7-9 month every year); • Variability including temporal and spatial distribution of rainfall; • High temperature, high evapotranspiration; • Desiccating wind with dust particles (kamsin); • Changes in the existing forest composition due to climate change; • Fire hazard; and • Insect infestation 	<ul style="list-style-type: none"> • Woody biomass production is decreasing from time to time (changes in forest/ woodland productivity); • Drying up of drought intolerant, shallow rooted shrub species like <i>Dodonaea angustifolia</i>, <i>Psidium punctulata</i>, <i>Meriandra bengalensis</i> and <i>Otostegia integrifolia</i>; • <i>Opuntia ficus indica</i>, <i>Prosopis chilensis</i>, which is registered as alien invasive species encroaching the upper parts of the Green Belt and the riverine forest respectively; • Important multipurpose trees such as <i>Mimusops kummel</i>, <i>Cordia Africana</i>, <i>Ficus vasta</i>, <i>Celtis Africana</i> etc are getting rare and endangered; • Species which have short seed dispersal distance such as <i>Teclea nobilis</i>, <i>Acokanthera schimperi</i>, <i>Rhus glutinosa</i>, have difficulties in migration and survival; and • Fragmentation of forest ecosystem and their vitality, regeneration capacity and productivity are negatively affected except on some areas under strict closures (e.g. Filfil areas of the Green Belt) 	<ul style="list-style-type: none"> • Getting wood both for energy and house construction are becoming more and more difficult. In the highlands people are using animal dung and crop residues as alternative of firewood at the expense of agricultural soil; • Land use conflict i.e. establishment of biodiversity conservation area and farming, grazing and settlement (e.g. in Semienawi and Debubawi Bahri); • Availability of non-wood forest products such as wild fruit, doum palm leaves (laka), resins and gums etc are declining; • Grazing land is shrinking and thus livestock production is seriously affected; • Women, children and livestock owners, gum tapers, traders (artifacts made of doum palm leaves, and gum Arabic) etc are among those vulnerable groups

	<p>(e.g. from Jan 1992 to July 2005, 3,015 ha of riverine forest converted to horticulture development only in Akurdet sub region;</p> <ul style="list-style-type: none"> • Over grazing and over browsing. On average about 24,000 cattle, 82,000 sheep and goats graze / browse in Semienawi and Debubawi Keyh Bahri each year. 			
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Table 3. Arid Ecosystems

Concerns	Human Impact	Climate Change	Biodiversity	Socio-economic Impact
Capacity Building				
Management Plan/ Monitoring & Assessment	<ul style="list-style-type: none"> • Destruction of natural vegetation; • Desertification; • Cultivation of steep slopes mainly in the highlands of the country; • Over grazing/over browsing occurring mainly during the dry season grazing camps as the rangelands continue to decrease due to encroachment by cropping; • Degradation of natural resources due to lack of land use policy, absence of management and community ownership; • Land use changes due to deforestation and intensified land use; • Unsustainable exploitation and improper management of water resources; • Water and river basin use change where most of the major river basins are being converted into irrigated 	<ul style="list-style-type: none"> • Increased averaged surface air temperature; • Increased salinity; • Decreased rainfall associated with drought; • Flooding; • Decreased water table in aquifers; • Increased climate variability; • Increase in frequency and intensity of extreme weather events; • Increased evaporation and transpiration; • Frequent fire outbreak in grasslands and forests due to increased temperature; 	<ul style="list-style-type: none"> • Changes in the existing composition and quality of vegetation due to climate change; • Desertification cause conversion of perennial grassland to savanna dominated by annual grasses, which is easily observable in most of the rangelands of Eritrea; • Changes in the existing traditional crops and animal species; and • Cattle have lost their herd structure because they have been pushed to the marginal grazing land by cropping intensity. • Wildlife such as Elephants and other species in the riverine habitat of Gash Barka are under threat. • Proliferation of invasive alien species mainly due to climate change and introduction by people who 	<ul style="list-style-type: none"> • Sea level rise and inundation in arid and semi-arid areas of coastal zone; • Increased thermal stress for human and livestock system; • Increased diseases and parasites for livestock and human system; • Decreased nutrition for livestock and human beings; • Decreased productivity of livestock production including changes in proportion of species; • Loss of lives and livelihoods; • Grazers (livestock) pushed out of existence in the rangeland; • Increased Rural-Urban migration is breaking the strong connection of people to the land, which produces profound changes in social structure, culture identity, and political stability; • The livelihood of

	<p>agriculture;</p> <ul style="list-style-type: none"> • Land and water fragmentation preventing livestock movement to water points and to the dry season grazing camps; • Settlements of internally displaced people and refugee returnees especially in the southwestern lowlands; • Fire to fumigate honey bees, to produce palatable and juvenile grasses and to clear woodland/bush land for crop production etc.; • Governance (wars) where considerable grazing area is either inaccessible due to land mines; 		<p>thought that they could be used for firewood.</p>	<p>pastoralists destabilized;</p> <ul style="list-style-type: none"> • Progressive weakening of the pastoralists and agro-pastoralist system to sustain the livelihood of the stakeholder populations; • General decrease in cattle herd size and loss of herd structure in cattle and changes in the distance and routes of animal grazing movement; • Increased level of food insecurity; • Market changes in water related products, fuel wood, crops, livestock and livestock products and other resources;
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Table 4. Mountain Ecosystems

Concerns	Human Impact	Climate Change	Biodiversity	Socio-economic Impact
Capacity Building				
Management Plan/ Monitoring & Assessment	<ul style="list-style-type: none"> • Long lasting deforestation of mountain woodland; • Accelerated soil erosion through infrastructure construction such as road, dams and agriculture; • Cultivation of steep slopes (Agriculture); • Land use change; • Over grazing/over browsing; • Use of animal manure for fuel; • Degradation of natural resources due to lack of land use policy, absence of management and community ownership; • Land use changes due to deforestation and intensified land use; • Unsustainable exploitation and improper management of water resources; and • Fire to produce palatable and juvenile grasses and to clear woodland/bush land for crop production etc.; 	<ul style="list-style-type: none"> • Increased averaged surface air temperature; • Decreased rainfall associated with drought; • Flooding; • Ground water levels dropped, yields of wells reduced and springs dry up; • Change in seasons; • Increased climate variability; • cold spell and drought; <p>Increase in frequency and intensity of extreme weather events such as flood, frost,</p> <ul style="list-style-type: none"> • Increased evaporation and transpiration; 	<ul style="list-style-type: none"> • Changes in the existing traditional crops and animal species; • Proliferation of invasive alien species mainly due to climate change • Woody biomass production is decreasing from time to time (changes in forest/ woodland productivity); • Cattle have lost their herd structure because they have been pushed to the marginal grazing land by cropping intensity; • Wildlife habitat destruction. 	<ul style="list-style-type: none"> • Fertility of soil is decreasing due to changes in cation content, organic matter, soil pore space, and water penetration and retention capacity; • Increased Rural to urban migration; • Decreased agricultural task force and productivity; • Increased disease incidence such as malaria due to climate change; • The livelihoods of Pastoralists and Agro-pastoralists are destabilized; • Change in land use- short season vegetables are replacing long season or perennial crops; • Reduced livestock population because no adequate grazing area and water and as a result lack of oxen for land preparation; • The Arado breed of cattle typical of the highland are being replaced by the Barka breed of the lowlands;

Table 5. Synergy to implement the proposed activities in the four components

Concepts	Coastal Marine and Fresh Water Ecosystems	Woodland and Riparian Forest Ecosystem	Arid and Semi-Arid Ecosystems	Mountain Ecosystems
Capacity Building	<ul style="list-style-type: none"> • Develop the capacity to improve legislative arrangements and coordination for the protection and sustainable use of Coastal, Marine and Island (CMI) biodiversity and enhance institutional capacity to implement legislation; • Increase public awareness of CMI biodiversity values; • Improve the capacity of MoFish and Regional administration to implement the existing legislation to protect CMI environments and develop additional legislation and regulation to ensure conservation and sustainable use of CMI biodiversity; • Improve the national capacity to ensure national coordination of legislation relating to the protection and sustainable use of CMI biodiversity; • Increase national capacity to undertake CMI biodiversity assessments and monitoring through education and training; • Develop the capacity to establish a 	<ul style="list-style-type: none"> • Promote public awareness and education; • Conduct targeted research; • Promote Technology transfer (forest roads, fire lines, fire fighting equipment and practices, modern beehives for honey bees, etc); • Development of environmentally sustainable tourism; • Stakeholder involvement and social issues; • Introduce Systematic Observation; • Set up early warning system; • Improve the capacity to increase production of wood-fuel from “converted habitat”; • Develop the capacity to increase representation of forestry issues in relevant sectoral legislation, and increased institutional and technical capacity to promote conservation and sustainable use of forestry resources; • Improve the capacity to promote the economic benefits to be derived from non-destructive utilization of trees in natural habitat; • Develop the capacity to increase protection of forestry resources from pollution; • Develop the capacity to increase forestry benefits 	<ul style="list-style-type: none"> • Awareness, education and training on resource utilization; • Strengthen the institutional capacity of major cities and towns water supply administration bodies; • Upgrade the capacity of Regulatory Service Department of MoA to increase surveillance and quarantine activities at points of entry for live biological material; • Training for MoA personnel on the use of environmental assessment procedures for new projects and monitoring of potential impacts of industry on agricultural biodiversity; • Upgrade and strengthen the water administration and management capacity of Zoba offices; • Upgrade and strengthen the water resources planning and management capacity of Water Resources Department; • Promote agricultural drought management by understanding and strengthening traditional coping mechanisms and improving the capacity of local communities; • Improve agro-climatic forecasts for weather, soil water, pest and diseases; • Research and development on crop breeding; • Research and Systematic Observation; • Improve the taxonomic skill base to increase taxonomic knowledge of biodiversity within agro-ecosystems; • To create awareness at scientific, policy and community level on the importance of agricultural biodiversity conservation and use through the national media, bulletins and incorporate in teaching materials; 	<ul style="list-style-type: none"> • Research and systematic observation; • Conduct environmental impact assessment on projects that use mountain ecosystems; • Strengthening institutional and legal aspects of MoA, NGOs, CBOs and local • Awareness, education and training on mountain resources utilization; • Upgrade the human resources capacity on groundwater assessment and development; • River training and flood protection; • communities in the conservation of mountain ecosystems;

