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## **EXECUTIVE SUMMARY**

Liberia is Party to three RIO Conventions: The Convention on Biological Diversity; the United Nations Framework Convention on Climate Change, and the United Nations Convention to Combat Desertification/Land Degradation. Since the ratification of these conventions, the country has been unable to effectively and efficiently implement them due to a host of human, institutional and structural inadequacies.

The thematic reports confirm a series of limitations/constraints responsible for these inadequacies, among them: training gaps in the sector; those who obtained relevant qualifications under these conventions obtained them between ten to twenty-five years ago, and thus are unable to cope with modern scientific methods and techniques; lack of harmonization of sectoral laws and policies; inadequate planning skills and resources; incomplete structures at all levels, and budgetary constraints. These have created gaps in the implementation of the conventions as well as in the overall management of the environment and natural resources.

The assessment and stocktaking exercises also reveal a total of 69 capacity constraints/issues within the three thematic areas of biodiversity, climate change and land degradation. Of these, 50 are within the Convention on Biological Diversity; 16 within the United Nations Convention to Combat Desertification, and 3 under the United Nations Framework Convention on Climate Change. Similarly, the synergistic and crosscutting capacity needs assessment across the three conventions revealed a total of 18 crosscutting issues identified at the two-day retreat and compiled by the consultant in the Synergy Report.

Based upon the identified, confirmed, and prioritized capacity constraints/issues and associated capacity development needs at the individual, institutional, and systemic levels, a five-year project proposal for capacity building in each of the three conventions has been developed. The capacity building needs under the CBD are estimated at US\$2,385m (is that 2.3M?), equivalent to L\$143,100m. Similarly, the capacity development needs of the UNFCCC and the UNCCD are estimated at US\$2,006m and US\$6,330m; while the Liberian Dollar equivalent are L\$120,360m and L\$379,800m respectively.

Moreover, the synergistic and cross-cutting capacity needs assessment across the three conventions revealed a total of 18 cross-cutting constraints/issues which were confirmed and validated by a national workshop on August 22 -23, 2005 (this is a repeated sentence, see para above).

Based upon these identified, confirmed, and prioritized synergistic and crosscutting capacity issues and their associated opportunities for capacity

building, a project proposal has been developed. These synergistic and crosscutting capacity building needs are estimated at about US\$4,537m, which is equivalent to L\$269,190m for a period of five years.

The National Strategy and Action Plan did not ignore the global issues relative to capacity constraints across the three conventions. These convention-specific capacity constraints/issues were identified and given serious consideration based on the existing needs. Accordingly, six key elements of a strategy were proposed to address relevant capacity development needs in protecting the global environment.

To further accelerate the implementation of the four project proposals (three thematic and one cross-cutting), a ten point “Next Steps and two Follow-up Actions” have been proposed. These next steps and follow-up actions are mainly focused on the task of mobilizing resources for the implementation of the strategies/actions.

It is further anticipated that the implementation process of the strategy/action plan will be monitored and evaluated within the framework of the NEAP/NRDP. The monitoring and evaluation strategy is designed to ensure that there will be regular reviews, and results fed back into the proposals, and thereby provide useful lessons for future capacity building planning and programming exercises.

It is expected that the Government of Liberia will accord this strategy the highest political commitment, and that various stakeholders will consider these initiatives for capacity development in managing the environment and natural resources seriously.

AMH: can we inserted one or two paragraphs on main conclusions of the NCSA, like global environmental issues of immediate relevance to Liberia, the most urgent capacity needs to remove bottlenecks for convention integration, and overall objective of the capacity building strategy)

## **LIST OF ACRONYMS**

ABS	Access and Benefit Sharing
BCH	Biosafety Clearing House
BCS	Biodiversity Coordinating Secretariat
BWI	Booker Washington Institute
CARI	Central Agriculture Research Institute
CBD	Convention on Biological Diversity
CBOs	Community-Based Organizations
CHM	Clearing House Mechanism
CI	Conservation International
CUC	Cuttington University College
DDCs	District Development Committees
EEC	European Economic Community
EFA	Environmental Foundation for Africa
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
FDA	Forestry Development Authority
FFI	Fauna and Floral International
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHs	Green House Gases
GIS	Geographic Information System
GOL	Government of Liberia
ICAM	Integrated Coastal and Marine Area Management
IPCC	Intergovernmental Panel on Climate Change
ISCB	Inter-Sectoral Committee on Biodiversity
ISCD	Inter-Sectoral Committee on Desertification
LEC	Liberia Electricity Corporation
LHS	Liberia Hydrological Surveys
LSRC	Legislative Sub-Committee on Rio Convention
LWSC	Liberia Water and Sewer Corporation
MDFTs	Multi-Disciplinary Facilitation Teams
MDGs	Millennium Development Goals
MIA	Ministry of Internal Affairs
MLME	Ministry of Lands, Mines & Energy
MOA	Ministry of Agriculture
MOT	Ministry of Transport
MPEA	Ministry of Planning & Economic Affairs
MRD	Ministry of Rural Development
NAP	National Action Programme to Combat Desertification
NAPA	National Adaptation Program of Action
NBSAP	National Biodiversity Strategy and Action Plan
NCCC	National Climate Change Committee
NCCAPs	National Climate Change Action Plan and Strategy
NCSA	National Capacity Self-Assessment
NDTF	National Desertification Trust Fund

NEAP	National Environmental Action Plan
NEPC	National Environmental Policy Committee
NGOs	Non-Governmental Organizations
NRDP	National Reconstruction and Development Plan
NSC	National Steering Committee
PA	Protected Areas
PVOs	Private Voluntary Organizations
RIA	Roberts International Airport
SDI	Sustainable Development Initiative
TATs	Thematic Assessment Teams
TSU	Technical Support Unit
UL	University of Liberia
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
VDCs	Village Development Committees
WHO	World Health Organization

# **1. INTRODUCTION AND BACKGROUND**

## **1.1. Rationale and Context of the NCSA**

### **1.1.1 The Rationale**

Pressures on ecosystems in Liberia are significant, and are consequence of a host of human, institutional and structural inadequacies. The huge gap in training and other problems across the three thematic conventions include: inadequate public awareness and education, inadequate institutions and institutional frameworks, inadequate political commitment, inadequate planning skills and resources, as well as incomplete structures at all levels of policy implementation, etc. These shortcomings have made it difficult to implement the NBSAP and to complete task relative to both the UNFCCC and the UNCCD. (trying to jump into conclusions without describing the apparent problems and the underlying causes. This para does not describe the rationale. It may start with challenges facing Liberia in addressing environmental issues and as the second paragraph indicated Liberai needs indigenous capacities to deal with these challenges, NCSA is to strategise the interventions needed to building these capacities!)

These inadequacies are further compounded by high level of illiteracy, ignorance, mass rural/urban migration, population increase, etc, all of which have significant impact on the harmonious and consolidated implementation of these conventions and the overall management of the environment and natural resources. The NCSA therefore, provides an excellent opportunity for Liberia to develop a targeted and coordinated approach to environmental management through the preparation of thematic profiles, identification of priority issues across the three conventions, identification of constraints, and the building of synergies and actions to address existing gaps.

### **1.1.2. THE CONTEXT**

#### **Location and Demographic Situation**

The Republic of Liberia is situated on the southwest corner of the West Coast of Africa between longitudes 7° 30' and 11° and 30' west, and latitude 4° 18 minutes 8° 30' north. It covers surface areas of about 111,370 km<sup>2</sup> (approximately 43,506 square miles). The dry land extent is 96,160 square km or 37,570 square miles. Liberia is limited on the west by Sierra Leone, on the north by Guinea, on the east by the Ivory Coast, and on the south by the Atlantic Ocean. Total land boundaries extend to 1,585 kilometers (990 miles) towards Guinea 563 kilometers (352 miles), Ivory Coast, 716 (446 miles) and Sierra Leone, 306 kilometers (191 miles) respectively.

The population of Liberia was estimated at 2.7 million inhabitants in 2001, with annual birth rate of 3%. The population density is about 28 persons

per square kilometer or 71 persons per square mile, the lowest compared to its immediate neighbors.

### **Political and Administrative Structure**

Liberia is a unitary state with a democratic form of government. There are three branches of government: The Executive Branch, headed by the President; the Legislative Branch, headed by a Speaker; and the Judiciary Branch, headed by the Chief Justice. There are twenty-three ministries of government, each headed by a cabinet minister. Ministers are appointed by the president with the advice and consent of the senate. They constitute the president's cabinet.

For administrative purposes, the country is divided into fifteen political subdivisions called counties. The counties are divided into districts, and the districts are further divided into chiefdoms, clans, towns, and then villages. County/local governments are headed by superintendents who are appointed by the president with the advice and consent of the senate. District superintendents and commissioners are also appointed by the president, while paramount, clan and town chiefs are elected by citizens in their respective constituencies

### **Geographic Features**

There are four topographical regions with each having its own distinct physical features and height above sea level. Along the Sea Coast is the Coastal Plain of 350 miles (560 km), an almost unbroken sand strip, which starts from the lowest elevation of up to 30 meters above sea level. Next to the Coastal Plain is the Belt of inundated plateaux followed by the Belt of highlands and rolling hills in the north and northwest. The highest elevation is the Northern Highlands, which includes Mount Wutivi (1,350 meters), the maximum elevation in Liberia.

Average annual rainfall along the coastal belt is over 4000mm and declines to 1,300mm at the forest-savanna boundary in the north (Bongers, Fetal, 1999). Relative humidity is generally high throughout the country; on the coastal belt it does not drop below 80% and on the average is above 90%. There is a wider variation in the interior; it may fall below 20% during the harmattan period which runs from December to February. A relative air humidity of 90% to 100% is common during the rainy seasons. During the dry season it decreases between 80% and 85%.

### **Climate and Hydrology**

Liberia's equatorial position puts the sun almost overhead at noon throughout the year giving rise to intensive insolation in all parts of the country, a consequence of high temperature with monthly variation. Notwithstanding, the temperature would have been much higher had it not

been for the effect of the degree of cloud cover, air, humidity and rainfall, which is influenced by the luxurious vegetation cover of the country. The Atlantic Ocean also has an additional ameliorating effect on the temperature along the coast with maximum annual and daily variations. As a whole, the temperature over the country ranges from 27°C to 32°C during the day and from 21°C to 24°C at night. High altitude explains a pleasant climate near the Guinean border.

The country has two seasons: raining and dry seasons. The dry season lasts from mid-November to mid-April; rainy season from mid-April to late October. Average annual rainfall along the coastal belt is over 4000mm and declines to 1300mm at the forest-savanna boundary in the north, (Bongers, F et al, 1999) (repeated sentence). Relative humidity is generally high throughout the country; on the coastal belt it does not drop below 80% and on the average above 90%. There is wider variation in the interior; it may fall below 20% during the harmattan period. A relative air humidity of 90% to 100% is common during the rainy season. During the dry season, it decreases between 80% and 85%. In March and February, the driest period of the year, relative humidity decreases to as low as 65%. (repeated and somehow conflicting figures with the above)

The agro-ecosystem of Liberia contains four major zones: (1) the coastal plains, (2) the hilly zone, (3) mountains and plateau zones, and (4) the northern highland zone. Thirty percent of the land area is arable, while 2.5% is pastureland. Most of the upland soils are lateritic, acidic, infertile, and low in humus. The swamp is comparatively better in nutrients and humus; they are, however, waterlogged from May to October.

### **Country Economic Context**

The Liberian economy has been largely dependent on extractive industries, and thus, foreign exchange earnings are derived largely from the sale of timber, diamond, gold, and rubber. The economy is also small, open, and export-oriented and is heavily influenced by external markets. Like most developing countries, the economy is dualistic; it consists of a large traditional sector, and a small modern (monetized) sector. The sectors are distinct and have weak linkages. The traditional sector is mainly agrarian and subsistence in nature. This sector accounts for primary economic activities and of about 70% of the labor force, who are engaged in the production of rice, vegetables, root and tubers, as well as cash crops including oil palm, coffee, cocoa and citrus. Sale of these agricultural commodities and other cash crops provides cash income with which households provide goods and services. Output from the sector is low principally because production techniques are rudimentary, relying on hand tools and traditional/cultural practices. There are no capital inputs into soil preparation; and meager outputs are subject to uninsured loss, as inadequate road networks do not facilitate efficient removal of surpluses to markets. The sector's contribution to national output prior to the war was

less than 20%; and is now estimated to be in the magnitude of 31.1% of a much lower gross domestic product.

The modern sector thrives mainly on foreign interests and is dominated by enclave concessions that exist and operate relatively independent of the rest of the national economy. The sector is capital-intensive, producing mainly rubber and logs in unprocessed form for export. Manufacturing and the tertiary industries are other activities in the sector. Prior to the war, iron ore mining was the leading investment in the sector. Then, the sector employed about 20% of the workforce and contributed an estimated 10% of GDP and 60% of export earnings. The modern sector accounts for an estimated 30% of the labor force and contributes 64% of GDP and 95% of exports. In 1998 and 1999, GDP growth in real terms amounted to 31% and 35% (please double check these figures; no economy has grown that much) respectively. Although there was a slow down in 2000, real GDP grew at 26%.

Liberia's post-war economy (what base year is this talking about) has been based on primary production. Logging, charcoal production and alluvial mining have become relatively more important because of the near absence of manufacturing, iron ore mining and the decline in maritime revenues. Charcoal production contributed 9% of GDP in 1999, compared to 2% during pre-war times. Timber extraction and rubber have intensified and presently constitute the most reliable sources of official foreign exchange earnings.

Despite the declining trend in annual growth rate, the economy has shown signs of resilience, particularly in the rural subsistence sector. Increases have been recorded in rice and cassava production, the nation's staples. Rice production attained nearly 75% of pre-war production level in 1999, and cassava reached its 1988 output volume of 313,000 tons. Fish production, substantially reflecting an output of the artisan (meant artisanal?) fishing has made a rebound. Production in 2001 shows an increase of 64% over that of 2000.