	<p>comprehensive GIG database on CMI biodiversity and related cross-cutting information;</p> <ul style="list-style-type: none"> • Increase national capacity for CMI taxonomic data acquisition; • Training on participatory methodologies for MoFish to develop and implement a participatory program for conservation and management of key CMI areas and for habitats and species of special concern outside of these areas; • Develop the capacity of relevant stakeholders to identify, monitor and control potential sources of pollution within CMI; • Develop the capacity to protect the CMI environment from alien invasive species; • Develop the capacity of MoFish and relevant stakeholders to formulate an integrated CMI development and zoning plan; • Develop and implement Integrated Coastal Zone Management Plan (ICZM); • Develop the capacity to ensure that Environment Proclamation and Fisheries Proclamation are in harmony; • Promote public awareness and education; • Conduct targeted research; • Assess underlying causes 	<p>arising from improved use of forestry information;</p> <ul style="list-style-type: none"> • Promote research and systematic observation; • Develop the capacity to establish Zoological and Botanic gardens; Natural History Museum and Aquarium; • Develop the capacity to improve documentation and dissemination of information on the conservation and sustainable use of forestry resources; • Develop the capacity to ensure that Environment Proclamation and Forestry and Wildlife Proclamation are in harmony; and • Conduct vulnerability and adaptation studies to the adverse impact of climate change, climate variability and extreme events in forest ecosystems including highland, woodland and riverine forests 	<ul style="list-style-type: none"> • Develop the capacity to increase protection of agricultural biodiversity within agro-ecosystems; • Develop the capacity to increase conservation of agricultural biodiversity within ex-situ and on-farm systems; • Develop the capacity to improve knowledge and control of alien species within agricultural eco-systems; • Develop the capacity to improve documentation of the distribution and status of agricultural biodiversity resources; • Upgrade the capacity to conduct surveys of soil biota associated with different crops and livestock, especially indigenous landraces; • Research on all alien species of crop, forage species and livestock including introduced pests associated with crops and livestock; • Research on rangeland ecology and indigenous livestock especially goat and sheep; • Improve the capacity of local communities to improve the rangeland quality through temporary closures, enhancement of perennial grazing cover; increased forage and fodder crops; • Improve the capacity of local communities to improve the crop management practices that enhance soil moisture retention of agricultural land; • Improve the capacity of MoA to design a monitoring program to identify changes in crop and forage diversity at farm level and establish baseline data for the program; • Improving information and extension services to improve health, breeding and technology for livestock sector; 	
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	<ul style="list-style-type: none"> and policies of land degradation and biodiversity loss; • Develop Coastal Water Resources Management Plan; • Promote Technology transfer; • Development of environmentally sustainable tourism; • Stakeholder involvement & Social issues; • Introduce Systematic Observation; • Set up early warning system; 			
Management Plan/ Monitoring Assessment	<ul style="list-style-type: none"> • Promote in situ conservation (Marine Protected Area, MPA); • Promote sustainable use of resources including traditional practices; • Promote the negotiating capacities of the focal points, technical committees and secretariats of UNCCD, CBD and UNFCCC in terms of the provisions of the Conventions; • Promote local funds for the implementation of UNCCD, CBD and UNFCCC; • Conduct Monitoring and Evaluation in the CMI environment; • Develop Disaster Management and Preparedness Plan; • Develop Coastal Water Resources Management Plan; 	<ul style="list-style-type: none"> • Promote in situ conservation (Highland forest, southwestern lowland woodland forest and western riverine forest); • Promote sustainable use of resources including traditional practices; • Promote Integrated forest management; • To increase capacity for the control of Alien Invasive Species in forest ecosystems; • Assess underlying causes and policies of deforestation; • Develop Forest Management Plan; • Promote local funds for the implementation of UNCCD, CBD and UNFCCC; • Conduct Monitoring and Evaluation in forest conservation and sustainable use; • Develop Disaster Management and Preparedness Plan; 	<ul style="list-style-type: none"> • Promote dry land management techniques; • Improve on farm level water use efficiency; • Promote water conservation measures; • Introduction and expansion of spate irrigated agriculture; • Enhance groundwater recharging mechanisms; • Introduce pricing and marketing methods to improve water use efficiency for both surface and groundwater users; • Exploration and promotion of alternative sources of renewable energy to reduce pressure on plants and natural habitat; • Promote wind break and shelter belts in the spate irrigated areas of the eastern and western lowlands; • Establishing surface and groundwater monitoring and analysis system with necessary infrastructures; • Identification of zones of high landrace (crop and livestock) diversity and incorporation of zones into national land use classification; • Improve rain-fed agricultural management; • Improve crop and soil management practices; 	<ul style="list-style-type: none"> • Encourage natural regeneration through enclosures and augment with planting of indigenous plants to fill gaps; • Encourage community based forest plantations; • Establish biodiversity protected areas; • Rehabilitate degraded sites through afforestation; • Design fuel wood collection in a sustainable way; • Provide incentives to promote community involvement in forest/woodland conservation; • Introduce proper land use planning; • Encourage the development of private and community woodlots; • Encourage the use of improved wood stoves; • Promote alternative sources of energy; • Encourage proper livestock management to reduce overgrazing; • Encourage alternatives for traditional house construction; • Integration of multipurpose trees in the farming system; • Promote watershed management; • Promote water harvesting through

	<ul style="list-style-type: none"> • Exploration and promotion of alternative sources of renewable energy; • Conduct vulnerability and adaptation studies to the adverse impact of climate change, climate variability and extreme events in the Coastal, Marine and Fresh Water Ecosystems; 	<ul style="list-style-type: none"> • Develop Inland Water Resources Management Plan; • Exploration and promotion of alternative sources of renewable energy to reduce pressure on plants and natural habitat; • To improve integration of forestry conservation into integrated land management; • Establish a committee drawn from MoA, MoFish and MLWE and other relevant stakeholders to harmonize policy/legislation on protected areas; 		<p>construction of wells, dams and ponds;</p> <ul style="list-style-type: none"> • Enhance groundwater recharging mechanisms; • Improve the design and construction procedures of water works; • Improve on farm level water use efficiency;
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2.3.2.2.5 Technical Assessments and Environmental Information Management

The main objective of this core program area is to develop the scientific and technical understanding important for comprehensive assessment of the dynamic state of the environment that is critical to environmental management. This program will monitor key environmental indicators.

This program will focus on scientific research and the collection and analysis of environmental information. The activities in this program depend on information generated by the other core program areas. It will respond and anticipate emerging environmental issues by carrying out research and collecting and archiving information databases.

The most important outputs of this program should be:

- Technical studies on priority environmental issues in Eritrea including marine pollution, hazardous waste management, land degradation, climate change and solid and liquid waste management
- Development and production of successive State of the Environment Report of Eritrea;
- Development of information databases on key environmental indicators; and
- The establishment of national Environmental Information System (EIS) network with regional and international linkages.

2.3.2.2.6 Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA).

The main objective of this program is to broaden the understanding and use of Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) procedures and guidelines as both a planning and regulatory tool among relevant ministries, regional administrations, NGOs and investors. This will be done through training in EIA and SEA procedures, strengthening a certification program in EIA and SEA in collaboration with national, regional, and international partners. Specific sectoral guidelines for environmental assessment should be developed in priority socio-economic sectors.

EIA is the process by which the potential impact of a project on the environment is determined through an in-depth study involving, project scoping and using both existing information and the collection of new data to produce an integrated Environmental Impact Assessment Report and Environmental Management Plan.

It should be noted that Environmental Impact Assessment (EIA) is cross-cutting issue in all strategic elements and core program areas rather than being strategic element in its own right. EIA is rather one of the core program areas of Environmental Management System. This is a support tool planned to assess the significance of potential impacts of policies and projects on the environment. Hence, it has relevancy to the mitigation and adaptation activities as they relate to the three Rio Conventions. Synergies of EIA with

the mitigation and adaptation projects as they related to Biodiversity and land degradation have been elaborated in detail under Environmental Management System.

Strategic Environmental Assessment (SEA) is a tool for ensuring that environmental, social and economic considerations are taken into account during the development of policies, plans and programs (as opposed to Environmental Impact Assessment at the detailed project level). The main benefit to using SEA is that its proper use can achieve national sustainable development objective. By including land degradation, biodiversity conservation and sustainable use and climate change as a factor in an SEA, a decision-maker will be able to determine, whether an initiative contributes positively or negatively to environmental management. Moreover, the SEA would identify options for lessening negative environmental impacts.

The expected output of this program should be:

- Sectoral guidelines for EIA and SEA;
- Trained national SEA and EIA specialists;
- Production of timely and quality SEA and EIA reports by ministries;
- Establishment of a competent compliance monitoring capacity;
- Development of national laboratory.

Proposed activities for Synergies

There has been an effort in the NEMP-E to establish the structure, administrative procedures, information base, expertise and technical capacity to carry out EIA.

One of the outputs of this effort is the National Environmental Assessment Procedures and Guidelines (NEAPG). Implementation of NEAPG is the responsibility of the Department of Environment in collaboration with other Ministries and Government agencies. The objectives of NEAPG are:

- Assessment of the likely environmental impact of economic policies;
- Assessment of the likely economic impact of environmental projects (UNFCCC, CBD & UNCCD, etc);
- Assessment of the likely equity impacts of both environmental and economic policies.

However, the role of the Department of Environment in controlling the EIA process has not been defined by law. There is a need to enhance the application of NEAPG both to encourage the continuation of EIAs by sectoral ministries, and to identify and define by law the coordinating role of DOE.

There is also a need to elaborate detailed environment guidelines for major mitigation and adaptation activities of climate change and biodiversity, which have significant positive or negative impact on the environment. The Ministries and licensing authorities are required to integrate environmental concerns into their policy, project preparation and

decision-making processes. Generally, the following synergistic issues have to be considered:

- Prepare and enforce environmental guidelines for all economic sectors;
- Develop a system of Annual Environmental Audits;
- Introduce Environmental Management System in all activities;
- Develop and enforce Environmental Standards; and
- Improve the existing NEAPG.

Prepare and enforce environmental guidelines for all sectors

Immediate priority should be given to preparing and enforcing environmental guidelines for agriculture, construction, chemicals, forestry, quarries, petroleum exploration and exploitation, industry, tourism, transport, energy, fisheries and shipping.

Develop a system of Annual Environmental Audits

The objective is to introduce a system of checks and balances in natural resource use to assess the optimum in resource use. Key socio-economic sectors will submit to the DOE, either with their request for annual budget or separately, a report on the extent to which their policies and activities, during the previous year, have diminished or improved the environment and optimized natural resource assets. The aim is to assess annually the progress towards sustainable development. DOE will collaborate with countries that have made progress in developing a natural resource accounting system, linked with the system of national accounts.

Introduce Environmental Management System

The initial step to be taken by a project should be to introduce as an integral part of overall project management an Environmental Management System (EMS). EMS does not establish absolute requirements for environmental performance. An EMS defines aspects of management systems, which are necessary to ensure that environmental issues and concerns arising from the day-to-day activities of a project are addressed. An EMS is applicable to any project/ organization, which wishes to:

- Assure itself of compliance with a stated environmental policy; and
- Demonstrate such compliance to the outside world

Projects willing to design an EMS should essentially subscribe to the following three principles:

- Compliance;
- Pollution prevention; and
- Continuous improvement

With the above back ground, EMS is best viewed as an organizing framework that must be continuously monitored and renewed to effectively direct project environmental activities in response to changing internal and external requirements, which would result in continuous improvement of financial as well as environmental performance.

The elements of an EMS are:

- Preparatory Review;
- Environmental Policy;
- Organization and Personnel;
- Environmental Aspects and Associated Impacts;
- Environment Management Manual and Documentation;
- Environmental Objectives and Targets;
- Operational Control;
- Environment Management Records.

Preparatory Review: The Project should by means of a preparatory review identify strengths, weaknesses, risks and opportunities as a basis for establishing an Environment Management System.

Environment Policy: The Policy should be indicated and developed by the top management to convey a commitment to meet all regulatory and legislative requirements, prevent pollution and continuously improved environmental management.

Organization and Personnel: The responsibilities of the management and workers for the implementation of EMS as well as pollution prevention and continuous improvement should be coordinated and exercised in conjunction with the management of all functions, activities and processes.

Environmental Aspects and Associated Impacts: The Project shall establish, and maintain procedures for identifying examining and evaluating the environmental aspects and associated impacts, of its activities, products and services and for compiling a register of those identified as significant.

Environment Management Manual and Documentation: The purpose of Environmental Management Documentation is to provide an adequate description of the Environmental Management System and serve as a permanent reference to the implementation and maintenance of that system.

Environmental Objectives and Targets: Objectives and targets should be set within the context of environmental effects, evaluation, and quantified wherever applicable. Targets derived from objectives should be demanding, quantitative and achievable.

Operational Control: Appropriate control and verification procedures should cover all the functions activities and processes that have or could have, if uncontrolled, a significant effect on the environment.

Environment Management Records: Records are essential in a set designed format as it is the evidence of ongoing operation of the Environment Management System (EMS).

By establishing an EMS the Project/ Industry can identify its environmental aspects, the associated root causes and options for mitigation. The sequence of mitigating the environmental problems should be as follows:

- Waste Minimization or Cleaner Production;
- Re-use in process;
- Recycling outside process; and
- End of pipe treatment.

Develop and enforce Environmental Standards

The following issues must be considered:

- Prioritization of areas for standards development;
- Establishment of (an ad-hoc) standing committee on environmental standards;
- Establishment of national working groups on environmental standards development;
- Adoption of environmental standards and adjusting them to fit Eritrea's conditions;
- Establishment of a monitoring and compliance mechanism;
- Use of lead agencies in inspection through designation of inspection (this need gazetting);
- Monitoring increase/decrease of violations with a view to identifying areas of concentration; and
- Development of an environmental disaster prevention / preparedness strategy.

Improve the existing NEAPG

The existing EIA guidelines have many gaps. The major ones are the following:

- The existing classification (project Categories A, B & c) of industrial units or projects is narrow;
- The structure and scope of the procedures for the preparation of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) are very narrow;
- The coordinating and controlling roles of DOE have not been defined by law;
- Inadequate production and dissemination of an EIA handbook to developers and lead agencies; and

- Low development of EIA capacity within lead agencies, districts, the private sector, etc

Classification of Projects

The existing EIA guidelines classify projects or industries into three categories namely A, B and C for the purpose of granting environmental clearance certificate. However, this categorization encourages overlap between projects, which should fall under category A and category B. Therefore, the classification of projects should contain at least four categories depending upon environmental impact and location including Green category, Orange A category, Orange B category, and Red category. Next, there is a need to develop clear steps involved in the issuance of environmental clearance for each project category.

Structure and scope of procedures for the preparation IEE and EIA

Review of the existing structures and formats of the various IEE and EIA carried out to date show that they have irregular structures and formats. Hence it is very important that the structure and formats of IEE and EIA for all projects should be the same. The elements in these formats should include to the extent possible all the social, economical, cultural and ecological domains. As usual a three-tier approach should be followed which includes *Screening, Initial Environmental Examination (IEE), and detailed environmental Impact Assessment (EIA)*.

Screening

The first and the simplest tier of project evaluation will be from the environment viewpoint. The screening is based on several criteria such as type of project, its size and location. A normative screening procedure should be followed according to which projects have been divided into four categories viz Green, Orange A, Orange B and Red where Green Projects have little or no environmental impact, whereas Red projects need to pass through full EIA having potential adverse environmental impacts. The list of projects of these four categories can be established from the existing list in the main document of EIA as well as additional projects from experience acquired in the last five years since the development of NEAPG.

Initial Environmental Examination (IEE)

All projects and industries in Orange B and Red categories have to conduct IEE, which helps in understanding the potential extent of environmental changes and finding mitigation measures by considering the available information, or past experience or standard operating practices. The steps for conducting IEE should be:

- Collection of baseline information in respect of the project and the environmental setting of the project and its site, especially climate change, biodiversity and land degradation issues.
- Setting of boundaries of an IEE by identifying the significant issues.
- Impact assessment, suggesting mitigation measures, Environmental Management Plan (EMP) or alternative sites or other project modifications.

- In the event IEE of the project or industry reveals that further investigation is to be carried out then the sponsors will have to carry out a detailed EIA.

2.4 Global-National-Provincial Linkages

Global-national-provincial linkages is a cross-cutting issue in national policies, sectoral legislations, national programs and projects, MEAs, GEF related enabling activities and multilateral and bilateral cooperation in the country.

A Global-national-provincial linkage has potential synergies in all aspects of the strategic elements including environmental management, policies, legal and institutional framework, and gender issues. Some of the national documents, which addressed Global-national-provincial linkage, are described below with the main priority issues of the country as they relate to International-National-Provincial linkages.

Since part the aims and objectives of institutions such as the Sub Regional Environmental Action Plan (SREAP)-Eastern Africa, the Intergovernmental Authority on Development (IGAD) and Millennium Ecosystem Assessment (MA) include the achievement of regional food security and environmental protection by encouraging and assisting efforts of member states to collectively combat drought and other natural and man made disasters and their consequences it is considered vital that the implementation of NCSA should use all available resources of such institutions.

2.4.1 Environmental Management Plan of Eritrea (NEMP-E)

NEMP-E emphasized that mutual cooperation is fundamental to protecting the environment, and using resources optimally in order to improve the quality of life because complete self-reliance is a myth. However, Eritrea should be selective in the number of international and regional agreements that she will accede to, so as to be able to devote the necessary attention to the obligations and responsibilities that follow accession. In this regard UNCBD, UNFCCC and UNCCD were quoted among the priorities of Eritrea. Capacity building to respond to international agreements in the environment fields is also cited as a priority. However, the importance of synergies between and among International and regional agreements were not addressed in the document. In this regard and other issues NEMP-E needs updating.

The document also mentioned the importance of a number of basic humanitarian and arms control and human rights instruments that Eritrea may wish to consider, some of which have specific environmental protection components, and all of which are consequential within the overall framework of environmental security. In this regard this area needs assessment to identify these instruments and arrange the necessary institutional, technical, financial and human capacity needs.

There are 53 projects proposed for implementation within the NEMP-E document. These projects have been categorized into *three functional categories: Support Measures,*

Environmental Assessment, and Environmental Management. These projects have invariably synergies between and among UNCCD, UNCBD and UNFCCC. Almost all of these programs have not been implemented to date. Among other needs for their implementation, individual projects need international, national and regional cooperation in terms of capacity building for their effective implementation. However, there is an urgent need to update and prioritize these projects before assessing the various constraints for implementation.