**Liberia's Gross Domestic Product (US\$ Million)**

<b>CATEGORY</b>	<b>1987/1988</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
<b>GDP at Current Prices</b>	972.8	384.9	448.3	480.6	508.3
<b>GDP at Constant Prices</b>	1,008.1	333.4	410.2	433.0	451.2

*Source: MPEA/Health Situation Analysis Study (WHO/GOL)*

### **The Agriculture and Natural Resources Sector**

Thirty percent of the land is arable; whilst 2.5% is used as pastureland. The agricultural system is characterized by subsistence farming. Major crops grown include rice (staple), root and tuber crops, oil palm, cacao, coffee, sugar cane, legumes, maize, bananas, etc. Notwithstanding, the subsistence nature of the agricultural system, there are eight large-scale rubber plantations with combined acreages of 57,000 hectare. These plantations

are owned and operated by foreign companies. There are also several small holding plantations of cacao and coffee scattered all over the country.

Produce of the various cash crops including coffee, cacao and rubber are exported unprocessed. Rice, the nation's staple, on the other hand, is imported because local production is far too low to meet consumers' need.

Cocoa and coffee exports contribute significantly to household and domestic income. According to the Central Bank of Liberia (2000) production has been on the increase since 1998. A total of 2,040 metric tons and 358 metric tons of cocoa and coffee valued at US\$1.6 million and US\$0.24 million respectively were exported in 1998. In 1999, a total of 2,591 metric tons of cocoa was produced, an increase of 27% over 1998 production. Coffee production in 1999 was 808 metric tons, representing 125% increase over 1998 production figure. (is there any more recent figures?)

Rubber is also one of Liberia's main export cash crops. It contributes more than US\$57 million annually to export earnings. Production grew in 1999 to 62,705 metric tons (valued at US\$33.3 million) from 48,916 metric tons (valued at US\$28.9 million) in 1998—an increase of 28.2% over 1998. During the year 2000, production of rubber rose to 102,412 metric tons (valued at US\$53.2 million) 63.3% increase over 1999 production.

Fishery is an important economic activity for a significant proportion of the Liberian population, mainly for those who live along the coast. Besides the five (5) fishing enterprises, only four (4) companies are reporting fish production statistics. Fishing is also done by artisan fishermen, whose harvest is predominantly subsistence-oriented. The fishing resources off the Liberian coast in 1984 were believed to be considerable and included such well-known food fish as croaker, grunter, sea bream, mackerel, snapper, sole, graper, tuna and various sardines. Shrimps, rock lobsters, crabs, and oysters were also caught. Inland subsistence fishing is carried out in the lagoons, swamps, streams, and rivers throughout the country. In 1988, a total of 1.3 million kilograms of fish was produced. Production declined drastically in 1999 to 449,400 kilograms, representing 65.4% when compared to 1988. The total reported catch in 2000 increased by 19.7% to 537,870 kilograms, but fell below the production of 1998 by 58.6%.

Livestock production in Liberia has always been the least prioritized as compared to crops. The industry plays a minimal role in agricultural development. This is indicative by the high annual importation of livestock as well as livestock products. Cattle, goat, sheep, pig, rabbit, guinea pig, chicken, duck and guinea fowl are used in Liberian agriculture. Although the local breeds are well adapted to the local conditions, their productive capacity is lower than the exotic breeds. They have stunted babies and the maturity period is longer than that of the exotic breeds. Research in animal husbandry is weak. Feeding, housing and health are major problems in the sector.

Nimba County is recorded to have the highest livestock production in both pre-war (55,096) and postwar (24,362) followed by Montserrado, Grand Bassa and Bong Counties respectively.

Forestry resources remain one of the most important economic assets of Liberia. In 2002, timber was the main export item contributing more than US\$85 million to Liberia's foreign Exchange earnings. Besides sawn timber, round logs and charcoal are valued forest products. In 1998 round log export totaled US\$12.3 million and rose to US\$23.4 million in 1999, and increased to US\$59.5 million in 2000. The absence of public electricity in the country for more than a decade has made wood the major source of energy, as only few affluent people can afford electric and gas cookers. In 1998, a total of 14,807 kilograms of charcoal was produced; this rose to 255,624 kilograms in 1999 and totaled 258,934 kilograms in 2000.

Mining, especially iron ore was the mainstay of the Liberian economy during and up to 1989. But with the closure of iron ore mines due to the civil war (1989-2003), gold and diamond became the major activity in the sector. A significant amount is mined in the country by artisanal miners using crude production techniques. In 1998, a total of 7,741 carats of diamond and 2,318 ounces of gold were produced; gold production reduced to 550 ounces in 1999 and fell further to 482 ounces in 2000. Diamond production on the other hand gained momentum in 1999 with 8,437 carats and further increased to 22,112 carats in 2000.

## **1.2 OVERVIEW OF PARTICIPATION AND PREPARATION OF THE NCSA**

(the introductory paragraph can be strengthened if refernec is made to the timing of NCSA, did it come before or after the Act and how that affected the NCSA process, if any changes happened).

The structure for sustainable development and the management of natural resources is provided for by the Environmental Protection Agency Act. The main bodies created under the Act are the Policy Council (the highest decision-making body on the environment), the Board of Directors, Provincial (county) and District Environmental Committees and other technical bodies. These are deployed at national, county and district levels. They are complemented by structures established under sectoral laws and policies. The institutions and groups represented in these structures include members of the national legislature, cabinet ministers, managing directors of public corporations, lawyers, academicians, scientists, local government administrators, and civil society. A host of bilateral and multilateral development partners, non-governmental organizations, and community based groups are also working in the sector.

## **1.2.1 Participation Process**

### **Sectoral Level**

Consultation at the sectoral level was limited to core stakeholders involved with the implementation of various projects. The focal point of each convention spearheaded the thematic assessment drive in collaboration with the national consultants and resource persons. The draft reports of these participatory stocktaking exercises provided the background information for broader consultations at county and district levels.

### **Regional Level**

Four Regional Workshops were held across the country during the process. The First Regional Workshop was held from the 8-9 November 2004 in Tubmanburg, Bomi County. Four counties (Montserrado, Grand Cape Mount, Gbarpolu and Bomi) were represented, with 60 participants from various environmental related institutions (Forestry, Agriculture, Education, Local Government, and Civil Society), NGOs, UNEP Post Conflict Assessment Unit, UNMIL, and NCSA Project Secretariat.

The Second Regional Workshop was held from 11-13 November 2004 in Buchanan, Grand Bassa County. 60 Participants from Bassa, Rivercess and Margibi Counties attended the workshop.

The Third Regional Workshop was held in Zwedru, Grand Gedeh County from November 23-25, 2004. Sixty (60) participants from Grand Gedeh, River Gee, and Maryland attended the workshop. Due to bad road condition, many participants did not come from Grand Kru and Sinoe Counties.

The Fourth and last Regional Workshop was held in Bong County from December 8-10, 2004. Sixty (60) participants representing Lofa, Bong and Nimba Counties were in attendance.

### **National Level**

(as a general note, consultation process should not be reduced or equaled to to conducting a workshop where people are invited and presented with reports prepared by consultant and asked to comment; some may not speak at all, some may not be authorized to speak on behalf of the institution he/she is coming from let alone that he/she cannot speak about the "sector"). So NCSA should have brought key players at the sectoral level; ie. Focal pints together with representatives from key institutions to form focus/technical groups)

The national consultation and priority setting workshops were conducted under the auspices of the Environmental Protection Agency, which is the

executing agency of the NCSA Project. Participants at this workshop represented a cross-section of stakeholders.

The NCSA Process began in May 2004 with the appointment of a project coordinator and administrative staff. This was followed by the commissioning of thematic teams and the establishment of a national coordinating committee in June 2004. The project which was officially launched on July 1, 2004, brought together representatives of various interest groups, stakeholder, institutions and organizations.

The consultants and resource teams began their work by developing questionnaires to engage stakeholders and to conduct interviews. Data obtained were compiled in preparation for the first national workshop.

The first national workshop was held on October 19-20, 2004. The workshop reviewed thematic reports, and Liberia's obligation under the RIO Conventions in order to identify crosscutting capacity issues/constraints and build consensus on priority needs across the thematic areas.

**PLENARY:** The plenary was devoted to presentation of the various documents and background to the NCSA process, which highlighted the four specific objectives, and the seven basic steps of the process. Participants were also drilled through the Issues Prioritization Matrix to illustrate the ranking process using three sets of criteria, namely:- Scale of the problem, Level of Concern, and Ability to Adequately Address the Problem. This was followed by a demonstration of a Final Priority Ranking using scale 1-5.

Participants were then taken through the next stages of the exercise dealing with the categorization of the capacity constraints for each issue into the three capacity building levels of individual, institutional and systemic. For this exercise, the use of the Capacity Constraints Matrix was demonstrated. They were further divided into three thematic working groups (Biodiversity, Climate Change and Land Degradation) and reviewed their respective reports within the framework demonstrated to them.

The background presentation included an overview of the steps taken during the consultations leading to the elaboration of the three convention strategies and action plans. The presentations were made by the national consultants, who worked with the Thematic Assessment Teams and Focal Points.

A period of comments, questions and answers followed each presentation allowing for greater participation of stakeholders. Questions, answers and comments were recorded and considered in the finalization of the thematic reports and in the development of the synergy report.

**WORKING GROUP SESSION:** Immediately after the general discussions, participants were divided into three thematic working groups to review the reports in greater detail. Each thematic working group was facilitated by its

respective Focal Point or the National Consultant. Groups had chairpersons, and rapporteurs to conduct their business in a methodical fashion and take detailed minutes.

**PLENARY:** A second plenary was usually convened in the late afternoon at which time each group reported its main findings to the general body. These findings were annexed to their respective draft assessment reports as background documents for the National Validation Workshop.

**1.2.2 Preparation Process (preparation and participation used indiscriminently and can lead to confusion; they meant to communicate same type of information)**

Liberia acceded to, and/or ratified three RIO conventions between 1998 and 2002. Project Secretariat was established after each accession or ratification to lead the process of preparation and the eventual implementation of various strategies and actions developed under each project both at national and local levels. The NCSA process has provided an opportunity to build on past experiences, and to further review, identify and consolidate capacity needs for environmental management in Liberia.

Thematic Assessment Teams were constituted from various sectoral institutions to conduct the actual assessment of capacity needs. The teams were headed by a national consultant and comprise resource persons (this is contradicting statements under Sectoral heading in 1.2.1 where it says that only focal points, consultants and resource persons formed the assessment group). Results from the assessment were compiled into a report, which was presented at regional workshops around Liberia. These workshops were helpful in reviewing and validating the reports by incorporating grass-root views and concerns.

The process of formulating the National Capacity Assessment began on 8<sup>th</sup> April 2004. At the national level, the process was guided by the first meeting held to formulate the Steering Committee. A consultative mechanism was then devised to guide regional and local consultations.

National level consultation considered the Liberian environment. The UNDP, UNMIL, and UNEP jointly convened a two-day seminar on the environment on July 12-13, 2004. The seminar, organized in collaboration with the EPA considered the importance of environmental protection during the country's recovery and reconstruction processes, and highlighted the vital role that sustainable development can play in natural resources management, as well as in the country's economic and social development and its ability to reach the MDGs.

The seminar also focused on two recent reports, (The UNEP Desk Study on the Liberian Environment, and the National Biodiversity Strategy and Action Plan). Both documents emphasize the importance of biodiversity and the

natural environment. Over 100 participants from government, local authorities, non-governmental organizations, academic and research institutions, the business sector, civil society and the international community validated these reports.

This section needs careful reading. It needs to be reorganized to explain the NCSA process in logical and easily understandable sequence. There are two elements of the NCSA process; one is the process itself; who was there, how and events leading to coming up to NCSA conclusions, the second element is the methodologies used to agree on particular NCSA result. For example, how criteria settings was done, how information were collected and analysed, how conclusion were drawn, etc.)

## **II. IDENTIFIED THEMATIC PRIORITY ISSUES**

### **2.1 Summary Overview of the Existing Situation**

The section should also to highlight Liberia's environmental issues with significance to global environment, in this case to issues covered by CBD. We are not implementing conventions for the sake of implementation but for sake of achieving environmental and sustainable development objectives of the convention; hence we need to refer to those environmental and development issues from Liberia's perspective)

The situation analysis conducted focused on key issues: institutional framework and responsibilities; instruments, and/or non-regulatory mechanisms, existing policy environment; existing programmes and responsibilities; existing information and database, and past capacity development initiatives as relevant. Each thematic report provides a detailed analysis of the situation with respect to its convention. These convention specific situations are summarized below:

#### **2.1.1 The Convention on Biological Diversity**

##### **Institutional Framework and Responsibilities**

Both the Environmental Protection and Management Law and the National Environmental Policy do not address the issue of institutional structure for the implementation of the convention. However, the NCSA process has given consideration to the structure established under the National Biodiversity Strategy and Action Plan (NBSAP). The NBSAP provides for Project Coordination Unit, which serves as the Secretariat; a National Steering

Committee (NSC), Planning and Research Teams, and any such technical teams as may be required for the full implementation of the convention.

The proposed institutional framework also envisages the creation of six (6) main Thematic Technical Advisory Teams. These include: Agricultural Biodiversity, Forest Biodiversity, Coastal/Marine Biodiversity, Aquatic Biodiversity, Mountain Biodiversity and Inland/Freshwater Biodiversity..

Functions of the National Steering Committee include:

- Oversee the overall implementation of the NBSAP;
- Provide policy guidance and technical support to stakeholders responsible for the implementation of specific strategies and actions in the plan;
- Advise the Government/EPA on new measures and policies necessary for the sustainable use of biodiversity;
- Provide advice in the formulation and implementation of specific projects and programmes aimed at promoting the conservation and sustainable use of biodiversity;
- Identify and advise government/EPA on new and additional sources of financial resources for the conservation and sustainable use of biodiversity;
- Monitor and evaluate the implementation of the NBSAP; and,
- Perform any other function as may be necessary to ensure the conservation and sustainable use of biodiversity in the country.

(these project-level details and of administrative nature are not needed here)  
The Biodiversity Coordinating Secretariat (BCS) headed by the Project Coordinator shall be supported by the six thematic program heads. He/she will serve as secretary to the NSC. His/her main functions shall include:

- Providing administrative and professional support to the steering committee;
- Initiating proposals for cross-sectoral policies, regulations, guidelines, projects, and other measures for consideration by the steering committee;
- Implementing decisions of the steering committee;
- Liaising with, and providing technical support to strategies and action plans;
- Disseminating information to the relevant actors;
- Coordinating and supporting the monitoring and evaluation of the NBSAP; and,
- Preparing and publishing reports

### **The Existing Policy Environment**

**Macro-Economic Policy Environment:** Liberia's macro-economic framework remains essentially a free market economy with the primary aim of creating an enabling environment for a private sector-led growth development strategy. The government continues to maintain structural adjustment and fiscal policies, a market-determined exchange rate, and a liberalized commodity market. However, the structural inadequacies and weaknesses of the postwar economy continue to limit private sector involvement.