NEMP-E places high priority to build the capacity of Department of Environment in order to respond to international agreements in the environmental fields.

2.4.2 National Biodiversity Strategy and Action Plan (NBSAP)

NBSAP emphasized that Central government ministries should support regional administrations by ensuring that national-level information and technical assistance is available to the developing regional (Zoba) administrations in terms of integrated management and other strategic elements of NBSAP under each of terrestrial, marine and agro-biodiversity core areas. Most of the activities identified in the NBSAP will be implemented at local level, whereas relatively new regional administrations have little practical experience of planning and implementing integrated decision-making in relation to these activities.

International and regional capacity building assistance is also required to implement these strategic elements and the activities identified under them.

2.4.3 National Action Plan of UNCCD in Eritrea

National Action Plan (NAP) of UNCCD identified 23 priority projects for implementation to combat desertification and mitigate the effects of drought in Eritrea, which was subsequently summarized in 20 bankable project proposals. These individual projects need international and regional financial and technical capacity building assistance for their effective implementation.

National and provincial coordination is also a requirement to implement the projects at local level. However, there is an urgent need to identify synergistic (both in terms of funding and ecological services and goods) activities between UNCCD, UNCBD and UNFCCC in order to determine cost effective capacity building measures.

NAP of UNCCD emphasized the need to instituting NAP at the National, Zoba, Sub-zoba and Village level.

At the National level the NAP Steering Committee (NAP-SC) has the central position. Based on its terms of reference, NAP-SC needs the following capacity building issues, among others, to implement the projects at National level:

- To formulate policy on land degradation;

- To develop indicators for the identified 23 projects and monitor them during implementation process in light of changing circumstances, new information and recommendations of the NAP National Forum on Land degradation;
- Capacity building on stakeholder consultation processes to coordinate the actions of all stakeholders on land degradation at national level; and
- On fundraising processes in the process of mobilizing resources, both locally and externally

At the Zoba level, the key mechanism for implementing NAP is the Sub-Committee on land degradation of the Zoba Baito.

Based on its terms of reference, the Sub-Committee needs the following capacity building issues, among others, to implement the projects Zoba (provincial) level:

- To formulate compatible policies and directives with central Government policies on land degradation;
- To gather and assess information pertaining to land degradation, and to recommend solutions for implementation by the regional administrator;
- On social and economic impact of land degradation;
- On stakeholder consultation processes to coordinate the actions of all stakeholders on land degradation at Zoba level; and
- On fundraising processes in the process of mobilizing resources, at Zoba level;

At the Sub-Zoba level, the key mechanism for implementing NAP is to establish a Special Supporting Unit on Land degradation. Such unit could be headed by a specially trained coordinator and facilitator designated by the Administrator of the Sub-zoba. Based on the duties and responsibilities of the Special Supporting Unit on Land Degradation, the following Capacity building issues are important:

- On gathering and assessing information pertaining to land degradation, and to recommend solutions for implementation by Sub-zoba administrator;
- On social and economic impact of land degradation;
- On stakeholder consultation processes to coordinate the actions of all stakeholders on land degradation at Sub-zoba level; and
- On fundraising processes in the process of mobilizing resources, at Sub-zoba level;

This pattern can be followed to institute NBSAP, vulnerability and adaptation activities contained in the INC and the urgent and immediate adaptation activities to the adverse impact of climate change to be identified under NAPA at the National, Zoba, Sub-zoba and Village level using similar institutional set up.

2.4.4 Initial National Communication of Eritrea

The INC emphasized the need for international cooperation to implement Eritrea's commitment under the UNFCCC including GHG inventories, Policies and measures and analysis of GHG abatement issues, Projections of GHG emissions and assessment of GHG abatement options, vulnerability assessment, climate change impacts, and adaptation. Technologies, including transfer, financial resources and development, Clean Development Mechanism (CDM), Joint Implementation (JI), Activities Implemented Jointly (AIJ), Emission trading, and Research and systematic observation.

Among these technology transfer and research and systematic observation have strong synergies with the implementation of priority activities of NAP under UNCCD and of NBSAP under UNCBD in Eritrea. Therefore, international-national-provincial linkage is critical to enhance national climatological, meteorological and hydrological capabilities and the means to provide for drought early warning.

The Framework Convention on Climate Change establishes a collective decision-making process within which the parties will negotiate future actions and cooperation. Although, some features of the decision –making process are set out in the Convention, many are still undecided. It becomes important, then, to examine negotiation and compromise as the primary basis for climate change decisions under the convention.

In this respect there is an urgent need to enhance the negotiating capacity of the focal point for climate change in relation to the provisions and various decisions of the Convention.

Enhancing negotiating capacity for UNCBD, UNCCD and UNFCCC focal points is also critical capacity building issue under UNCBD and UNCCD. These efforts can be synergized for the three Conventions.

2.4.5 Sub Regional Entities

2.4.5.1 Sub Regional Environmental Action Plan (SREAP)-Eastern Africa

The Eastern Africa Sub-regional Environment Action Plan (SREAP) has a proposed objective to compliment and assist efforts of member states in improving environmental conditions of the sub-region in order to achieve economic growth and poverty eradication, within the context of the New Partnership for Africa's Development (NEPAD).

It has programmatic areas that will reflect responses to the issues and threats including, *Land degradation and desertification, Wetlands and Water, Biodiversity in general and forests in particular, Invasive Alien Species, Coastal and Marine Resources, Climate Change, Cross-cutting Issues and Special Issues for eastern Africa*. Combating land degradation, drought and desertification has especially been given special attention in this

predominantly dry land area. Each of the issues has been addressed with an objective for action, a set of prioritised actions and proposed projects as well as a suggestion of likely organisations that would be involved. The sub-regional action plan will need further consultation and discussion in some areas and a monitoring and evaluation system (and possibly a logical framework) should be developed to ensure that efforts are directed towards reachable goals. It is expected that the sub-regional plan will be finalised after another consultative meeting in 2006.

2.4.5.2 IGAD

The Intergovernmental Authority on Development (IGAD) is a regional grouping of seven Eastern African countries of Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan and Uganda. It was created in 1986 by the Heads of State and Government of member states as the Intergovernmental Authority on Drought and Development (IGADD) following the recurrent and severe droughts and other natural disasters that caused widespread famine, ecological degradation and economic hardship in the Eastern Africa region between 1974 and 1984. IGAD has its Head Quarters in Djibouti, the Republic of Djibouti.

With the new emerging political and socio-economic challenges, the Assembly of Heads of State and Governments, meeting in Addis Ababa in April 1995, resolved to revitalise IGADD and expand areas of cooperation among member states. The new and revitalised IGAD was launched during the 5th Summit of IGAD Assembly of Heads of State and Government held on 25-26 November 1996 in Djibouti, which endorsed the decision to enhance regional cooperation in three priority areas of food security and environment protection, economic cooperation and political and humanitarian affairs.

Since all IGAD priority programmes are expected to contribute to the following strategic core outputs in the IGAD Strategy, namely:

- Harmonisation and development policies in IGAD Priority areas
- Development Information as a strategic resource in decision-making
- Capacity building of member states human resources, systems and institutions in the priority areas
- Research, science and technology agenda.

Since part of the aims and objectives of IGAD include the following issues, it is considered vital that the implementation of NCSA should use all available resources of such institutions.

- Economic cooperation and integration.
- Achieve regional food security and environmental protection by encouraging and assisting efforts of member states to collectively combat drought and other natural and man made disasters and their consequences
- Initiate and promote programmes and projects for sustainable development of natural resources and environment protection

- Promote peace and stability in the sub-region and create mechanisms within the sub-region for the prevention, management and resolution of inter- and intra-State conflicts through dialogue
- Facilitate, promote and strengthen cooperation in research, development and application in the fields of science and technology

As a crosscutting theme, IGAD has a Gender Affairs programme, whose aim is to strengthen the role of women in IGAD priority areas.

2.4.6 Millennium Ecosystem Assessment (MA)

The Millennium Ecosystem Assessment (MA) is an international work program designed to meet the needs of decision makers and the public for scientific information concerning the consequences of ecosystem change for human well being and options for responding to these changes. The MA was launched by UN secretary- General Kofi Anan in June 2001 and it will help to meet assessment needs of the Convention on Biological Diversity, Convention to Combat Desertification, the Ramsar Convention on wetlands, and the Convention on Migratory Species, as well as needs of other users in the private sector and civil society. If the MA proves to be useful to its stakeholders, it is anticipated that an assessment process modeled on the MA will be repeated every 5- 10 years and that ecosystem assessment will be regularly conducted at national or sub-national scales.

The MA focuses on ecosystem services (the benefits people obtain from ecosystems), how changes in ecosystem services have affected human well-being, how ecosystem changes may affect people in future decades, and response options that might be adopted at local, national, or global scales to improve ecosystem management and thereby contribute to human well-being and poverty alleviation. The specific issues being addressed by the assessment have been defined through consultation with the MA users.

The MA will:

- Identify priorities for action;
- Provide tools for planning and management;
- Provide foresight concerning the consequences of decisions affecting ecosystems;
- Identify response options to achieve human development and sustainability goals; and
- Help build individual and institutional capacity to undertake integrated ecosystem assessment and to act on their findings.

2.5 Environmental Education and Awareness

It should be noted that strategic element *environmental education and awareness* is a cross-cutting issue in all strategic elements and core program areas rather than being core program areas in its own right. This is a support measure and investment planned to

support an institution than a coherent set of programs that an institution implements in support of environmental management. Environmental education and awareness does not need to take place, but it will be done as a separate activity in response to identified deficiencies within the strategic elements and/or core program areas.