In response to these and other socio-political developments, and the need for a national sense of purpose, the government of Liberia in 2005, launched the Millennium Development Goals, placing particular emphasis on Goal #7, which deals with Environmental Sustainability. The vision statement of the National Biodiversity Strategy and Action Plan (when was the NBSAP formulated to be so good to toght its objectives to MDGs?) also commit biodiversity management to the MDG of Liberia.

**Agricultural and Natural Resources Policy Environment:** The broad national objectives and priorities for development of the Agriculture and Natural Resources Sectors, including sustained food security, are to restore the vital role of the Agriculture Sector as the driving force for economic development; adequacy of food supply; stability of production and access to food by all sectors of the populace (population!); develop and disseminate improved technologies into the farming systems, and develop field tested interventions. (name the policy document that refers to such sector objectives) The objectives include:

- Expansion of agriculture as a principal base for self-sustainable economic development;
- Stimulating increase in productivity, employment, and income for the Liberian farmers to strengthen the capacity of extension workers, and farmers' organizations;
- Adequate protection of human, fauna, and flora, their biological communities and habitats, as well as harmful impacts to preserve biodiversity;
- Ensuring sound management of natural resources and the environment; and,
- Maintaining ecosystem and ecological process essential for the functioning of the biosphere.

**National Food Security Policy Environment:** The Government of Liberia and development partners have agreed under the Millennium Development Goals (MDG) Strategy to facilitate drive towards reducing the proportion of underweight children (less than five years old), and the proportion of the population below the minimum level of dietary energy by funding and/or supporting the following programs and policies:

Reactivation of agriculture extension services;

Reducing tariffs on imported agriculture inputs;  
Promoting the use of improved farming methods, processing and storage methods;  
Distribution of farming tools and seeds to vulnerable groups (IDPs and returnees);  
Rehabilitation of farm-to-market roads/rural infrastructure;  
Formulation of a national agricultural development policy framework;  
food security strategy;  
Reviewing existing legislation on food safety standards;  
Supporting small scale income generating opportunities-agribusinesses, and credit schemes;  
Refurbishing vocational training schools and conducting rural workshops; and,  
Supporting the reactivation of fisheries, cooperatives and rural community resource centers for skill development and training, especially for youths and girls.

**Environmental Policy Framework:** Liberia is yet to develop a National Environmental Action Plan; but it has developed a National Environmental Policy (again need to name or cite the official document which has such policy statement). The policy was necessary to address the issues of lack of coordination, and fragmentation of environmental programs by sectoral institutions. The government's environmental policy emphasizes the harmonization of sectoral policies and sustainable economic growth and development consistent with the improvement of the quality of life of this generation without compromising the rights of future generations. This is the rationale for having the policy but what the policy itself is saying and what relevance it has to conventions and NCSA?)

### **Organization of Research**

The Central Agriculture Research Institute and the Liberia Biomedical Research Center have been the core of biodiversity research in the country. Biodiversity in these institutions are complemented by research units at the University of Liberia, specially, College of Agriculture and Forestry; Departments of Biology and Geography.

Research in Biodiversity and related areas is generally weak due to lack of suitable infrastructures and adequate expertise to undertake modern research in several biodiversity disciplines. The structures mentioned above which had the responsibility for coordinating research in agriculture and natural resources, including livestock, wildlife, fisheries, etc (sentence not complete). However, these institutions were destroyed by the civil crisis, and have not been reconstructed and upgraded for the task. Few NGOs (FFI, CI, SDI, and EFA) are undertaking biodiversity research programs.

## **Existing Programmes and Responsibilities**

Biodiversity conservation, management, and sustainable use in Liberia are undertaken by various stakeholder institutions based upon their mandates.

The Wildlife and National Parks Law came into force in 1988. This law compliments the Protected Forest Area Network Law, which was passed along with the Mount Nimba Nature Reserve and the Sapo Park Act in October 2003. The current protected area system consists of one protected area and five proposed protected national parks and nature reserve under the supervision of the Forestry Development Authority. These areas cover a total land area of 533,887 hectares, which is about 30% of the land area. They include: Cestos/Sankwein, Grebo, Wenegizi, Wologizi and Lake Piso.

## **Major Stakeholder Organizations**

Biodiversity conservation is a cross-sectoral responsibility involving both public and private institutions. The major biodiversity institutions are the EPA, FDA, MLME, MOA, and their technical units.

## **Existing Information and Database**

The central pool for environmental and biodiversity information is located at the EPA, which is the coordinating and supervising institution for all environment related activities. In addition, the NBSAP and the National Biosafety Framework Projects are to implement both the CHM and the BCH programmes respectively. The CHM will contain information on the status and trends of biodiversity in Liberia and management plans; while the BCH will provide information on the nature and trends of biotechnology and Biosafety programmes.

Most sectoral institutions have their own database systems where critical/relevant information are sourced. A GIS, as well as, electronic communication systems are also available, where and how useful they have been in being good tools for decision making).

## **Instruments, Policies and/or Non-Regulatory Mechanisms:**

Environmental governance and protection, and the need for the conservation and sustainable use of natural resources were not a high national priority before 1992, when the World Summit on the Environment and Sustainable Development took place in Rio de Janeiro. Today, however, several legislations are in play. They include: general environmental legislations, public health legislations, agriculture (quarantine and livestock) production legislations, and relevant international conventions on the environment.

**Natural Resource Management Specific Legislations:** The 1986 Constitution of Liberia vests all natural resources in the state, which in turn ensures that the resources are utilized for the enjoyment of all its citizenry

through appropriate legal, administrative and institutional arrangements. Key legislations are the Environmental Protection & Management Law, the National Environmental Policy, the Act Creating the Environmental Protection Agency (2003), New National Forestry Law (2000), New Mineral and Mining Laws(2000),the Public Health Law (1976), Forestry & Wildlife Law (1988) and the City Ordinances of the City of Monrovia (1975).

**General Environmental Legislations:** The environmental legislative issues relevant to natural resources management are treated in the National Environmental Protection and Management Law (2003), the Zoning Act of the Ministry of Internal Affairs (1957), the National Environmental Policy (2003), and international conventions. (need to combine the above 2 paras into one)

**Land Tenure and Land Use Legislation:** The absence of a clear land use policy is one of the major threats to biodiversity conservation in Liberia. The Zoning Law (1957) recognizes traditional/customary land tenure arrangements, and requires that land used by indigenous communities be governed and regulated by the customary codes of the area (isn't this enough? and why?).

Between 1957 and present, several important legislations were enacted: The Zoning Law of the Ministry of Internal Affairs, the Zoning Act of the City of Monrovia, the Natural Resources Law, the New Mineral and Mining Law, the New National Forestry Law, the Environmental Protection and Management Law, and the Liberia Water Resources Act (repetitive). These acts/laws sought to control and regulate the use of land, and to shape the physical and socio- economic development policies of the country. A clear Land Use Planning and Land Policy are not available (by name may be but by objective there is the zoning plan and the other various acts).

**Public Health and Production Control Legislation:** The Public Health Law (1956/1976) covers issues such as: Public Nuisance; Housing and other structures; Water Pollution Control; Sewage; Food, Beverages and Food Establishments; Health Standards of Public Institutions. Other Public Health-related laws include: the Traffic Law (1972), Plant & Animal Quarantine Acts, (1971), and the Environmental Protection Legislations, 2002/2003.

**International Conventions and Agreements:** The Republic of Liberia is party to 16 important international conventions and agreements of relevance to environmental management generally, and biodiversity conservation and sustainable use in particular. (useful to provide the list of these agreements in the Annex)

**Past and Present Capacity Development Initiatives**

Biodiversity conservation and management in Liberia currently cuts across various sectoral institutions, including the Forestry Development Authority, Ministry of Agriculture, Bureau of Maritime Affairs, Ministry of Lands, Mines & Energy, Ministry of Health & Social Welfare, Ministry of Internal Affairs, University of Liberia, and the Environmental Protection Agency. These institutions have serious capacity constraints: They lack adequate infrastructure, logistics, equipments, and manpower to fully execute their mandates (we should not introduce conclusions here, continue with describing the situation only). Past capacity initiatives under some of these institutions are as follows:

- a) The Forestry Development Authority operated a Forestry Training Institute in Western Liberia prior to the civil crisis. It was responsible for training middle-level forest technicians; is it still on?
- b) The Ministry of Agriculture operated the Central Agriculture Research Institute where technicians were trained to assist farmers in modern techniques of farming practices; is it on? And how operational is it now?
- c) The Ministry of Health & Social Welfare trains Environmental and Occupational Health Personnel amongst other professionals at the Tubman National Institute of Medical Arts to address basic sanitation, waste management, and food and water quality control issues. It does have a college level program in place.
- d) The Bureau of Maritime Affairs operated the Maritime Training Institute in Marshall City, Margibi County where its technicians were trained;
- e) The College of Agriculture and Forestry/University of Liberia continues to provide training in forestry, agriculture, animal husbandry and related disciplines. It is the only institution of the above, which has a structure (although seriously damaged) and is still operating. Due to constraints, initiative to compile compendium of experts in each institution has been slow. The Civil Service Agency does not have current and adequate statistics of personnel in each institution;
- f) The Environmental Protection Agency is a newly created institution of government. It has been conducting series of workshops to build capacity through projects assistance provided by GEF/UNDP/UNEP. It trained 31 persons locally in Environmental Impact Assessment in 2001, and 2 in 2003 in Accra, Ghana. It has also developed a curriculum to establish a College of Environmental Science at the University of Liberia.

## **2.1.2 THE CONVENTION ON CLIMATE CHANGE**

### **Institutional Framework and Responsibilities Of Major Stakeholders**

(very weak section, we do not know whether this is a recommendation or the reality; i.e the existing situation?), Again should start with describing the most critical climate change issues affecting Liberia, then description of existing efforts to address those issues including analysis of Liberia obligation under the UNFCCC and its existing strategy to respond to it. Details on acts, projects, teams, etc can be annexed)).

The report on the Thematic Area of Climate Change recommends that to enable effective implementation of the convention, it is necessary to establish a National Coordination Committee. The project (which project?) will also have two secretariats: UNFCCC and IPCC; a Thematic Expert Group, and four task teams: A Task Force on Mitigation; Task Force on Vulnerability and Adaptation; Task Force on Greenhouse Gases Inventory and Task Force on Cross-cutting Issues. As with the CBD, the NCCC will report directly to the Environmental Protection Agency, the GEF Focal Point, and lead agency on the environment.

The NCCC and the Task Teams will be multi-disciplinary. They will comprise representatives from government agencies, non-governmental organizations, private sector institutions, civil society and academic institutions. The NCCC will be mandated to implement the UNFCCC in Liberia. Its responsibilities and roles will include:

- Creation and enhancement of awareness on Climate Change and related socio-economic and environmental issues;
- Inventorization and report on sources and sinks of greenhouse gas emissions;
- Assessment and reporting on the options and measures to mitigate greenhouse gas emissions;
- Assessment and reporting on the coordination of institutional framework as it relates to climate change;
- Assessment and reporting on the impact of climate change on the economy and social development;
- Assessment and reporting on the options and measures necessary to adapt to climate change; and,
- Conducting research on climate variability and climate change.

The roles and responsibilities of all agencies involved in the implementation of climate change activities at the national, regional and global levels are to be coordinated by the NCCC, with the Meteorological Section, Liberia Hydrological Survey (LHS), Department of Mineral Exploration and Environmental Research, Ministry of Lands, Mines & Energy taking the lead coordination role.

Coordination of the roles and activities of each agency will be at the meetings of the NCCC. The quarterly meetings will determine the expertise available within the NCCC and assign roles and responsibilities to qualified agencies.

## **Research and Assessment Programs and Role Of Different Sectors of Society**

**The Government of Liberia (GOL/UNEP-GEF) National Inventory Study (Phase I):** With UNEP-GEF, financial support, Liberia has prepared its first report to the UNFCCC Secretariat on the Inventories of Greenhouse Gases, Sources and Sinks in Liberia since October, 2004.

**Stocktaking on Climate Change Vulnerability and Adaptation (phase I):** In 2004, the Liberian Government with the financial assistance of UNEP-GEF carried out stocktaking on Climate Change Vulnerability and Adaptation on various sectors of the environment. The study involved extensive surveys wherein views were sampled from the population at random localities regarding apparent effects of climate change on biodiversity, on energy demand, and flooding. Results of the stock-taking indicated that monitoring and qualitative studies need to be carried out to determine the actual effects of climate change on the environment in Liberia (could have been very useful if this study came up with at least indicative trends of climate change impact rather than saying the study recommended to conduct another study!).

**Existing Data and Information:** Data and information relative to climate change in Liberia are scanty and unconsolidated. Meteorological data are collected and maintained by some private agricultural companies as well as the National Airport (Roberts International Airport). However, these data have not been consolidated/developed into databases for easier retrieval.

## **Instruments, Policies and/or Non-Regulatory Mechanisms**

(since legal, policy and institutional frameworks for the conventions are interconnected and to avoid duplication of information, I suggest that we have only one section on the overall macro policy environment. Presenting it in this way will help the reader in understanding the gaps and draw initial conclusions of capacity support directions)

**Macro-Economic Policy and Strategy:** The Macro-economic Framework remains essentially a free market economy, primarily to create an enabling environment for private sector-led growth development strategy. There are, however, underlying structural inadequacies and weaknesses of the economy, which continue to limit private sector involvement. In order to deal with this, and to create the need for a national sense of purpose and

direction in prioritizing its socio-economic development agenda, the Government of Liberia formulated the Result-focused Transitional Framework, the NBSAP, and the Millennium Development Goals to transform the country into an improved and socio-economically viable society by 2015.

## **Sectoral Trends, Policies and Initiatives**

**Agriculture:** the main thrust of strategy for an environmentally friendly agricultural system is tackling issues such as environmental degradation and depletion; safe and effective pest management regime; use of improved inputs, and addressing decreasing farm-labor supply resulting from rapid increase in rural-urban migration

**Fisheries (why fisheries brought here under CC and not under BD?):** pursuant to the fishery laws, key strategies have been formulated to ensure sustainable management of this sector. These include:

- Robust enforcement of fishery regulation;
- Effective monitoring of the Marine and Coastal Zone so as to curtail over exploitation of fish stock; and,
- Conduct of breeding ground surveys and periodic study of migration habitats in response to artificial and natural disturbances.

**Energy:** The main energy resource base of Liberia includes electricity, petroleum products, fuel wood, charcoal and liquefied petroleum gas. Much consideration is being given to restoration of centralized electricity power generation, thus reducing frequent outage through increased efficiency in the utility sector, and promotion of private sector participation to engender provision of affordable tariffs.

**Forestry:** The laws and policies seek to ensure sustainable use of the forest resources. Key issues that are considered include:

- Illegal logging;
- Reforestation and afforestation;
- Community forest management;
- Research in conservation of forest resources;
- Establishment of protected areas; and,
- Conduct of education and awareness programs/activities of forest resource conservation and management

**Water Resources:** The Water policies of Liberia are inadequate and scanty due to their sectoral nature, and the lack of a more coordinated mechanism prior to the enactment of the Environmental Protection and Management Law. The Liberia Water & Sewer Corporation, with the assistance of donor partners, notably, the European Union and UNICEF, is currently working to repair the public water system destroyed as a result of the civil crisis, as well as working with sector partners to update policies, strategies and regulations of the water resource sector.

The major policy concerns to biodiversity (section talks about Climate Change and not BD?) are: development of a comprehensive water development policy framework, which includes institutional strengthening of public education and awareness mechanisms, and greater community involvement in conservation and research in water programs. The Environmental Protection and Management Law provide such a framework and address all the important concerns of the CBD.

**Waste Management:** The present policy emphasis on waste management is to relocate old solid waste dumpsites to more appropriate sites and create land fills to better manage the ever-increasing solid wastes being generated in the country. Supporting policies and legislations include: The Environmental Protection Act (2003); the Public Health & Safety Law (1956/1976); National Health Policy (2001), the Zoning Laws (1978] the City Ordinances (1975).

### **Past Capacity Development Initiatives**

Liberia's First National Communication under Article 4 and 12 of the UNFCCC is not due until September 2005, but Liberia has already initiated the groundwork for its communication by completing three consultancies, they include: the Stocktaking and Stakeholders Consultation on Anthropogenic Emissions of Greenhouse Gases (GHGs) in Liberia in September 2004; Climate Change Vulnerability and Adaptation Stocktaking under NAPA multidisciplinary integrated assessment in November 2004; lastly, the identification of Climate Change Adaptation Needs and Barriers was concluded in March 2005. It is currently assessing the economic impact and cost assessment in the various sectors. The main chapters of the communication will include among others, the greenhouse gas inventory; vulnerability to the coastal area; vulnerability of agriculture to Climate Change, etc.

### **2.1.3 CONVENTION TO COMBAT DESERTIFICATION/LAND DEGRADATION (UNCCD)**

#### **Institutional Framework and Capacities**

Liberia acceded to the convention in 1998. Since that time, only the National Project Secretariat and the National Coordinating Committee have been established under the Environmental Protection Agency. This has been due to previous difficulty by the GEF Council to recognize Land Degradation as a major environmental issue (GEF not to blame; this is a national commitment once the country signs on the convention).

Existing institutions that have functions relative to Land Degradation consist of line ministries and agencies of government, and parastatals. Their efforts

are being complemented by bilateral and multilateral development partners, NGOs, Civil Society, and Community-Based Organizations.

With the above arrangement, it is clear that responsibility for conservation, development and management of natural resources cuts across various government ministries, agencies and NGOs. These institutions function at all levels of the society and continue to interact with one another to enhance the integration of sectoral efforts and minimize conflict of interest and duplication in the use of resources. This collaborative/coordination effort can be seen at policy, sectoral and operational levels, especially at the Policy Council, County and District levels.

### **Major Stakeholder Organizations**

Government institutions and non-governmental organizations are the key players-implementing various programmes and projects, supported by external financial institutions.

The ministries and agencies in the sector, including their technical departments are responsible for the implementation of the UNCCD. They include: Ministries of Lands, Mines & Energy, Agriculture, Health & Social Welfare, Public Works; the Forestry Development Authority and the Environmental Protection Agency. These institutions implement their various programs through their technical structures.

NGOs are involved considerably in natural resources management in recent times. It is estimated that nearly 70% of the overall external development support to the sector is channeled through and administered by NGOs. Other community-based organizations are conducting local initiatives on land degradation control.

### **Existing Programmes and Responsibilities**

The ministries and agencies listed above influence strategic policy decisions relative to Desertification/Land Degradation, and control associated projects and programs. These policy decisions and proposals for investment are executed by their technical departments through programmes, projects and action plans developed to improve both the production environment and the natural resource base. The key programmes include:

- Crop Development Service Programme
- Livestock Services Development Programme
- Cooperatives Development Programme
- Water Resources Management Programme
- Protected Parks and Wildlife Management Programme
- Forestry Resources Development Programme
- Fisheries Resources Development Programme
- Environmental Management Programme
- Rural/Community Development Programme

## **Instruments, Policies and/or Non-Regulatory Mechanisms**

**Macro-Economic Policy:** The Macro-economic Framework remains essentially a free market economy, primarily to create an enabling environment for private sector-led growth development strategy. There are, however, underlying structural inadequacies and weaknesses of the economy which continue to limit private sector involvement. In order to deal with this, and to create the need for a national sense of purpose and direction in prioritizing its socio-economic development agenda, the Government of Liberia formulated the Result-focused Transitional Framework, the NBSAP, and the Millennium Development Goals to transform the country into an improved society by 2015. (as commented before, need to consolidate these sections into one for the three convention areas)

**Agriculture and Natural Resources Policy Environment:** The broad national objectives and priorities for development of the Agriculture and Natural Resources Sectors, including sustained food security are to restore the vital role of the Agriculture Sector as the driving force for economic development, adequate food supply, stability of production, and access to food by all sector of the populace; develop and disseminate improved technologies into the farming systems, and develop field tested interventions.

In order to deal with widespread poverty and food insecurity, which are direct causes of natural resource depletion and degradation, the government has articulated the below sub-sectoral natural resources management policy objectives:

- Horticulture Policy Objectives
- Livestock Policy Objectives
- Fisheries Policy Objectives
- Land and Water Resources Policy Objectives
- Forestry Policy Objectives
- Wildlife Policy Objectives

**National Food Security Policy Environment:** Both the Millennium Development Goals and the NBSAP have within their policy commitment the goal of achieving food security as a national priority. The main concern of national food security has been to improve the nutritional status of the population generally, and rural areas in particular, through increased domestic production of variety of foodstuffs, and to increase the consumption of locally produced foodstuff as well as variability in food prices overtime. Key constraints, however, remain. They include: overall national income level and earning capacity, domestic marketing system, prevailing social norms and dietary habits, domestic production systems, and the weight of international food markets etc.

## **Environmental Policy Framework**

Liberia is yet to develop a National Environmental Action Plan, but it has developed a National Environmental Policy (repetitive). The policy was necessary to address the issues of lack of coordination and fragmentation of environmental programs by sectoral institutions. The government's environmental policy was necessary to emphasize the harmonization of sectoral policies and sustainable economic growth and development consistent with the improvement of the quality of life of the present generation without compromising the rights of future generations.

## **The Legal Framework of Natural Resource Management**

Liberia has four legal framework/instruments affecting natural resource management. They include – general environmental legislations, public health legislations, Agriculture (Quarantine and Livestock) Production Legislations, and international conventions.

## **Natural Resources Management-Specific Legislations**

The 1986 Constitution of Liberia vests all natural resources on the state, which in turn ensures that these resources are utilized for the enjoyment of all its citizenry through appropriate legal, administrative, and institutional arrangements. Key legislations are: The Environmental Protection Act, National Environmental Policy, Environmental Protection and Management Law (2003), New National Forestry Law (2000), New Mineral and Mining Law (2000). Where is the Zoning Act?

## **General Environmental Legislations**

The environmental legislative issues relevant to natural resources management are treated in the National Environmental Protection and Management Law (2003), the Zoning Act of the Ministry of Internal Affairs (1957), the National Environmental Policy (2003), and international conventions.

## **Land Tenure and Land Use Legislation**

There is currently no land tenure and land use policy. However, the Zoning Law of the Ministry of Internal Affairs recognizes customary land tenure arrangements, and states that the use of land by indigenous peoples be governed and regulated by the customary laws of the community. Thus far, Liberia has five pieces of legislations that address land use issues; what are they? Are they the list below?

Between 1957 and present, several important legislations were enacted: The Zoning Law of the Ministry of Internal Affairs, the Zoning Act of the City of

Monrovia, the Natural Resources Law, the New Mineral and Mining Law, the New National Forestry Law, the Environmental Protection and Management Law, and the Liberia Water Resources Act. These acts/laws sought to control and regulate the use of land, and to shape the physical and socio-economic development policies of the country. A clear Land Use Planning and Land Policy are not available.

### **Public Health and Production Control Legislations**

The key natural resources management related legislations include: The Plant and Animal Quarantine Act (1971), Public Health and Safety Law (1956)/1976), the City of Monrovia Zoning Act (1958), the Water and Sanitation Act (1980), and the Environmental Protection and Management Law (2003).

### **Past and Present Capacities Development Initiatives**

The Ministry of Agriculture, in order to boost productivity, ensure efficiency and to minimize land degradation in the agriculture sector, has formulated numerous strategies among which are: decentralization of agricultural programs, construction of farm to market roads, development of agricultural extension systems, and promotion of the use of modern farming methods. However, the center responsible for training, CARI, was severely damaged by the war, and is yet to be rehabilitated due to financial constraints. Training is, therefore, at a standstill.

In its agro-forestry program, the Ministry of Agriculture is discouraging the use of shifting cultivation and is encouraging swampland cultivation. The agro-forestry projects which will operate in the rural parts of the country will lay out swamplands, assign plots to local farmers, teach modern farming techniques, and provide farm implements.

The Ministry of Agriculture (MOA) has also undertaken several tours of various vulnerable plant disease prone areas and taken specimen for analysis. Results from tests conducted on such samples could become important database for future disease identification and control for farmers.

The Ministry of Lands, Mines & Energy is responsible for monitoring all renewable energy activities in the country. The mandate includes: research, development and promotion of renewable energy technologies in wind, solar, and biomass energy.

The University of Liberia has academic training programmes in agriculture, forestry, engineering, science, etc. The relevant programs at the University include:

- Agriculture and Forestry
- Engineering
- Environmental Science
- Socio-Economic Development Programs

The Forestry Training Institute was responsible for training middle level forestry personnel for nine months. Training was also conducted at CARI for agricultural extension workers.

## **2.2 THE IDENTIFIED, CONFIRMED OR REVIEWED PRIORITY ISSUES**

### **2.2.1 Convention on Biological Diversity**

**This is a very long list of both environmental and capacity building issues; we anticipate that this list is shortened via credible prioritization process that depends on agreed criteria. Priorities should reflect national environmental context and relevant convention obligations/commitment to conserve global environment. And before going into only listing the issues, there must an introduction to how we came to this list; what considerations given? Brief & concise)**

The analysis of the thematic profile of the CBD revealed a number of important capacity issues. The following summarizes the identified, confirmed, or reviewed priority issues within the thematic areas:

#### **Forest Biodiversity**

**(these might be third level of underlying causes; immediate can be clearing land for agriculture, deforestation fo timber production, fuelwood overutilisation, etc). Reading through the list of issues did not give me the impression that there was rigorous analysis of issues and root causes; statements are very generic and could have been written without doing NCSA)**

Underlying causes of forest biodiversity loss poorly understood, as well as well as measures to mitigate them;

Absence, and/or lack of, understanding of the ecosystem approach to forest management including its sustainable management issues;

Poor forest management systems, as well as poor enforcement of forest laws/policies.

#### **Coastal and Marine Biodiversity**

- Lack of an integrated or ecosystem approach to sustainable use of coastal and marine biodiversity;
- Degradation and over-exploitation of marine and coastal resources;
- Limited initiatives in aquaculture (why Liberia needs aquaculture when it has some 500km of coastline and rich fisheries?;
- Inadequate, and/or lack of marine and coastal protected areas (why is it important? Is the lack of protected area is the root cause?;
- Lack of data on the taxonomy, status and biological characteristics of fish species and habitats;
- Low level of community involvement in fisheries management;
- Over exploitation of commercial fish species.

### **Wildlife and Protected Areas**

Lack, and/or inadequate wildlife policy and protected area management plans;

Lack of adequate capacity for wildlife management;

Inadequate protection for critical species, habitats and heritage;

Inadequate data on the status and trends of wildlife and habitats;

Inadequate/lack of community and private sector initiative in protected area management;

Lack of/poor management of buffer zones around protected area.

### **Agricultural Biodiversity/Crops**

- Lack of good farming practices that conserve agricultural biodiversity;
- Poor farming practices leading to loss of agricultural biodiversity;
- Lack of/inadequate scientific information to orientate agriculture towards sustainable patterns;
- Neglect of minor crops, medicinal plants and relative of wild crops;
- Lack of knowledge of the impact of different policies, agricultural practices and technologies on agricultural biodiversity;
- Poor /inadequate promotion of biodiversity enhancing agricultural system and practices.

### **Agricultural Biodiversity/Livestock**

Inadequate supply of livestock products (poultry, pork, draft power, meat etc);

Over grazing and poor rangeland management practices;

Inadequate supply of feed for livestock;

Predominance of extensive livestock (low input) production system;

Lack of clear policy, and institutional frameworks for the management of inland water ecosystems.

### **Identification, Monitoring and Taxonomy**

- General lack of, or weak capacity for assessment, identification and monitoring of components of biodiversity (personnel and infrastructure);
- No comprehensive baseline data, criteria and indicators by which biodiversity can be measured and monitored;
- Lack of biodiversity assessment and monitoring programmes and systems;
- General lack of taxonomic expertise at the national level for biodiversity characterization, conservation, and sustainable use.

### **Sustainable Use Issues**

- Over exploitation of biological resources;
- Lack of efficient biodiversity harvesting and use, methods and practices;
- Poor fisheries harvesting, processing and utilization methods and practices;
- Lack of data on fisheries resources (age, size, structure etc) and over harvesting of fisheries by foreign vessels;

- Lack of effective enforcement of the laws; especially with regards to wildlife and poor understanding of biodiversity conservation and sustainable use, issues and practices.