However, with regard to the Rio Conventions, all the Rio Conventions emphasize that for their implementation, it is important to ensure that the public and workers in the fields of environment and development are aware and educated. Thus, involving the public in the implementation process is important in order to establish community support.

The need for education and awareness is indicated in the UNFCCC, CBD and UNCCD by Article 6, Article 13 and Article 17 and 19 (b) respectively. Based on the previous discussion environmental education and awareness are critical in the following synergistic areas:

- Enhanced understanding of the relationship between biodiversity, ecosystem structure and function, and dispersal and/or migration through fragmented landscapes;
- Improved understanding of the response of biodiversity to changes in climatic factors and other pressures;
- Development of appropriate resolution of transient climate change and ecosystem models especially for quantification of the impacts of climate change on biodiversity at all scales, taking into account feedbacks;
- Improved understanding of the local to regional scale impacts of climate change adaptation and mitigation options on biodiversity;
- Further development of assessment methodologies, criteria, and indicators to assess the impact of climate change mitigation and adaptation activities on biodiversity and other aspects of sustainable development; and
- Identification of biodiversity conservation and sustainable use activities and policies that would beneficially affect climate change adaptation and mitigation options.

2.6 Human Resources Development and Institutional Capacity Building

This is also a cross-cutting issue rather than being a strategic element in its own right. The critical issues under this topic are:

- Improving coordination in implementation of the MEAs at national and local levels and,
- Capacity building needs to the upcoming National Conventions Coordination body.

2.6.1 Improving coordination in implementation of the MEAs at a national and local levels

- At national level this can be done by bringing together cross-cutting national committees or steering committees for the three Rio Conventions, which will help facilitate the achievement of synergies.
- Establish a coordinating mechanism between the Department of Environment and the Ministry of Agriculture that links the two separate institutions, which are the focal points for CBD/UNFCCC and UNCCD respectively, which will help synergy at national level.
- As an alternative, instead of giving the mandate for implementation of CBD and UNFCCC to the Department of Environment and UNCCD to the Ministry of Agriculture, the Department of Environment, which is responsible for the two conventions (UNFCCC and CBD), could be made responsible for the three Rio Conventions by establishing a National Conventions Coordination Liaison Office within the Department so as to achieve excellent synergy at national level.
- At the Zoba level, it is possible to create a coordinating committee representing all sectors, by making locally elected democratic institutions responsible for environment and development, or by encouraging community based organizations, religious groups and women's groups to help coordinate environmental efforts and achieve synergies.

2.6.2 Capacity building needs to the upcoming National Conventions Coordination body

Since Eritrea is a new state, it is overstretched by the Rio conventions' competing demands and obligatory activities. Therefore, capacity building will help the country and the upcoming Convention Coordination body to address these demands and achieve synergy. Thus this Convention Coordination body within the Department of Environment will require capacity building to:

- Develop inventories, perform monitoring and make systematic observations;
- Develop policy, plan effectively and reform legal frameworks;
- Perform impact assessments and research;
- Improve information, knowledge and data management;
- Perform reporting and monitoring; and
- Enhance education, training and public awareness.

2.7 Gender Issues

2.7.1 Introduction

Gender inequality is a historical social phenomenon all over the world that continues to exclude women from accessing and enjoying the full spectrum of their human rights as equal citizens.

Women's experiences, knowledge, perspectives and special gender needs have yet to be specifically consulted, tapped and incorporated to inform national and regional conceptual repository of knowledge or development frameworks. Their vital role in public sector has not been fully recognized and appreciated. Their voices on issues of nationhood, governance, development, and constitutionality including economic policies and social rights and choices remain anecdotal and incidental within the context of public policy formulation and national development planning.

Women are the most vulnerable groups due to underdevelopment exacerbated by recurrent natural and human made disasters including famine, widening and deepening poverty, poor infrastructure, armed conflicts and deeply entrenched traditional practices that give rise to many inequalities within, between and among men and women.

The following sections describe:

- Disproportionate challenges faced by women due to environmental issues;
- The role of Women in Environmental Protection; and
- Potential capacity building activities to improve their livelihood and environment;

These discussions are based on the existing knowledge of Gender issues in the background of environmental change as they relate to climate change, desertification and loss and unsustainable use of biodiversity in Eritrea.

2.7.2 Disproportionate Challenges Faced by Women Due to Environmental Services

NEMP-E, INC, NBSAP, NAP of UNCCD and other regional and international literatures unequivocally put forth that women are among the most affected by environmental degradation, which might be caused by climate change, biodiversity loss, desertification, and land degradation among others. The following are some examples showing how resource access and use are differentiated by gender and how this is aggravated by environmental change.

The scarcity of wood or other biomass fuel in rural Eritrea is making life difficult. A generation ago, a rural woman had to walk at most 30 minutes to collect sufficient firewood of good quality to meet her family needs for two weeks. Today nearly a day is required to collect the same amount. What is available is of much poorer quality, and

could even be foul, smelly and toxic. Moreover, cooking is done in open hearths with inefficient poorly ventilated stoves, which result in excessive wastage of biomass, and are a health hazard (NEMP-E: DOE, 1995).

In Eritrea, including many countries, water access and use are differentiated by gender. In locations without reliable piped water supplies, women are often responsible for locating, obtaining and transporting freshwater for household use. They frequently depend on drawing water from naturally occurring sources-springs, streams and rivers, lakes or on groundwater from wells and boreholes. Women also bear a disproportionate share of the negative impacts of inadequate freshwater supplies. In rural Africa including Eritrea, for example, women and girls spend as much as three hours a day fetching water; an energy expenditure greater than one-third of their daily food intake.

Eritrea is extremely vulnerable to climate change impacts because of its geographical location, high population density in the highland, high levels of poverty, and the reliance of many livelihoods on climate-sensitive sectors, particularly rural agriculture and fisheries. These impacts will be falling more heavily on the women and girls of Eritrea

2.7.3 The Role of Women in Environmental Protection

Eritrean women in rural areas carry the heaviest burden in providing their households with basic environmental services. When environmental sanitation is inadequate, or indoor air pollution from smoke and soot becomes a health hazard, it is women who are the most affected and the ones who suffer most. It is not surprising therefore, that Eritrean women wish to take the lead in environmental protection, in promoting environmental hygiene, in ensuring clean water, and in promoting environmentally sound and adequate domestic energy. It is logical to expect that the National Union of Eritrean Women (NUEW) wish to play a leading role in implementing Environmental Action Plans including NBSAP, NAP, INC, NAPA and NEMP-E.

As recommended by NEMP-E and NAP of UNCCD and based on the discussion in the previous section, there is a need for the NUEW to play an effective role that can be expected of it including:

- Establish within its organization a unit to deal with gender and environmental issues;
- Mobilize women for environmental protection activities and increase the awareness of women about the negative impact of environmental deterioration on the well-being of women and their families;
- Cooperate with all MEAs and other environmental action plans such as NAPA and NEMP-E Secretariats in drawing up programs for environmental protection;
- Cooperate with international and regional gender related organizations such as the Intergovernmental Authority on Development (IGAD) Women's Desk;
- Ratify and implement the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW);

- Integrate a long-term strategy to combat desertification, climate change and loss of biodiversity;
- Develop a short-term strategy and operational outline that will involve all of NUEW's members throughout Eritrea to implement NAP, NBSAP, Climate Change Action Plan and NAPA;
- Ensure that women become part in the NAP, NBSAP, Climate Change Action Plan and NAPA planning, implementation and evaluation process;
- NUEW should introduce solar panels, fuel-efficient stoves, kerosene stoves, and other appropriate technologies at the grassroots level in consultation with the Ministry of Energy and Mines;
- NUEW should identify areas in consultation with the Ministry of Agriculture on where to plant trees, especially during the month of June, when rainfall is relatively abundant.
- Encouraging young schoolgirls to participate in the school-vacation program of afforestation, and conduct awareness campaigns on desertification, climate change and conservation and sustainable use of Biodiversity;
- Make sure that women enjoy the rights provided to them by the Land Reform Proclamation regarding access to land ownership;
- Mainstream gender issues in environmental action plans, national development plans and sectoral legislations;
- Participate effectively in all decision-making processes;
- Make sure that women are involved in the management of land and water use in the Village, especially in woman-headed households; and
- Encourage and assist women to get involved in income-generating activities such as horticultural activities, poultry flock and goat flock in order to assist them in securing their food requirements;

2.7.4 Capacity Building Activities for Gender Issues

NAP of UNCCD identified specific interventions to combat desertification as they relate to women in Eritrea. Nonetheless, these activities equally address vulnerability and adaptation of women to the adverse impact of climate change including climate variability and extreme weather events.

The NEMP-E and NAP of UNCCD emphasized that there is a need for the NUEW to consider the following steps in order to strengthen its capacity to deal with gender and environmental issues:

- Organize training courses on environmental issues for all levels, including the highest level of NUEW officials;
- Strengthen its administration capacity to implement environmental projects of significance to women;
- Strengthen its personnel, financial and training capacities to initiate concrete, practical projects;

- Raise the awareness of women in the protection of environment and in the negative impacts of climate change, loss of biodiversity and the danger of desertification;
- Prepare training manuals in the local languages, which can be easily understood by women in the Villages, in order to address the physical, biological and socio-economic impacts of climate change, desertification and drought and loss and unsustainable use of biodiversity in consultation with the Department of Environment of MLWE and Ministry of Agriculture;
- Identify and select women animators from all Sub-zobas of Eritrea, who would be given training programs on desertification, climate change and Conservation and sustainable use of biodiversity, so that they in turn would be able to train others in their respective sub-zobas;
- Integrate the issue of combating desertification, climate change and conservation and sustainable use of biodiversity into all of its skills training programs including literacy;
- Train women in the technical handling of water pumps; and
- Train women in environmental sanitation and hygiene.