#### **Incentive Measures**

No explicit strategy, policy or programme on incentive measures for biodiversity conservation and sustainable use;  
Lack of a national incentive programme;  
No capacity development/building in incentive measures.

#### **Research and Training**

Inadequate/poor biodiversity related training activities;  
Lack of data on the structure and function of ecosystems;  
Lack of relevant socio-economic and policy planning capacity and data.

#### **Public Education and Awareness**

- Ignorance, illiteracy and lack of awareness which threaten biodiversity;
- Inadequate environmental education campaign efforts; and
- Inadequate biodiversity education.

#### **Biosafety/Biotechnology**

Limited level of awareness of the impact of products of biotechnology on human health and the environment;  
Inadequate comprehensive, legislative and policy framework to guide the use of biotechnology in the country;  
Inadequate national institutional structure to regulate and monitor the use of biotechnology and Biosafety issues.

#### **Alien/Invasive Species**

- Poor understanding and information on status of invasive/ alien species and their impact on biodiversity, as well as, the methods to eradicate them;
- Lack of a comprehensive legal and legislative framework on invasive/ alien species including non-enforcement of existing sectoral laws.

#### **Access and Benefit Sharing**

- Lack of regulatory regime on ABS;
- Lack of national capacity to implement a regulatory regime on Access and Benefit Sharing (ABS);
- No legislative policy or administrative measures to facilitate ABS in the use of genetic resources, as well as, lack of ABS negotiation skills.

### **2.2.2 UN Framework Convention on Climate Change**

The following summarizes the sectoral issues identified, confirmed and reviewed as priority for the implementation of the Climate Change Convention in Liberia

### **Agriculture (Crop Production Sub-Sector)**

- Integrated Crop/Livestock Farming;
- Methane recovery from abattoirs and peri-urban dairy farms;
- Waste recycling for agricultural production through composting;
- Efficient management of soil and water so as to reduce runoff and nitrogen; leaching, and also improve soil conditions to enhance crop production;
- Contour farming and construction of dykes, crop residue farming, fallowing and crop rotation for the maintenance of soil structure;
- Crop cultivar screening, training of rural development agents and on-farm adaptive research on crop management practices.

### **Coastal Zone of Liberia**

- Management of the Sand Bar along the coastal ties;
- Construction of dykes to protect villages bordering the wetlands and swamplands from seasonal flooding;
- Rehabilitation of the **groyne** systems;
- Construction of revetments, seawalls/bulkheads and breakwater systems in order to protect economically and culturally important areas;
- Development and enactment of appropriate regulations and policies relevant to construction, urban growth planning, and wetland preservation and mitigation; and
- Development of a Coastal Zone Management Plan.

### **The Energy Sector**

- Promote energy efficiency and reduce energy use by applying basic house keeping and retrofitting;
- Promotion and use of renewable energy (Solar Home Systems);
- Replacement of firewood and charcoal as a source of domestic energy supply;
- Revitalization and promotion of river transport.

### **Fisheries Sector**

- Introduce biological monitoring;
- Enforce fishing control measures;
- Promote aquaculture;
- Modify and strengthen fisheries management policies and institutions;
- Strengthen and expand catch-monitoring activities;
- Preserve and restore essential habitats and promote fisheries conservation and environmental education;
- Foster international and interdisciplinary research; and
- Use hatcheries to enhance natural recruitment.

### **Forests and Wetland Ecosystems**

Establishment of plantations, National Parks (NP) and Protected Areas (PA);

Reforestation of landscapes with fragmented forest areas;

Conservation of existing carbon pools in forests;

Expansion of carbon stocks in forest ecosystems;  
Switching from fossil-fuel-based to biomass-based energy products;  
Introduction and promotion of incentive programs;  
Development of Seed Banks; and  
Promotion of effective management practices, and flexible criteria for intervention.

**Rangelands and Livestock**

- Active selection of plant species;
- Control animal stocking;
- Promote and encourage new grazing strategies.

**Waste Management Sector**

- Landfill/dump site management;
- Alternative waste-management strategies;
- Wastewater treatment;
- Aerobic Treatment;
- Recovery and utilization of methane from anaerobic digestion of wastewater or sludge.

**Water Resources Sector**

- Regulation or abstraction of freshwater from the river to maintain a delicate equilibrium between flow and saline intrusion;
- Introduction of legislative measures such as licensing and permits for withdrawal of river water for irrigation;
- Improvement of the efficiency of existing irrigation systems and introduction and encouragement of the use of more efficient irrigation systems such as sprinkler and drip irrigation systems;
- Promotion of water harvesting techniques;
- Development and utilization of better planning tools such as aquifer simulation models and a predictive/operational saltwater intrusion models;
- Construction of dikes or small dams in most of the smaller streams of the river; and
- Improvement of tidal water level monitoring and water resources assessment capability of the water resources institutions.

**Cross-Cutting Issues (education, training and public awareness, research and systematic observations)**

- Incorporate climate change issues in curricula at the elementary, high school and college levels;
- Use mass media techniques such as television/video, radio, print media, traditional communicators and extension agents in well designed campaigns aimed at enhancing public awareness;
- Develop educational and sensitization materials to enhance public awareness on climate change;
- Enhance the capacity of the members of the NCC through training in economic assessment of mitigation and adaptation measures and projects;

- Realign current practices and policies to take into account climate variability, the projected climate change and sustainable economic and environmental development and management;
- Conduct institutional reforms and mainstreaming of climate change into national development programmes;
- Replace and upgrade conventional, hydrological, and meteorological equipment;
- Rehabilitate and expand existing station networks for more representative monitoring of weather, climate and other environmental issues;
- Provide better and bigger capacity data processing and storage equipment for the upgrading, networking and interconnectivity of the various data base systems of the Ministry of Lands, Mines & Energy and other collaborating institutions; and
- Strengthen the human resources and capacity of the institutions involved in collection, processing and maintenance of data and information related to meteorology, hydrology and climatology.

### **2.2.3 The Convention to Combat Desertification/Land Degradation**

The following summarizes the sectoral issues identified, confirmed and prioritized under the national thematic areas within the Convention on Desertification/Land Degradation:

#### **Forestry and Wildlife**

- Reserve, maintain and develop forest land resources covering at least **30%** of the total land area;
- Ensure that **75%** of the forest cover is managed by involving local communities and private sector;
- Ensure the development and effective application of forest policy and implementation tools;
- Establish wildlife protected areas covering at least **15%** of the total land area for the conservation, protection, management and sustainable use of flora and fauna;
- Improve the structure and strengthen the institutional capacity of the Department of Parks and Wildlife Management/FDA.

#### **Agriculture, Soil and Water Conservation**

- Arrest and reverse inappropriate and destructive land use practices;
- Arrest and reverse unsustainable crop production practices, which characterize the prevailing agricultural system.

#### **Livestock and Range Management**

- Keep and maintain livestock production in balance and at level consistent with the limitations of the rural resources to avoid overstocking and reduce overgrazing and environmental degradation.

#### **Population and Social Dimensions**

- Restore and maintain a balance between population growth rate and the use of natural resources;

- Alleviate poverty through improved food security and increased economic growth and development.

#### **Institutional Issues**

- Establish effective institutional structures and legal basis for the implementation of the NAP within the frameworks of the NEAP, existing institutions and their legal provisions and, the proposed reform of the local government system and decentralization programme;
- Promote and support wider participation of the population including natural resource users, the government, the civil society and the NGO community in the implementation of the NAP at national, divisional and social levels;
- Strengthen or build adequate human and financial resources and institutional capacity for the implementation of the NAP;
- Establish an effective monitoring mechanism to identify, assess and monitor on a regular basis the impact of the NAP on the nature and status of, and trends in the major causes of desertification/land degradation.

### **III. SUMMARY OF CAPACITY CONSTRAINTS AND OPPORTUNITIES FOR CAPACITY BUILDING IN THE THREE THEMATIC AREAS**

#### **3.1 Detailed Description of Capacity Constraints in the Thematic Areas**

Liberia's capacity for environmental management and the practice of sustainable development initiatives is grossly inadequate and unsatisfactory to be used as a framework for poverty alleviation/reduction and durable food security. This is reflected in the slow pace at which the three RIO Conventions are being implemented since their adoption. It is clear from this that the key capacity constraints for environmental management stem from a series of institutional, human resources, and structural inadequacies. These include:

- Inappropriate policies and legal instruments, and/or lack of effective regulatory mechanisms;
- Ill-defined responsibilities and poorly coordinated mandates of major institutions in charge of agriculture and natural resources management;
- Low level of involvement of industry, civil society organizations and interest groups in natural resource management particularly in research;
- Inadequate trained human resources coupled with virtual lack of technical capacity for skills development;
- Inadequate funding and equipping of public agencies and lack of motivations and incentive schemes for civil servants; and,
- Inability to enforce existing environmental laws.

The following depicts constraints specific to the three RIO Conventions at the individual, institutional and systemic levels:

### **3.1.1 Capacity Constraints in Biodiversity**

Analysis of the stocktaking exercise identified a series of capacity constraints that are counterproductive to the effective management and sustainable use of biodiversity. These constraints are discussed below with respect to the three capacity building levels.

#### **Capacity Constraints at the Individual Level**

A series of capacity issues and training needs were identified in the stocktaking exercise. These capacity constraints at the individual level include:

- Low and inadequate levels of education and training; especially, in analytical, scientific, and technical skills, and personnel.
- Ill-defined job requirements and misplacement of available human resources;
- Inadequate level of delegation of responsibility resulting to under-utilization of available skills and expertise which impacts negatively on production;
- Poor staff incentive structure resulting in low level of team spirit and productivity, as well as inadequate networking;
- Low level of enforcement of performance standards and merit system resulting to poor staff performance.

#### **Capacity Constraints at Institutional Level**

Almost all institutions responsible for biodiversity conservation and sustainable use lack the necessary capacity to effectively carry out their work. These inadequacies include: lack of expertise in core disciplines, inadequate financial resources, equipment and necessary supplies. The key capacity constraints can be itemized as:

- Lack of clearly articulated strategic plan with concise focus on specific biodiversity issues;
- Inadequate staffing level and poor organizational structure resulting in low institutional productive capacity;
- Lack of infrastructure and the requisite equipment and supplies to adequately address pressing biodiversity problems;
- Inadequate financial resources resulting in inadequate maintenance, operation, and efficient use of equipment/facility.

The foregoing problems have constrained the capacities of institutions to fulfill the important institutional functions of:

- Biodiversity assessment and monitoring in the different ecosystems;
- Conduct taxonomic inventory;

- Carry out risk assessment and management in biotechnology;
- Develop regulation and enhance negotiation skills for ABS; and,
- Access information for effective biodiversity conservation.

### **Capacity Constraints at System Level**

The key capacity constraints of systemic nature in the management and sustainable use of biodiversity in Liberia are inadequate policy and legal framework, low level of involvement of civil society in biodiversity management and, inappropriate and inadequate natural resource management systems.

Recent policy and legal reforms leading to the enactment of the Environmental Protection and Management Law has greatly remedied the gap in the legal framework, which earlier characterized biodiversity conservation and sustainable use. However, given that biodiversity conservation is synonymous with natural resources management, the existence of inappropriate natural resources management legislation has important implication on the former.

Community and other important stakeholders (NGOs and CBOs) consultations at the various levels have resulted in raising the awareness of Liberians on issues of biodiversity conservation and sustainable use. Notwithstanding the apparent achievements in this area, there is need to reinforce and consolidate awareness creation activities at all levels of the Liberian society to bring about the much needed attitudinal change.

### **3.1.2 Capacity Constraints in Climate Change**

A number of capacity constraints critical to effective climate change management were identified in the stocktaking exercise. These constraints are individually detailed below at individual, institutional and system levels.

#### **Individual Capacity**

- Inadequate trained human resources to effectively manage the climate change sector;
- Lack of awareness on mitigation and adaptation options, as well as other issues on climate change;
- Absence of training opportunities in the core disciplines of climate change.

#### **Capacity Constraints at Institutional Level**

- The development of a comprehensive climate change action plan and integrated implementation strategy that takes into account the capacity building needs of the various institutions participating in climate change activities, particularly in research and training;

- Lack of education and training programmes, as well as, specialized skills or expertise in scientific and technical institutions concerned with climate change issues;
- Lack of efficient climate change monitoring;
- Lack of explicit policy and regulatory measures that adequately take into account climate change issues as sustainable development priorities;
- Inadequate national programmes aimed at reducing pressure on resources and enhance adaptive capacity;
- Lack of adequate public awareness and education mechanism to provide opportunities for meaningful public participation;
- Lack of financial resources to provide critical equipment required to facilitate data collection.

### **Capacity Constraints at the System Level**

Capacity constraints of systemic nature identified in the stocktaking include:

- Legal and regulatory issues affecting climate change;
- Lack of financial and skilled human resources, as well as the necessary infrastructure for effective climate change management.

### **3.1.3 Capacity Constraints in Desertification/Land Degradation**

A critical review of the capacity issues identified in the thematic assessment exercise revealed the following constraints under the Convention to Combat Desertification/Land Degradation. These constraints are defined at the three capacity building levels as follows:

#### **Capacity Constraints at Individual Level**

The key individual level capacity constraints for combating desertification/land degradation are identical to those in biodiversity management and sustainable use. They include:

- Inadequate trained human resources in core disciplines relative to land development;
- Lack of alternative sources of livelihood for rural dwellers to support conservation initiatives;
- Inadequate/inappropriate farming practices or technologies;
- Poor incentive structure resulting in low staff morale and motivation;
- Inadequate opportunities for networking;
- Poor forest management practices;
- Inadequate public awareness and education;
- Over-exploitation and/or poor harvesting of biological resources;.

#### **Capacity Constraints at Institutional Level**

All the institutions, especially at national and local levels, identified for involvement in the implementation of the UNCCD, lack adequate human resources, appropriate scientific and technical skills, and financial resources to implement the strategies of the NAP and the general requirement of the convention. These capacity constraints as in the case of the CBD, can be specified as follows:

- Lack of institutional capacities for combating land degradation;
- Lack of appropriate range management programs;
- Inadequate assessment and monitoring initiatives;
- Lack of data on biological and other natural resources;
- Inadequate financial resources to operate and maintain existing infrastructure/equipment in a functional state and effectively carry out important management functions such as regular programme planning, monitoring and evaluation;
- Lack of effective mechanism for information processing and sharing;
- Poor knowledge of indigenous/traditional conservation techniques/practices;
- Poor management of existing protected areas;
- Inadequate staffing level and poor organizational structure resulting in low outreach programmes for essential knowledge and technology transfer.