2.7.5 Conclusion and Recommendation on Gender Issues

The value and linkage between gender issues and sustainable development is no longer debatable but a foregone conclusion. As internationally agreed upon by consensus of the United Nations member states, gender equality is a core human rights value and principle of good governance, just and sustainable development. Achieving gender equality is one of the Millennium Development Goals and has been ratified by significant UN member states. Achieving gender equality is Eritrea's responsibility. Therefore the institutional recognition and accession to establishing institutional frameworks such as the NUEW and mechanisms for achieving gender equality and gender-mainstreaming measures is a plausible conceptual and policy decision.

Achieving gender equality and gender mainstreaming goals is not only a technical imperative and prerequisite for sustainable development but also a marked political and good governance decision.

In this background there is a need to enact a gender policy as crucial institutional decision and important strategy for addressing the myriad compelling historical development challenges facing Eritrea.

Although major improvements have been made in the past fifteen years towards gender issues and concerns and the advancement of women, Eritrea still needs additional policy interventions to mainstream gender issues in Food Security and Environmental protection, Economic cooperation and integration, Conflict resolution and peace building, Information Communication Technologies (ICTs), Institutional mechanisms and the local dimension of Millennium Development Goals, PRSPs and MEAs.

III. CROSS-CUTTING ISSUES FOR GLOBAL ENVIRONMENTAL MANAGEMENT IN ERITREA

Having identified where and how potential synergies might occur, the following chapter focuses on identifying and confirming the cross-cutting issues and their accompanying capacity needs (Annex 1).

The process involved a detailed review of the thematic reports of the three conventions as well as the detailed synthesis of the preceding two chapters. The national consultant further developed and analysed the cross-cutting capacity constraints, and identified eight specific cross-cutting areas, where capacity needs across all three conventions namely biodiversity, climate change and land degradation are similar and where further in-depth analysis is required. The cross-cutting issues are presented below:

3.1. Environmental Education, Awareness and advocacy

The long-term objective for this program area is to facilitate the emergence of an informed public, knowledgeable of and committed to the furtherance of sound environmental practices in the context of broad-based social and economic development. At present, public information is limited by:

- An absence of authoritative and accessible scientific guides to the issues,
- An absence of regular and skilled media presentations, notably by radio on environmental issues,
- A weak or non-existent civil society sector concerned with environmental issues,
- An absence of links to international bodies with concerns in this area.

Conservation educators recognize that sustainable development and conservation of biological diversity has become more integrated; it has become increasingly clear that economic and social progress must be incorporated into effective management of natural resources (Wood and Wood, 1990).

The purpose of conservation education is to develop natural resource management, whilst reducing environmental damage. Wood and Wood, (1990), set three objectives that distinguish the priorities of conservation education from other educational practices:

- I. Increase public awareness to the significance of natural resources and the ecological processes they sustain;
- II. Show parties what the threats are to the well-being of their environment and how they can contribute and (benefit from) to its improved management.
- III. Motivate parties to do what they can to improve environmental management.

The need to advocate conservation-focused education has evolved through increasing extraction of materials and organisms from nature, and modification of landscapes at unprecedented unsustainable rates resulting in accelerated extinction rates, degradation, and loss of ecosystems (Trombulak, *et al*, 2004).

In conservation education, advocacy can be defined as an important tool. Conservation educators lobby to identify target groups about conservation problems they face and convince them to support a conservation position on the identified problems and solutions to enact change. In order for a conservation educator to undertake an effective advocacy programme, he/she must establish a network or link with other people and organisations that have a particular speciality or appropriate resources to contribute to the development of multi-disciplinary solutions to complex conservation problems.

3.2. Environmental Policy, Institutional and Legal Frameworks

Although Eritrea has adopted a number of laws in support of sustainable development, certain gaps remain:

- Protection of the Environment
- Water Management

These laws are still in draft form and need to be harmonized with other sectoral legislation. Agreement around critical issues such as the authority and procedures for the establishment and management of protected areas will be required. In the light of desert encroachment and locally rapid degradation, a ‘fast-track’ procedure needs to be instituted to ensure, for example, rapid gazetting of Protected Areas.

In view of potential policy conflicts, such as between high-output farming and agro-biodiversity conservation, a powerful inter-institutional committee will have to be established to set priorities. Its authority will have to be adequate to over-rule policies of individual ministries. Such a committee should include representatives from civil society bodies.

3.3. Environmental Impact Assessments

The use of EIAs is still barely developed in Eritrea. The primary objective will be to extend the capacity and use of the EIA procedures and guidelines as both a planning and a regulatory tool among relevant ministries, local governments and the private sector.

3.4. Environmental Information Management Systems

The primary objective is to develop the scientific and technical capacity required to provide a more complete assessment of the dynamic state of the Eritrean environment and to monitor key environmental parameters by the establishment of an EIS network in Eritrea with regional and global linkages.

3.5. Biodiversity Conservation and Management

The central objective is to facilitate and direct the planned expansion of production systems and the resettlement of populations in an environmentally sustainable manner, while conserving and protecting critical biodiversity resources. This will be achieved through integrated initiatives in land use planning, water resource management, applied research on the effective use and conservation of agricultural biodiversity resources, and the identification and protection of biological resources through the establishment of resource-specific management plans and a graduated protected areas system.

3.6. Human Resources Development and Institutional Capacity Building

The objective is to rapidly increase staff opportunities for exposure, education and experience in relevant areas of environmental management, regulatory policy and practice, environmental impact assessment methods, information collection and management, and State of the Environment Reporting. At the same time, institutional memory capacity will ensure the retention of key insights and documentation. To ensure all stakeholders participate in the co-ordination and management of sustainable development, the roles and mandates of all the stakeholders must be clearly articulated. This implies the establishment of key committees with mandates for prioritisation.

3.7. Global - National - Provincial - Local linkages

Eritrea has been effective in developing NAPs based on its obligations following ratification of international conventions. GoE is undertaking an extensive programme of decentralisation to *zoba* level. Effective processes must be established for co-ordination between the national and provincial on environmental issues, which are not defined by administrative boundaries. At the same time, the active participation of the local communities is essential to sustainable environmental management. Village level committees should be empowered to co-ordinate and integrate development plans and programmes by mobilising and establishing co-operative self-help projects and programmes.

3.8. Gender

As key providers in the household, women are preferentially affected by soil erosion, declining yields and decreased food security. Eritrea has typically advanced legislation in respect of women's rights and powerful and cohesive women's associations. It is recognised that women are key stakeholders in all processes of environmental awareness, as they transmit value-systems to the upcoming generations. A particular focus will therefore be on awareness and training in relation to women's associations and in the production of gender-sensitive educational materials.

IV CONSTRAINTS AND OPPORTUNITIES FOR SYNERGY IN CAPACITY BUILDING

The constraints and opportunities for implementation of synergistic capacity building efforts to implement the MEAs are presented in this section as well as in Annex 2. The following capacity constraints were arrived at based on the thematic assessment study, which involved prioritizing and establishing a cause-effect relationship among the issues using a problem tree analysis.

4.1 Constraints for Synergy in Capacity Building

4.1.1 Constraints: A Summary

Based on the NCSA Thematic Assessment Study (DOE, 2006) the following were mentioned as constraints at systemic level, that is lack of: -

- Coordination and communication between stakeholders and the Department of Environment.
- Awareness of the public,
- Overlap of activities and lack of clear mandate of each organisation,
- Implementation of projects or programmes,
- Evaluation and monitoring,
- Continuity or follow up of started programmes,
- Baseline information
- Long term planning,
- Capacity in decentralized Zoba offices of DoE.
- Information centers such as National Herbarium, Natural History Museum and Botanical Garden.
- National species checklist and database of all taxonomic groups.

The constraints at Institutional Level are the following:-

- Lack of office facilities, environmental kits as well as laboratory facilities,
- Lack of a unit/person responsible for environmental issues,
- Lack of representatives of the institutions in zobas,
- Lack of funds or budget to carry out environmental studies,
- Lack of strategic long-term planning,
- Lack of monitoring and evaluation,
- Lack of transportation facilities.

Based on the constraints the following gaps were identified namely:

- Skilled human resources specialized on environmental issues,
- Lack of legal and regulatory environment.
- Lack of office, information and communication facilities, laboratories, research materials, and books for libraries and other resources that are required to make best use of available resources.

The aforementioned constraints are presented in greater detail below.

4.1.2 Synergistic Capacity Constraints

The following were identified as the key capacity constraints to synergistic implementation of the MEAs:

4.1.2.1 Systemic Constraints:

1. Weak inter-institutional coordination and communication

Coordination and collaboration among institutions involved in MEAs implementation is generally weak. Ineffective inter-institutional coordination mechanisms, hosting of various ENR sub-sectors in different ministries, unharmonized institutional interests and the weak vertical and horizontal information flow between them and local governments are some of the causes of weak inter-institutional collaboration in implementation of MEAs. Furthermore, inadequate functional environmental structures, weak traditional institutions and lack of environmental management plans at the local level, hinder rational planning in natural resource management.

2. Weak policy and legal frameworks

Although Eritrea has adopted a number of laws in support of sustainable development, there are laws, which are still in draft form and need to be harmonized with other sectoral legislation. The lack of enabling laws to strengthen national commitment and harmonization in implementation of MEAs and their integration into national laws and policies is a key constraint in this respect. In addition, weak inter-institutional collaboration in formulation of policies and laws as well as their implementation leads to divergence in approaches, duplication, and intensification of conflict of interests in natural resource management.

Failure to translate many of the existing laws and policies into by-laws and ordinances by local governments due to limited technical capacity makes monitoring, implementation and enforcement of these instruments difficult at the local level.