### **Capacity Constraints at Systemic Level**

The capacity constraints at systemic level in combating desertification/land degradation are essentially similar to those related to the management and sustainable use of biodiversity. These constraints are mainly associated with inadequate policy and legal framework, inadequate management /accountability framework, poorly structured economic framework, low and inadequate critical mass; and, ineffective national processes and relationships in sustainable development.

## **3.2 THEMATIC PROJECT OPPORTUNITIES IDENTIFIED FOR BUILDING CAPACITY**

A detailed review of the thematic assessments of the three Rio Conventions revealed that a total 69 capacity issues/constraints were identified confirmed, and prioritized by the National Stakeholder Validation Workshops. The thematic distributions of these issues/constraints are: 50 in the CBD, 3 in the UNFCCC and 16 in the UNCCD. Capacity building opportunities to address these constraints were developed and presented in capacity constraint matrixes for each convention under the three capacity building levels, (individual, institutional and systemic).The following presents the thematic project opportunities identified for building capacity under each of the three conventions as project proposals which will strengthen the overall capacities, both for national and global environmental management.

### **3.2.1 Thematic Project Opportunities for Building Capacity in Biodiversity**

Based on the 50 identified, confirmed, and prioritized capacity issues/constraints under the CBD, capacity building opportunities at the individual, institutional, and systemic levels were developed. The following provides a systematic presentation of these project opportunities as a project proposal:

**Project Title:** Building National Capacity to implement the CBD in Liberia

**Duration:** five (5) years

**Starting Date:** 2006

**Lead Agency:** Environmental Protection Agency (EPA)/Focal Point for CBD

**Collaborating Agencies:** FDA, MOA, MLME, MIA, CBOs, DDCs, UL, VDCs, NGOs and BWI.

**Goal and Objectives:**

The overall goal of the Project is to contribute to the achievement of the NBSAP Vision of creating a “Society in harmony with Nature” through the enhancement of national capacity to manage the conservation and sustainable use of biological diversity. Consistent with this overall goal, the primary objective of the project is to enhance the effective implementation of the NBSAP. The specific objectives are:

- To create and/or develop the requisite human resources in all the relevant fields and sectors for the effective implementation and monitoring of the NBSAP;
- To strengthen and/or create national institutional capacities to facilitate the effective implementation and monitoring of the NBSAP; and,
- To reform and rationalize the existing overall policy framework to create the necessary enabling environment for the effective implementation of the NBSAP on a sustainable basis.

**Implementation Approach/Activities**

The project will support the establishment and functioning of a Biodiversity Coordination Unit (comprising an Inter-Sectoral Committee on Biodiversity

(ISCB), Six Thematic Technical Advisory Teams, Planning & Research Teams and a Secretariat). The ISCB shall comprise at least twenty to thirty representatives from key relevant sectoral government departments, NGOs, the private sector and the local community groups. The Biodiversity Coordination Secretariat will comprise a coordinator; six programme officers, a secretary and one driver.

A series of short-term training courses will be organized within the country for different target groups. The key areas in which specialized training will be provided include, among others: taxonomy, biodiversity assessment and monitoring, integrated resource planning, ecosystem approach to resource management, protected area management, environmental economics and evaluation methods, policy analysis, design of incentive measures and information management. Scholarships will be provided to train a few specialists abroad.

The project will also help to enhance the institutional capacity of key government agencies and NGOs by providing them with the basic resource requirements. These will include literature and awareness materials, research equipment, computer ware, office supplies, transport and other key resources.

### **Project Components**

Consistent with its specific objectives and the three capacity building levels, the project will have the following strategy components:

- i. Training:- long and short-term training, seminars, workshops, refresher courses and networking;
- ii. Establishment and development of new institutions;
- iii. Provision of infrastructure/equipment to strengthen key institutions; and,
- iv. Review and investigation into the performance of the existing overall policy framework.

### **Indicative Budget**

The following summarizes the indicative budget for the project in terms of strategy elements and their associated activities and costs:

<b><u>ITEM</u></b>	<b><u>COST (in '000)</u></b>	
	US\$	LD Eq.
1. Training:		
1.1 Long-Term (2 cartographers, 3 taxonomists, 4 ecologists/botanists, 4 marine biologists, 3 natural resource economists, 2 biometricians /statisticians, 3 forest engineers, 3 silviculturists, and 3 wildlife biologists	1,232	73,920

1.2	Short-Term (2 specialized courses in Forest Biodiversity and 2 in Monitoring and Evaluation	112	6,720
1.3	Three Training workshop for NGOs, CBOs, and PVOs, customs officers, coastguards, plant & animal quarantine officers in biodiversity	30	1,800
1.4	Five (5) Refresher Training Courses for MDFTs	30	1,800
1.5	Eighteen (18) training courses) Training VDCs around nature reserves	36	2,160
1.6	Seminars and Workshops (4 per year x 5 years)	40	2,400
1.7	Networking (3 per year x 5 years)	75	4,500
	<b>Component Total:</b>	<b>US\$1,555</b>	<b>L\$93,300</b>

## 2. Establishment and Development of New Institutions

2.1	Provision of offices for a Biodiversity Coordination Unit	40	2400
2.2	Staffing of the Coordination Unit: six (6) programme officers, secretary and a driver)	120	7200
2.3	Office furniture and supplies	15	900
	<b>Component Total:</b>	<b>US\$175</b>	<b>L\$10,500</b>

## 3. Provision of Infrastructure/Equipment to Strengthen Key Institutions

3.1	Purchase five (5) vehicles	75	4,500
3.2	Purchase computers, photocopiers and printers, Training materials and equipment	30	1,800
3.3	Rehabilitate/reconstruct facilities	450	27,000
	<b>Component Total:</b>	<b>US\$555</b>	<b>L\$33,300</b>

## 4. Review and Investigation

4.1	Review of the structures of MIA, MOA, MLME, FDA and EPA with a view of determining their optimum staffing level	15	900
4.2	Review of the National Environment Legislations	10	600
4.3	Development of public awareness programmes	20	1,200

4.4 Implementation of the public awareness programmes	20	1,200
4.5 Development, revision and/or adopting existing guidelines for ecosystem approach to biodiversity	15	900
4.6 Review of biodiversity related policies, legal and administrative measures with a view to making them biodiversity responsive	10	600
4.7 Develop scientific research policy	10	600

**Component Sub-total:** **US\$100 L\$6,000**

**Total Project:** **US\$2,385 L\$143,100**

### **3.2.2 Thematic Project Opportunities for Building Capacity in Climate Change**

Based on the three (3) identified, confirmed and prioritized issues and constraints under the UNFCCC, capacity building opportunities at the three capacity building levels were developed. These capacity building opportunities are presented hereunder as a project proposal.

**Project Title:** Enhancing the National Capacity to Implement the UNFCCC

**Duration:** Five (5) years

**Start Date:** 2006

**Lead Agency:** EPA, Ministry of Lands, Mines & Energy (MLME)/Proposed Focal Point for UNFCCC

**Collaborating Agencies:** NGOs, CBOs, Ministry of Education, CARI, LEC, FDA/Wildlife, Ministry of Agriculture, Ministry of Health & Social Welfare, MOT, RIA, EPA, UL and the private sector.

#### **Goal and Objectives**

The overall goal of the project is to enhance national ability to contribute to the stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate change system. Consistent with this overall goal, the primary objective of the project is to build the national capacity to implement the climate change convention and its protocol. The specific objectives of the project are:

- i. To strengthen human resources and capacity of institutions involved in the collection, processing and maintenance of data and information related to meteorological, hydrological and climatological element and phenomena;
- ii. To replace and upgrade the conventional equipment to digital equipment for maximum effect, and also to provide continuous recording of the meteorological, hydrological and climatological elements and phenomena;
- iii. To rehabilitate and expand the existing station networks for more representative monitoring of weather, climate and other environmental conditions;
- iv. To provide better and bigger capacity data processing and storage equipment for the upgrading, networking and inter connectivity of the various data systems of the Ministry of Lands, Mines and Energy and other collaborating institutions.

### **Implementation Approach/Activities**

The project will support the effective functioning of UNFCCC secretariat and NCCC through training in negotiation skills. It will train two (2) members of the secretariat and 5; two (2) government, one (1) NGO, one (1) CBO and one (1) private sector representative) members of the NCC in negotiation skills locally and regionally.

The project will support the implementation of the National Climate Change Action Plan and Strategy (NCCAPS) by developing education and training programmes in specialized skills through support to academic and technical institutions like the University of Liberia, CARI, and LEC. Train four (4) members of the Inventories Task Force at the EDRC at the University of Cape Town in South Africa and the lead agency of each of the sectoral teams (crop production, rangeland and livestock, fisheries, forestry, biodiversity, water resources, coastal resources and health) in modeling for vulnerability assessment; institutionalizing networking and collaboration of the Global Climate Change Research Unit in Liberia with leading climate-modeling groups.

The project will support the improvement of the national observation network through the acquisition of five (5) Automatic Weather Stations (AWS) and equip the existing fifteen (15) meteorological and hydrological stations.

### **Project Components**

In line with its specific objectives, the project will have the following four strategy components:

- i. Training :-specialized short-term training, industrial attachment and networking;
- ii. Institutional development/ establishment of a secretariat;

- iii. Provision of infrastructure/equipment to strengthen educational and research institutions; and,
- iv. Review of the environmental management legal and regulatory frameworks.

### **Indicative Budget**

The following summarizes the indicative budget of the project in terms of strategy elements and their associated activities and indicative costs:

<b><u>ITEM</u></b>	<b><u>COST (in '000)</u></b>	
I. Training	US\$	L\$ Eq.
1.1 Seminars for NCC (2 government, 1 NGO, 1CBO and 1 private sector entity) members	15	900
1.2 Specialized training for 11 sectoral team members in modeling, 5 in climate studies, GIS, EIA, ICAM and land degeneration, 3 meteorologists	750	45,000
1.3 Thematic attachment for 4 Task Force members on vulnerability assessment and/or crash programme at EDRC at the University of Cape Town in South Africa	30	1,800
<b>Component Total:</b>	<b>US\$795</b>	<b>L\$47,700</b>
<b>2. Institutional Development-Focal Point Secretariat</b>		
2.1 Staffing: - project officer, secretary and a driver	90	5,400
2.2 Provision of logistics and supplies	10	600
2.3 Purchase of 2 Double Cabin Pickups	30	1,800
<b>Component Total:</b>	<b>US\$130</b>	<b>L\$7,800</b>
<b>3. Provision of infrastructure/equipment for Educational/Research Institutions</b>		
3.1 Purchase of 5 Automatic Weather Station (AWS)	50	3,000
3.2 Purchase of conventional instruments and automatic records for 15 meteorological stations	150	9,000

3.3 Provision of stock of replacement and spare parts	50	3,000
3.4 Provision of scientific instruments for University of Liberia, MOT, MOA and RIA	200	12,000
3.5 Development of training modules and public awareness materials	15	900
3.6 Establishment of thematic pilot project on adaptation planning and assessment in each county	300	18,000
3.7 Rehabilitate/reconstruct facilities	250	15,000
<b>Component Total:</b>	<hr/> <b>US\$1,015 L\$60,900</b>	

#### **4. Review of Environmental Policy, Legal and Regulatory Framework**

4.1 Review sectoral policies with a view to making them climate responsive	33	1,980
4.2 Develop environmental regulatory framework with a view to making them climate change responsive	33	1,980
<b>Component Total:</b>	<hr/> <b>US\$66 \$3,960</b>	

**Total Project Cost: US\$2,006 L\$120,360**

#### **Thematic Project Opportunities for Building Capacity in Combating Desertification/Land Degradation**

The thematic assessment within the UNCCD identified 16 capacity issues/constraints, which were confirmed and prioritized by the National Stakeholder Workshop. Capacity building opportunities to address these constraints were developed and categorized under the three levels of capacity building (individual institutional and systemic). The following systematizes these opportunities into a project proposal.

**Project Title:** Enhancing the National Capacity to Implement the UNCCD

**Duration:** Five (5) years

**Start Date:** 2006

**Lead Agency:** Ministry of Lands, Mines and Energy/UNCCD Focal Point

**Collaborating Agencies:** EPA, MOA, MIA, FDA, UL, CARI, NGOs, CBOs, DDCs, WDCs, BWI and VDCs.

### **Goal and Objectives**

The overall goal of the project is to contribute to the national ability to halt land degradation and associated rural impoverishment. The primary objective of the project is to enhance the national capacity to implement the NAP, and in this respect, its specific objectives are:

- i. To strengthen and/or establish the institutions identified as essential pre-requisites for the effective implementation of the NAP;
- ii. To train and develop the critical manpower resources for the effective implementation and management of the NAP on a sustainable basis;
- iii. To appropriately equip the technical, educational and research, institutions and agencies, including public, private, NGO and CBO concerns involved in the implementation of the NAP at all levels of the development process;
- iv. To appropriately review and/or reform the relevant natural resource management policies; and, legal and regulatory frameworks to create the necessary enabling environment for a broad-base participation in the implementation of the NAP on a sustainable basis, including population management issues.

### **Implementation Approach/Activities**

The project will support the establishment and functioning of the UNCCD Operational Centre/Focal Point (comprising the National Desertification Trust Fund) (NDTF), Programme Unit, the Technical Support Unit (TSU) and Monitoring and Evaluation Unit) and the six (6) Regional Desertification/Land Degradation Coordination Units (RDCUs).

A series of short and long-term training courses will be organized both within and outside the country. The in-country short-term training courses will include the training of NGOs, CBOs, extension personnel of concerned technical departments and trainers, the local level participatory structures, (WDCs and VDCs), Women national resource harvesters/processors, and data collection enumerators. The long-term training course will include taxonomy, environmental economics, biology, zoology, surveying, wildlife management and range management in appropriate overseas educational institutions.

The project will also support selective policy, legal and regulatory reforms. Such reforms would include the review of the mandates of technical agencies concerned with a view to institutionalizing cooperation among counterparts, designate more nature reserves, and propose new range management policies and Land Use/Planning Policy and Act.