3. Low awareness by the public of MEAs issues

At present there is lack of a well informed public, knowledgeable of and committed to the furtherance of sound environmental practices in the context of broad-based social and economic development. This is due to:

- Scarcity of awareness materials on MEAs at national level and almost absent at local level,
- Inadequate awareness programs on MEAs using the media,
- Inadequate integration of MEA and other ENR issues into formal education programs and curriculum limits public appreciation of MEAs issues,
- A weak or non-existent civil society sector concerned with environmental issues.

4. Lack of baseline data and information exchange

There is lack of baseline data on which to base environmental assessment and monitoring. Modern database management facilities and skilled human resources to develop and maintain databases are generally lacking in the key institutions dealing with natural resource management. Weak Environmental Natural Resource (ENR) monitoring mechanisms and absence of clear monitoring indicators also limit the use of available databases for decision-making functions.

Information and data exchange between key sectors responsible for MEAs and their Focal Points is still weak owing to lack of strong information networks, differences in database formats and lack of policy on data access and exchange. Hence there is a need for the establishment of an EIS networks in Eritrea with regional and global linkages.

5. Unsustainable land use practices

The dominant use of primitive and labor-intensive production tools for cultivating the land does not provide the incentive for soil and water conservation at farm level. Traditional tenure patterns particularly the *Diessa* (village ownership) and *Resti* (kinship ownership) have not been conducive to good land husbandry, even though these tenure systems produced a uniquely egalitarian society with a deep spirit of community. Both these systems have prevented landlessness and thus were economically and socially valuable in the context of subsistence agriculture. However the positive aspect of traditional tenure has been undermined by population pressure. Both the *Diessa* and *Resti* ownership patterns have, in the circumstance, generated fragmentation of holdings.

Whatever traditional conservation measures existed (e.g. prohibition of tree cutting, reducing overgrazing by preventing cattle-except milk cows and plough-oxen, from grazing in village lands during certain periods of the year, use of fallow system to restore the lands vegetation and fertility) was rendered ineffective as dramatic political, social and economic changes occurred around the turn of the twentieth century.

4.1.2.2 Institutional Constraints:

1. Inadequate technical capacity to implement the MEAs

The most critical constraint affecting implementation of MEAs is the limited managerial and technical capacity of the human resources in the relevant areas of MEAs.

Building a strong economy in the longer-term will require overcoming a shortage of skilled manpower. However with only 25% of the population literate, the lack of human resource capacity is daunting. Net primary school enrolment in Eritrea is only 10%, compared to 40% for countries in Sub-Saharan Africa. Until there is a literate population and a well trained work force the economic and social development strategy developed by Eritrea is unlikely to succeed.

Recently the Government of the State of Eritrea with support of the World Bank has made the necessary resources available for improving education and increasing access of education to the population at large.

In order to implement MEAs there is a need to carry out an assessment of the Human Resources Capacity and training needs. Increase staff opportunities for exposure, education and experience in relevant areas of environmental management, regulatory policy and practice, environmental impact assessment methods, information collection and management, and State of the Environment Reporting.

2. Weak Institutional Capacity

There is serious lack of human resources in institutional, financial and technical areas of relevant institutions involved in natural resource management. Eritrea's administrative, legal, and commercial, judiciary and regulatory institutions are also still weak and evolving.

An institutional framework for environmental regulation refers to the mechanisms and State organs, which are mandated to regulate activities, which affect the environment. An institutional framework therefore can, and often does, consist of a series of institutions, which should work in a coordinated system. An institutional structure has not been established to maintain progress and to upgrade levels of scientific knowledge among experts in different relevant institutions. Consequently there are serious limitations in adaptive planning capacities, infrastructure development, information gathering and management, analysis and information dissemination.

The staffing and facilities of existing training institutions are limited and cannot adequately provide the diverse skills required, given the broad nature of environmental issues. Budget constraints experienced by government departments and institutions responsible for environmental management affect their ability to train available manpower.

In the recent National Capacity Needs Self-Assessment (DOE, 2001) and NCSA Stakeholder Linkages study (DOE, 2005), whose aim was to carry out an assessment of the main capacity needs (institutional, technical and financial) both at the national and zoba (regional) levels had identified the following major constraints:-

- No detailed capacity needs assessment has been undertaken;
- An absence of effective local networking has meant that information-sharing both nationally and regionally remains weak
- No process exists to set prioritisation targets in the area of environment.
- Studies were undertaken sectorally, with little effort to determine synergies and overlaps between the stakeholders and across the three Conventions;

3. Inadequate funding and lack of budgets

Financial resources are the main constraints for the implementations of obligations of the Rio conventions. However environmental issues have not been given high priority in terms of financial allocation, understandably due to other more pressing and urgent concerns. Even though environmental issues are on the rise on the global agenda, access of financial resources for implementation of programs and projects were limited, due to weak capacity to prepare timely and acceptable proposals using guidelines provided by funding agencies. If the required resources are not mobilized to implement the activities, then the mandate to fulfill the Rio convention obligations could be threatened.

4. Inadequate monitoring and evaluation mechanisms

Monitoring of environmental management is weak and unable to provide timely information for actors to make appropriate decisions. The lack of baseline data and measurable indicators on key parameters relevant to implementation of MEAs make monitoring and evaluation (M&E) less valuable to decision makers. Furthermore, poor integration of M&E in environmental programs has affected performance.

5. Inadequate Research and Training

Although the existing institutions try their best to carry out various environmental researches, however they lack the technical capacity and the required resources to carry out scientific research.

Low priority given to environmental issues in the national research policy and strategic plans, and inadequate infrastructure and facilities for research in specific MEA issues, has affected the capacity of relevant institutions to conduct environmental related research.

Since technical and scientific capacity is required to implement the Rio conventions, the research capacity of the thematic areas has to be enhanced as well as the training of

research staff has to be put in place and scientific institutions have to be encouraged to carry out research.

4.2 Opportunities for Synergy in Capacity Building

4.2.1 Synergistic Opportunities

The following were identified as the key capacity opportunities to synergistic implementation of the MEAs.

1. Existing institutional support

There are several opportunities for every institution involved in environmental activities related to each thematic area. One of the main opportunities is that many stakeholders are already engaged in different environmental activities and have significant experience in planning, implementing and evaluation of various environmental conservation activities. For instance, the Ministry of Education jointly with the Ministry of Agriculture and Zonal administrations have been conducting excellent work in soil and water conservation by mobilizing students during the summer work program.

The other opportunity is that there is well-founded awareness, as well as indigenous wisdom and traditional practices among the different Eritrean communities on environmental conservation. Nevertheless further awareness raising campaigns are needed. Thus new practices and knowledge could be applied on top of these traditional practices.

Existence of DOE as the principal government agency on environment matters with a role to coordinate, supervise and monitor all matters of environmental management provides a good institutional foundation for synergistic implementation of the MEAs. The DOE strengthens the integrated approach and enlists active participation and concrete responsibility of various departments, which is necessary for the synergistic implementation of MEAs.

Many of the staff and experts of the stakeholders have some basic knowledge and skill about the thematic areas and hence their skill could easily be enhanced with some short training. For example the small pool of knowledge and experience in the DoE could be effectively utilized if short term specialized training is given to the staff.

Furthermore, the existence of Village Committees on development projects and established water and environmental committees from district to local level facilitates the development of strong local environmental management institutions and promotes participatory planning and monitoring environmental changes. It also provides entry point for demonstrating synergistic implementation of MEAs at the local level.

2. Supportive legal and policy frameworks

Although most of the existing natural resource management related laws and policies do not specifically mention MEAs, they outline measures necessary for implementation of MEAs issues and could be reviewed to strengthen implementation of MEAs.

The Proclamation for the Establishment of Regional Administrations (No. 86/1996, GOE, 1996) and the Land Reform Proclamation No. 58/1994 (GOE, 1994), provide the necessary legal basis for implementing the synergy for capacity building. Additional Legislation, still in draft (e.g. Environmental law and forestry and wild-life Act) will provide added legal supportive capacity to implement the synergy once these are adopted.

Poverty reduction and economic development is addressed in the Transitional Economic Growth and Poverty Reduction Strategy (GOE, 2001), which lays out the government's policies for macroeconomic management, steps to create the conditions for economic growth, and policies and programs to ensure that growth is widely shared. It recognises that environmental protection is necessary to achieve poverty reduction and, sustainable human development, as environmental degradation disproportionately impacts on the poor. In the context of Eritrea's evolving Poverty Reduction Strategy Paper (I-PRSP, 2003) process, environment and poverty are linked in two major ways. Firstly poverty alleviation should not damage the environment of the poor. Secondly improving environmental conditions can help reduce poverty, as the poor are highly dependent on the natural environment for their livelihood security. Hence mainstreaming of MEAs issues into national development plans is possible.

3. Existence of structures to support community level initiatives

The existence of a decentralized governance system with local village councils up to village level provides structures through which communities can be organized to undertake initiatives to implement MEAs. In addition NGOs and CBOs working on Natural Resource management and micro-credit activities are available and could support and facilitate synergistic implementation of MEAs at community level.

4. Potential institutions to provide technical and managerial skills

Asmara University and the recent decentralization to the Zoba's of institutions of higher learning could be used as a springboard to integrate the required technical and managerial training programs to support implementation of MEAs.

Besides, there are a number of institutions, such as Statistics and Evaluation Office and Sustainable Land Management (SLM, NSEO, 2003) and Eritrean Land Use Forum (ER-SLUF), Global Water Partnership in Eritrea (GWP-Eritrea), which are engaged in collecting data relevant to MEAs. These provide a starting point to strengthen national reporting, development of country profiles and harmonization of databases.