## Project Components

Consistent with its specific objectives and activities the project will have the following strategy components:

- Institutional building/establishment of the operational centre/Focal point and the RDCUs;
- Training both short and long-term fellowship training;
- Establishment of infrastructure/provision of equipment;
- Reviews, studies and investigations.

## Indicative Budget

The following summarizes the indicative budget of the project in terms of strategy elements and their associated activities and costs:

<b><u>ITEM</u></b>	<b><u>COST (IN '000)</u></b>	
	US\$	LD Eq.
<b>I. Institution Building</b>		
1.1 Office space for Focal Point/ secretary	20	1,200
1.2 The physical establishment of Five (5) RDCUs	200	12,000
1.3 Staffing and staff salaries to be phased out by year three (3)	72	4,320
<b>Component Total:</b>	<b>US\$292</b>	<b>L\$17,520</b>
<b>2 Training:</b>		
2.1 Short-term training		
- Training data collection enumerators	20	1,200
- Training for MDTFs in various resources utilization	180	10,800
- Management techniques	120	7,200
- Training of WDCs and VDCs	200	12,000
2.2 Long-term training of		
- 2 Taxonomists	168	10,080
- 3 Entomologists	84	5,040
- 2 Marine Biologists	168	10,080
- 3 Range Management Experts	168	10,080
- 3 Zoologists	168	10,080

- 2 Land Resources Surveyors	420	25,200
- 3 Environmental Economists	168	10,080
<b>Component Total:</b>	<b>US\$1,864</b>	<b>L\$111,840</b>
<b>3. Provision of Infrastructure/Equipment</b>		
3.1 4 Vehicles	60	3,600
3.2 Computers, printers and photocopiers	40	2,400
3.3 Research equipment including a research vessel	3,700	222,000
3.4 Training material for MDFTs	7	420
3.5 Teaching materials for the educational institutions	7	420
3.6 Surveying equipment	10	600
3.7 Rehabilitate/reconstruct facilities	300	18,000
<b>Component Total:</b>	<b>US\$4,124</b>	<b>L\$247,440</b>
<b>4. Reviews, Studies and Investigations</b>		
4.1 Review the mandates for technical departments to include cooperation counterparts	5	300
4.2 Review/develop natural resource management policies	20	1,200
4.3 Review fisheries Act to redefined its regulatory classes and conditions for utilization	10	600
4.4 Formulate land tenure policy and Act	15	900
<b>Component Total:</b>	<b>US\$50</b>	<b>L\$3,000</b>
<b>Total Project Cost:</b>	<b>US\$6,330</b>	<b>L\$379,800</b>

#### **IV. OPPORTUNITIES FOR SYNERGISTIC AND CROSS-CUTTING CAPACITY BUILDING APPROACHES AND PROJECT:**

##### **4.1 Opportunities for Synergistic and Cross-Cutting Capacity Building Approaches**

The capacity assessment across the thematic areas of the three conventions identified a series of 18 cross-cutting capacity constraints/issues. Based on these capacity issues, opportunities for capacity building across the conventions for maximum synergistic effects were developed, confirmed and validated by a workshop of a combined TATs. The following provides an overview of the capacity building opportunities at the three (3) levels as a basis for the presentation of opportunities for synergistic and cross-cutting capacity building project.

#### **4.1.1 Opportunities for Synergistic and Cross-Cutting Capacity Building at Individual Level**

A number of opportunities for synergistic and cross-cutting capacity building at the individual level were identified. These capacity building opportunities can be categorized as creating new capacities and enhancing existing capacities. Creating new capacities will entail a series of long-term training courses to develop the critical mass of scientists and professionals. These include botanists, taxonomists, zoologists, statisticians, monitoring and evaluation specialists, sociologists, planners, cadastres, surveyors, economists, extension specialists, forest engineers, ecologists, agronomists, GIS specialists, EIA experts and silviculturists.

Enhancing existing capacities will entail series of refresher and short-term specialized training courses. Such training courses will include refresher courses in extension methodology and PRA techniques for MDFT members especially NGO field staff, and CBOs and PVOs; specialized training seminars and workshops for extension agents, EEC skills training for staff of databases at EPA, MOA, LWSC, MRD, MPEA, MIA, UL and BWI.

#### **4.1.2 Opportunities for Synergistic and Cross-Cutting Capacity Building at Institution Level**

The main focus for effective integration of the cross-cutting issues for maximum synergistic effect is at the institutional level. Thus adequate opportunities for synergistic and cross-cutting capacity building exist at this level. These include mobilizing and/or redeploying and enhancing existing capacities.

Although opportunities for mobilizing existing capacities are relatively few, they have important implications for sustainability and effective international participation in the implementation of the conventions. They include developing modules/courses in negotiation and conflict resolution skills at the University of Liberia and Cuttington University College, and production and sensitization materials by Extension Aids Unit, and introducing courses on monitoring, assessment and inventory.

Enhancing existing capacities will include institutional rationalization and reform, strengthening monitoring units of EPA, MLME and FDA, and strengthening the extension programmes, research and planning capacities of EPA, FDA, MOA, MLME, LWSC, BWI, CUC, and UL.

#### **4.1.3 Opportunities for Synergistic and Cross-Cutting Capacity Building at systemic Level**

The task of opportunities for synergistic and cross-cutting capacity building at systemic level is to create an overall enabling environment. It will mainly entail enhancing existing capacities through review and strengthening. The

review activities will include examination of the incentive regime policy, legal and regulatory frameworks and study of technology adoption rate and the environmental information system. The strengthening of activities will include developing the information delivery capacity of the media, community radio stations, and land-use planning capacity at national, county, district, and village levels.

#### **4.2 Opportunities for Synergistic and Cross-Cutting Capacity Building Project**

The foregoing opportunities for synergistic and crosscutting capacity building approaches provide the essential elements of a project proposal.

**Project Title:** Building National Capacity to Maximize the Synergistic Effects of the Rio Conventions.

**Duration:** Five (5) years

**Start Date:** 2006

**Lead Agency:** EPA/Secretariat for NEPC

**Collaborating Agencies:** NGOs, CBOs, PVOs, MOA, LWSC, MPEA, UL, MIA MLME, FDA, RIA, MOT, and MRD.

#### **Goal and Objectives**

The overall goal of the project is to enhance national ability to manage the environment on a sustainable basis. Its primary objective is to contribute to the effective implementation of the three (3) Rio Conventions. Consistent with this primary objective, the specific objectives of the project are:

- i. To create the critical mass for the internalization of the cross-cutting issues of the three (3) Rio Conventions for maximum synergistic effects;
- ii. To rationalize and reform the existing institutional framework for natural resource management to effectively integrate the cross-cutting issues for maximum synergy;
- iii. To strengthen the institutional capacities of public and civil society agencies involved in the implementation of the conventions; and,
- iv. To create the enabling environment for a broad-based participation in the implementation of the conventions.

#### **Implementation Approach/Activities**

The project will support the creation of new capacities and the enhancement of existing capacities of the individual. The new capacity creation will be realized through series of academic long-term training courses. Enhancing existing capacities will involve a series of refresher courses, seminars and workshops as detailed in (4.1.1) above.

At the institutional level, the project will support mobilizing existing institutional capacities and enhancement of existing institutional capacities as detailed in (4.1.2) above.

At the systemic level, the project will support institutional rationalization and reform, the creation of an enabling environment for a broad-based participation in the implementation of the three (3) conventions. These will include reviews, studies and strengthening activities as detailed in sub-section (4.1.3) above.

**Project Components:**

In line with the specific objectives of the project and the adverse nature of the underlying cross-cutting capacity constraints and their associated capacity building needs, the project will have the following components:

- i. Training:-both long and short-term training, seminars, workshops, refresher courses and networking;
- ii. Institutional rationalization and reform through legislative decisions;
- iii. Provision of infrastructure/equipment to strengthen key institutions; and,
- iv. Reviews and studies to investigate the performance of existing overall policy framework and processes.

**Indicative Budget:**

The following summarizes the indicative budget for the project in terms of the strategy elements and their associated activities and costs:

<b><u>ITEM</u></b>	<b><u>COST('000)</u></b>	
	<b>US\$</b>	<b>L\$ Eq.</b>
I. Training		
1.1 Long-term training:- 2 botanists, 2 taxonomists, 2 zoologists, 3 marine biologists, 2 statisticians/biometricians 2 ecologists, 3 sociologists, 2 land-uses planners, 2 cadasters, 2 land resource surveyors, 2 forest engineers, 2 silviculturists, 2 economists, 2 GIS specialists and 2 meteorologists.	2,352	141,120
1.2 Short-term training:- 3 monitoring and evaluation specialists, 5 in ecosystem management, 4 in EEC skills, 3 in inventory and monitoring, 4 in cartography and 3 EIA specialists.	535	32,100
1.3 Refresher courses (5 groups of MDFTs in		

environmental awareness, extension methods and PRA, staffs of NGOs, CBOs and PVCs in extension methodology and PRA, extension agents in ecosystem approach).	72	4,320
1.4 Seminars and workshops (extension staff of both public and NGOs to address topical issues of concern to the Rio Convention).	48	2,880
<b>Component Total:</b>	<b>US\$3,007</b>	<b>L\$180,420</b>

## **2. Institutional Rationalization and Reform:**

2.2 Create a legislative sub-committee on the Rio Conventions (LSRC)	15	90
2.3 Merge the secretariat of the Rio Conventions	15	90
2.5 Merge the ISCB, NCC and ISCD into a single Inter-sectoral Committee for the Rio Conventions	15	90
<b>Component Total:</b>	<b>US\$45</b>	<b>L\$270</b>

## **3 Provision of Infrastructure/Equipment to Strengthen Key Institutions:**

3.2 Develop modules/courses in negotiation and conflict resolution skills.	20	600
3.3 Develop sensitization and promotional material for ELBS, Extension Aids and Community Radio Stations.	30	1,800
3.4 Procure 18 double cabin pick-ups and 140 Motorcycles for EPA, MLME, FDA, MOA, MIA, LEC, MRD, LWSC, and MOT.	600	36,000
3.5 Procure 10 double cabin pick-ups and 110 Motorcycles for participating NGOs, CBO and PVOs.	500	30,000
3.6 Procure surveying equipment for the Ministry of Lands, Mines & Energy.	10	600
3.7 Procure 2 double cabin pick-ups and 10 motorcycles		

for the Ministry of Planning & Economic Affairs.	160	9,600
3.8 Procure 8 computers, 4 printers, 4 photocopiers of the Monitoring Unit of EPA, MPEA, FDA and MOA.	30	1,800
3.9 Procure essential research equipment for CARI, UL, BWI and CUC.	50	3,000
3.10 Procure 1 vehicle, 3 computers, printers and photocopiers for the EPA Technical Units.	30	1,800
<b>Component Total:</b>	<b>US\$1,430</b>	<b>L\$85,200</b>

### 3. Review and Studies:

3.1 Review/develop the policy, legal and regulatory frameworks for Natural Resource Management to enhance community/private involvement and enforcement.	20	1,200
3.2 Review the rates of natural resources technology generation and adoption and associated bottlenecks.	20	1,200
3.3 Review/develop land use planning with a view to improving the process.	15	900
<b>Component Total</b>	<b>US\$55</b>	<b>L\$3,300</b>
<b>Total Project Cost</b>	<b>US\$4,537</b>	<b>L\$269,190</b>

## V. ELEMENTS OF A STRATEGY FOR CAPACITY BUILDING TO PROTECT THE GLOBAL ENVIRONMENT

### 5.1 An Overview of the Capacity Issues/Constraints and needs to Protect the Global Environment

Definition of the elements of a strategy for capacity building to protect the global environment presupposes the existence of clearly understood, global capacity issues/constraints and needs in the protection of the global environment. Thus, an overview of such overwhelming capacity constraints and need constitute a legitimate preface for such an exercise. The environmental conventions constitute a consummate framework for

addressing global environmental concerns. Observation emerging from the regional assessments and cross-cutting studies of the capacity needs in these conventions point to a number of capacity development needs at the overall systems levels, commonalities in thematic issues and capacity development needs between regions, and the existence of synergies across the conventions in terms of capacity needs. These capacity issues/constraints and needs constitute an adequate object of the elements of a strategy for capacity building to protect the global environment. The following provides a summary presentation of these capacity constraints in each of the three (3) conventions.

### **5.1.1 Global Capacity Constraints in Biodiversity**

Analysis of the world-wide threats to biodiversity and associated identified priority issues revealed specific capacity development constraints and needs to address each issue. These capacity constraints are summarized as follows:

- Lack of awareness and inadequate knowledge of the benefits of biodiversity protection;
- Inadequate national policy frameworks for effective implementation of CBD;
- Inadequate legal and regulatory frameworks to address the complexity of the issues covered by CBD;
- Confusion, conflict and inefficiency in institutional mandates and jurisdictions, as well as, poor coordination and decentralization in activities;
- Inadequate information, and weak management system;
- Poor incentive scheme, and little consideration for the economic significance of conservation in decision making;
- Weak mechanism to engender regional and international policy cooperation;
- Low levels of continuity in representations at negotiation/meetings;
- Inefficient and internal organizations and institutions;
- Inadequate skilled human resources for conservation and sustainable use of biodiversity;
- Poorly managed in-situ and protected area biodiversity;
- Low level of stakeholders' participation in the full range of biodiversity conservation and sustainable use issues.

### **5.1.2 Global Capacity Constraints in Climate `Change**

Detailed analysis of the priority issues in climate change with respect to the three (3) capacity building levels showed a substantial number of capacity constraints and needs. A synthesis of the most relevant capacity issues/constraints into three (3) clusters, together with the necessity to

build a critical mass of human resources, formed the core of capacity development needs for climate change. These clusters are:

- Inadequate technical and scientific knowledge for a more effective management of climate change issues, and the process of negotiation;
- Poor institutional organization resulting from a weak political, social, economic and legal framework; and,
- Inadequate and/or lack of skills to man the policy and decision-making processes more effectively.

### **5.1.3 Global Capacity Constraints in Land Degradation**

Based on a synthesis of the various national and regional reports, and consultations held in each of the regions, the key capacity needs in land degradation stem from five (5) capacity constraints. These are:

- Inability to adequately anticipate and monitor land degradation timely;
- Low information sharing and dissemination resulting in inability to widely publicize dramatic events;
- Inadequate public support for, and participation in, better and appropriate land management practices, including enforcement of proper land use practices, policies and laws;
- Inadequate research and development on the nature and causes of land degradation and on prevention and control methods; and,
- Inadequate budgetary allocations for land management.