5. Conducive environment for awareness and education

The adoption of environmental education in the National Curriculum and the growing number of mass media broadcast of environment awareness campaigns particularly through radio provides an opportunity to educate the public, particularly the youth on issues of natural resource management, particularly on MEAs.

6. Potential for mainstreaming and tapping global resources

Periodic review of national and district development frameworks and the annual budgeting process are participatory and allow integration of emerging issues and priorities. This is conducive for mainstreaming and prioritizing MEAs issues in national planning and budgeting processes in order to enhance resource allocation for their implementation. In addition, the decentralized management of development programs adopted by government enables more financial resources to reach targeted areas and populations, thus enhancing effective use of the available resources. At the global level, designation of land degradation and deforestation as a new GEF focal area has increased the possibility for mobilizing additional resources to address synergistic issues of MEAs.

7. Mainstreaming MEA issues into Sector-Wide Action Plans and District Development Plans

The Government of Eritrea gives high priority to proper conservation and use of the environment and as part of its poverty assessment the I-PRSP project took on board environmental issues in order to establish causes of poverty. The main aim had been to help mainstream environmental issues in development planning. However in the sectoral policies and priorities not many of the Line Ministries had given emphasis to environmental issues.

The Eritrean Government has formulated a food security strategy and a realistic plan to meet the challenges, which will form an integral part of the poverty reduction strategy paper. This study was based on the Household Living Standard Measurement Survey and the Food Insecurity Assessment in Eritrea: Evidence from Household Survey, (NSEO, 2003; as well as the Participatory Poverty Assessment (PPA) study.

It is important that the links between biodiversity and the people of Eritrea are made so as to demonstrate the variety of ways people use and manage their natural resources, and the embodying customary rules and regulations for controlling that use. Eritrea has the potential to integrate, in a responsible manner, the countries conservation resources through sound land use planning. This requires that conservation contribute to national and local land use. In such areas conservation needs to be an important component of rural livelihoods, so as to encourage rural people to actively conserve and manage their conservation resources. This project document is based on the premise that poverty alleviation is intimately linked with sound environmental and natural resource

management, and in so doing will help Eritrea meet some of its Millennium Development Goals (MDGs) obligations, and actively support the PRSP processes.

V. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

Achieving synergies between MEAs is challenging for Eritrea due to a variety of reasons and circumstances. In part barriers to achieving synergies in Eritrea are a legacy of how global environmental issues are addressed at the international level. Issues such as climate change, desertification and biodiversity have been addressed in a targeted, narrowly focused manner. The conventions and other initiatives developed in response to these issues have not been designed to promote synergies with other agreements, perhaps reflecting the complexity of the issues each party is addressing. Often individuals responsible for negotiating one agreement do not have substantial knowledge of the objectives, content and programs of action associated with other agreements, and are therefore limited in their ability to see the value of promoting linkages between them. Communication between focal points has often been limited, reflecting a tendency to not recognize the shared objectives of MEAs and to undervalue the importance of coordinated implementation of agreements at the national and local level. Compounding this situation is the absence of a policy framework for achieving synergies between MEAs.

The inefficiencies and parcelling of responsibilities and activities experienced at the international level are often reflected at the national level. A focal point established to implement measures under the UNCCD, for instance, may be located in a different department and have little interaction with its country's CBD or UNFCCC focal points. Poor communication between focal points can result in lack of awareness of the potential opportunities for achieving synergies and the benefits that these might bring. This situation can be compounded by concerns about continued access to resources and loss of control over an issue.

It may be possible to overcome these barriers through many of the ideas presented in the previous sections. For instance:

- Existing institutional structures may be examined and altered to facilitate greater communication and cooperation between MEA focal points;
- Capacity development may be undertaken to strengthen the ability of MEA implementers to resolve conflicts and engage in integrated planning processes; and
- Education and awareness raising regarding the objectives and activities of the various MEAs may be undertaken with focal point members to highlight their mutual interests.

Regardless of how well developed national MEA implementation structures are though, overcoming the barriers to achieving synergies between MEAs requires demonstrable support from the highest political levels. Leaders must clearly understand and communicate the many positive linkages between achieving synergies between MEAs and the achievement of national development goals such as poverty reduction and the promotion of sustainable livelihoods.

Studying synergies between the Rio National reports and action plans documents from the NCSA process of many countries such as Bulgaria, Rumania, Gambia and Namibia were reviewed thoroughly to identify the follow-up activities designed to strengthen synergies (UNDP, 2005). Five categories were used to group the activities, which can be used to strengthen Eritrean capacity to synergise the implementation of the MEA's.

5.2 Recommendations

The following recommendations are suggested for follow up in order to ensure the success of synergistic implementation of NCSA:

It is suggested that development of capacity to conceptualise and formulate policies, legislations, strategies, and programmes should be formulated, which will help in effective implementation of capacity building projects.

At the same time capacity has to be developed to engage and build consensus among all stakeholders, which will ensure the ownership of project. In addition the capacity to mobilise information and knowledge should be put in place to ensure wider participation and create awareness of the people and beneficiary organizations.

Finally the project cannot be accomplished successfully unless the capacity to monitor, evaluate, report and learn is put as part of the overall strategy.

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ANNEX 1. Illustrative Comparison of Data Needs Across the Three Conventions

Core Data Set Needs	Biodiversity	Desertification or Land Degradation	Climate Change
Land use plan (by type)	➤ Will help to identify the future protected area for biodiversity	➤ Which land is degraded and exposed to desertification is not clearly identified	➤ This data can easily be compared with the climate change
Vegetation (by type)	➤ There is no data on all types of vegetation. The available data is limited.	➤ There is no data on the vegetation types, which are indicators of land degradation	-
Forests (by type, condition, density)	➤ There is inadequate data on the type, condition and density of forests available, which could help to know the diversity of forest s.	➤ This data will help to identify, which area is covered and which area is exposed to wind and water erosion.	➤ The climatic condition of forested and un-forested area is different.
Agriculture (by type)	➤ This data will help to identify the agricultural type that can destroy the crop/animal diversity	➤ Some agricultural practices (over cultivation, irrigation without proper treatment, over grazing etc.) can cause land degradation therefore this data will help to reduce the expansion of land degradation	-
Climate (temperature, precipitation etc)	➤ This data is very necessary for the whole part of the country. It can conserve or destroy the biodiversity of the country.	➤ This data also helps to see the trend of desertification or land degradation.	➤ This data helps to see the trend of climatic change.
Surface hydrology (lakes, rivers, streams) quality, condition	➤ It is the habitat of some species therefore, it is important to know the quality and condition of surface water bodies.	➤ Surface hydrology condition is related to land degradation. For example if salinity of the water body increased.	➤ This data helps to see the trend of climatic change.
Flora and fauna (specie type and density information)	➤ It helps to know the biodiversity of the country and to monitor and	-	-

	evaluate for the future.		
Human settlement plans	➤ The settlement plans must be known ahead so that action plan can be undertaken regarding biodiversity	➤ In our country settlement activities have destroyed a lot of trees and caused land degradation.	➤ If there is land degradation or desertification then there will be climate change
Endangered species and their habitat	➤ This data will help the status of biodiversity.	-	-
Area of degraded land and future expansion	➤ Land degradation can affect the biodiversity therefore, knowing the future expansion can help to take remedial actions on biodiversity	➤ This data will help to reduce the future expansion of land degradation	➤ If there is land degradation there will be climate change.
Soils by type	➤ This is helpful for biodiversity	➤ Knowing the soil type can help to identify the degradable land and help to plan measures.	-
Wind energy and its expansion	➤ It can affect birds and other flying animals	➤ It will help to reduce deforestation and thereby land degradation	-
Indicators for each convention	➤ This will help for monitoring and evaluation	➤ This will help for monitoring and evaluation	➤ This will help for monitoring and evaluation
Capacity with in community group	➤ Helpful in conserving biodiversity by ensuring community ownership.	➤ It is helpful in reducing land degradation	➤ It helps to reduce climate change.

ANNEX 2. Identifying Capacity Constraints and Opportunities for integrated Capacity Building

Cross-Cutting Capacity Constraints	Biodiversity	Desertification or land degradation	Climate Change	Opportunities for cross-cutting Capacity building
Legislation and policies	X	X	X	<ul style="list-style-type: none"> ➤ Approval of available draft policies and environmental law ➤ Draft legislations by taking the experience of other countries
Stakeholder coordination	X	X	X	<ul style="list-style-type: none"> ➤ Review the past projects properly and use the lessons learned. ➤ Improve coordination and communication of stakeholders ➤ Use multi-stakeholder consultations and decision making efforts
Unclear stakeholders mandate	X	X	X	<ul style="list-style-type: none"> ➤ Promotion of partnership and working together ➤ Agree on activities to carry out between the stakeholders ➤ Continuous communication and information exchange
Institutional weakness of government institutions in project implementation	X	X	X	<ul style="list-style-type: none"> ➤ Projects should be led and driven nationally by including self monitoring, self evaluation and learning by doing ➤ High political commitment in implementing projects related to the three conventions
Public awareness and education	X	X	X	<ul style="list-style-type: none"> ➤ Use of mass media ➤ Use of schools to raise awareness and public education ➤ Improve the existing curricula so that it integrates national environmental issues
Information and data management	X	X	X	<ul style="list-style-type: none"> ➤ Use experience of other countries data management system ➤ Establish national or sectoral data management institution
Financial resources	X	X	X	<ul style="list-style-type: none"> ➤ Assess and use the available international funds ➤ Improve national funding system
Monitoring and evaluation skill	X	X	X	<ul style="list-style-type: none"> ➤ Use learning by doing approach ➤ Introduce M&E in all projects.