### **5.2 Elements of a Strategy for Capacity Building**

A strategy for capacity building to protect the global environment needs to clearly address the foregoing global capacity constraints in biodiversity, climate change and land degradation. Although the identified capacity constraints are convention-specific, their respective capacity needs fall within a series of crosscutting areas with considerable synergies between the conventions as regards these needs, which define the elements of a strategy to protect the global environment. Some of the key elements of such a strategy can be specified as follows:

- Creation of greater public awareness, knowledge and understanding of the relevant issues of the Rio Conventions;
- Developing the “critical mass” of skills required to effectively implement national commitments under the global environmental conventions;
- Strengthening national policy planning, legal and regulatory frameworks to create an enabling environment for the effective implementation of the conventions;

- Rationalizing and reforming institutional mandates, coordination and processes for interaction and cooperation among all stakeholders;
- Strengthening national information management, monitoring and observation systems, and appropriately linking them to regional and international networks; and,
- Strengthening consultative and participatory mechanisms and processes at local, national, regional and international levels.

## **VI. PROPOSED NEXT STEPS AND FOLLOW-UP**

### **6.1 Next Steps Needed to Implement the Proposed Strategies**

The proposed project proposals may require fine-tuning by way of revising the indicative budgets, and/or developing implementation schedules/modalities in accordance with prospective donor requirements. Consequently, the proposed ten (10) next steps are primarily focused on the task of resource mobilization for implementation, and are described below:

- **Validation of the Action Plan:** EPA's, with the technical and financial assistance of GEF, subject this NCSA document to a national validation workshop of the same composition as the workshops on the thematic assessment reports;
- **Revision of the Indicative Budgets:** Based on the comments of the validation workshop, the EPA to revise the document appropriately;
- **Adoption of the Action plan:** EPA official adoption of the document as a national strategy/action plan through legislative approval;
- **Integration of the action plan in the NEAP/NRDP:** Following legislative approval, EPA submits the thematic and the synergistic and cross-cutting project proposals for incorporation in the NEAP/NRDP as strategy elements of the Rio Conventions to implement the NEAP/NRDP programmatic component;
- **Funding Arrangements of the Action Plan:** The Government of Liberia (GOL) formally approaches GEF to consider participating in a tripartite funding arrangement for the project proposals. Such a tripartite funding arrangement may be in the ratio of: 0.15:0.50: and 0.35 of the total proposals (GOL/GEF) and other external donors sources respectively.
- **GOL's Contribution towards the Project Proposals:** The GOL appropriately allocates its fifteen percent contribution for funding in its annual budget's resources;
- **GEF's Contribution towards the Project Proposals:** GEF to also appropriately phase its fifty percent contribution according to its established rules of disbursement and conditions;
- **Other External Donor Sources:** GEF, through its partnership relations with UNDP, to assist the GOL to organize a special donor consultation to raise the other thirty-five percent of the total cost of the proposals;

- **Revision of the proposals as may be required by Funding Parties:** EPA with the technical and financial assistance of GEF and other external donor sources, revises the project proposals as may be required by other funding partners;
- **Implementation Schedules/Modalities:** GOL to put in place implementation modalities and schedules acceptable to the rest of the tripartite funding groups, and commence implementation in earnest.

Given that the successful implementation of the proposed project proposals will result in strengthening the overall capacities for both national and global environmental management, the quest for funds may prove to be difficult one, but not impossible.

## **6.2 The Required Follow-Up Action**

The required follow-up actions clearly derived from, and are sub-summed in the proposed “ten (10) next steps”, and have both national and international dimensions. These essentially are:

- GEF to follow-up with the GOL to draw-up definite timetable to take the “ten (10) next steps” and assist it by implementing its own ascribed components on a timely basis; and,
- EPA to follow-up with GOL to draw up the time-lines and take the necessary decisions timely in the implementation of the “ten next steps”.

These are the most important follow-up actions necessary to move the process forward.

## **VII. MONITORING AND EVALUATION**

### **7.1 Operational Mechanism for Monitoring and Evaluation**

The monitoring and evaluation of this national capacity building strategy/action plan, by its very scope and nature, will be the responsibility of the established national environmental monitoring and observation capacities of the EPA. These capacities include: government agencies, NGOs, private sector and the decentralized local community bodies. It will be monitored within the framework of the NEAP/NRDP. The indicative budgets and the proposed schedules of implementation to be developed for each of the project proposals will constitute the framework of monitoring and evaluating the implementation of the strategy /action plan.

### **7.1.1 Monitoring Progress**

The strategy/action plan specific implementation process will be monitored through a three-step assessment of the execution of the budgets against the schedules of implementation. These steps will be:

- Measuring the progress of implementation of the budgets against the proposed time schedules;
- Analysis of any variance in the budgets execution against the planned time schedules, both in terms of actual expenditures versus the budgeted amounts, and times of making the expenditures versus the planned schedules; and,
- Determination of any remedial actions where necessary.

### **7.1.2 Evaluation of the Impact**

Evaluation of the implementation of the strategy/action plan will basically aim at ascertaining the degree of success to which the specific objectives of the strategy/action plan are being realized. The realization of the specific objectives should translate into achievement of the primary objectives which in turn are expected to contribute to the overall goal of the strategy/action plan. The outcome of the evaluation process should establish the need, or otherwise, for any further corrective action in the design of the strategy/action plan.

### **7.2 Mechanism for Consultations on the Monitoring and Evaluation Reports**

The production of quarterly reports will be instituted as an essential parallel activity to the strategy/action plan implementation. The EPA Working Groups, and the DDCs, will constitute respectively, the mechanisms for consultation on the Monitoring and Evaluation results of the strategy/action plan at national and regional levels.

The monitoring and evaluation strategy of the strategy/action plan is based on the assumption that regular reviews will be conducted to ensure broad-based timely decisions on the intermittent results, which presupposes the production of regular reports on a quarterly basis. The data collected for these regular reviews will be the basis for policy decisions on the strategy /action plan.

### **7.3 Feedback on Monitoring and Evaluation to Programme Management**

The regular reviews are designed to provide essential monitoring and evaluation information to the programme management, policy decision-makers and the general public at large. Thus, it is essential that data provided through routine data collection are accurate, and more importantly, reflective of the realities. Thus the overall monitoring and evaluation strategy is to provide on-going feedback to the strategy/action plan management, concerned agencies, and policy decision-makers regarding the effectiveness of the implementation activities so that improvements can be made and future capacity building planning and programming exercises incorporate lessons learnt from these experiences.

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## **ANNEXES**

### **ANNEX 1.1: TERMS OF REFERENCE FOR NCSA PROCESS**

- 1.1.1 Conducting capacity assessments within the thematic areas of biodiversity, Climate Change and Desertification/Land Degradation.

#### **Guidelines and Terms of Reference**

A four-step process is suggested for thematic assessments in Biodiversity, Climate Change and Desertification/Land Degradation.

- (1a) **Baseline/Situation Analysis:** This involves taking stock of what exists in each thematic area. Through this stocktaking, priorities can be identified or confirmed and related capacity constraints and opportunities for capacity building.

**Reports which would need to be reviewed in stocktaking for the preparation of Thematic Profiles are listed in the box below:**

Existing National Reports which may inform the Preparation of Thematic Profiles	
Biodiversity	Cross-cutting & Miscellaneous
a) National Biodiversity Assessments, Strategies and Action Plans b) Forestry Assessments, Strategies	a) National Environmental Action Plan b) National Sustainable Development Strategies

	Action Plans	
Climate Change	a) UNFCCC National Communications	c) National Agenda 21 reports d) Capacity 21 reports e) State of the Environment Report
	b) Climate Change Assessments, Strategies and Action Plan	f) National Conservation Strategies g) Biosafety Frameworks h) Pops Implementation Plans i) UNCED National Reports
Desertification/Land Degradation	a) National Action Programmes to combat Desertification (NAPs)	j) Environmental Planning Document k) Capacity needs assessments
	b) National Reports on the implementation of the CCD	l) Sector studies

**Developing Thematic Profiles:** For each thematic area, a Thematic profile needs to be developed which takes into account the following questions:

- What are the relevant instruments, polices and/or non – regulatory mechanisms?  
Are they effective, or do they overlap, and do gaps or inconsistencies exist?
- What are the responsibilities and relevant activities of ministries, agencies and other governmental institutions?  
Are these activities well coordinated and complementary?
- What are respective roles and contribution of industries, public interest groups and bodies in the research sector?  
Which organizations have major interest and programmes in the relevant subject area?
- What relevant information and database exist, where are they located, and who has access to them? Are all relevant data needs well addressed? What are the major gaps?
- Which relevant projects have been implemented and what are the impacts of these projects, as well as lessons learned?
- What kinds of capacity development projects and activities have been undertaken? What are the short term and long term impacts of those projects and activities?
- What relevant technical capacity exists, and is this infrastructure available and sufficient to address the objectives of the respective area?
- What is the level of awareness and understanding within government and the public concerning the thematic area?
- What human resources are available, and through which organizations, to work on the respective thematic area?

- What training and human resources programmes exist, and what do they offer?
- What financial resources might be available at the national level for action plans concerning the thematic area?
- Has there been any monitoring and evaluation of capacity development projects and activities during or after their execution? How has the country measured their successes or effectiveness?
- Do individuals have incentives to acquire new skills and technical capacity related to the thematic area? Do they have sufficient opportunities to do so?
- Are individuals in contact and exchanging knowledge and experiences with appropriate peers? Are there ways to communication within and across relevant institutions focused on the thematic area?
- Does any untapped capacity exist, or is there capacity that could be redeployed to better effect? Is there capacity in danger of being lost?
- Are capacity development efforts sufficiently linked to existing or future legal, regulatory, or institutional requirements and responsibilities? Has capacity built in the past proved to be sustainable over the medium and long term?

**Identifying, confirming, or reviewing priority issues within each thematic area:** After reviewing each thematic profile, the strengths and gaps within each area will be identified. Following that, the assessment team needs to identify, confirm, or review priority issues within each thematic area. A good starting point for the identification, confirmation and review of priority issues is through the use of ‘**The Indicative Reference List**’ for each thematic area provided in **Annex B**.

**The matrix in the box below is designed to assist a group to identify, confirm, or review priority issues within each thematic area.**

<b>Issue Prioritization Matrix</b>				
Ranking issues against the following criteria will allow a simple comparison of the relative importance of each, and should thereby facilitate further group discussion on setting, confirming or reviewing priorities. Such a tool, however, should not be seen as an end in itself. It is first and foremost an evaluative tool. Simply adding values assigned to each issue will not take into account the different weighting assigned to particular criteria.				
<b>Issue</b>	<b>Scale of problem<sup>1</sup></b>	<b>Level of concern<sup>2</sup></b>	<b>Ability to adequately address issue<sup>3</sup></b>	<b>Priority Ranking<sup>4</sup></b>
- Issue: respect for and preservation of knowledge, innovations and practices of indigenous and local communities.				

- Issue: Ex-situ conservation of components of biological diversity, including for collection of biological resources from natural habitats for ex-situ conservation purposes.				
- Issue: ...				
- Issue: ....				
<ol style="list-style-type: none"> <li>1. Enter local, regional, national, or global</li> <li>2. Enter low, medium or high</li> <li>3. Provide relative ranking from 1 to 5 of the problem(s) being faced by the country (1 = most severe problem(s) 2= second most severe problem(s), etc). The same ranking can be given to different issues where appropriate.</li> </ol>				

- (1) Identifying Capacity Constraints for Priority issues for each Thematic Area:** After the priority setting of the issues has been completed, the next step involves the identification of capacity constraints for each thematic area. Various planning tools can be used for this exercise including: the Logical Framework Approach, SWOT, “Problem and Objective Tree”, etc.

At this stage, a basic question that should be considered is what are the capacity constraints responsible for the non-realization of the issues identified in each thematic area. “Capacity constraint” in the context of this assessment refers to those factors that prevent us from effectively addressing the issues identified earlier. Through the review of documents and consultations, a list of problems relating to capacity constraints will be produced. The list can then be grouped into the three (3) capacity levels of individual, institutional or systemic guided by certain specific questions. The three (3) different levels of capacity and how they are determined are described below:

**(a) Assessing Capacity Constraints at the Systemic Level**

Capacity building at the system level emphasizes the overall policy framework in which individuals and organizations operate and interact with the external environment, as well as the formal and informal relationships of institutions. Guiding questions include:

- Policy framework: Is the overall policy environment conducive?
- Legal and regulatory framework: Is the appropriate legislation in place, and are these laws effectively enforced? (These may be both formal and informal, such as cultural mores).
- Management accountability framework: Are institutional responsibilities clearly defined and responsible institutions held publicly accountable?

- Economic framework: Do markets function effectively and efficiently?
- Systems level resources: Are the required human, financial and information resources available? (These may be in any or all of national and local government, private sector, and civil society-including NGOs).
- Processes and relationship: Do the different institutions and processes interact and work together effectively (including national and local government, private sector, and civil society).

### **(b) Assessing Capacity Constraints at the Institutional Level**

Capacity building at the institutional level focuses on the overall organizational performance and functioning capabilities, as well as the ability of an organization to adapt to change. It aims to develop the institution as a total system, including individuals, groups and the organization itself. Guiding questions include:

- Mission/strategic management: Do the institutions have clearly defined and understood missions and mandates?
- Culture/structure/competences: Are the institutions effectively structured and managed?
- Processes: Do institutional processes such as planning, quality management, monitoring and evaluation, work effectively?
- Financial resources: Are financial resources managed effectively and allocated appropriately to enable effective operation?
- Information resources: Is required information available and effectively distributed and managed?
- Infrastructure: Are material requirements such as buildings, offices, vehicles, and computers, allocated appropriately and managed effectively?

### **(c) Assessing Capacity Constraints at the individual Level**

Capacity building at the individual level refers to the process of changing attitudes and behavior, impacting knowledge and developing skills while maximizing the benefits of participation, knowledge exchange and ownership. Guiding questions include:

- Job requirements and skills levels: Are jobs correctly defined, and are the required skills available?
- Training/retraining: Is the appropriate learning taking place?
- Career progression: Are individuals able to advance and develop professionally?
- Accountability/ethics: Is responsibility effectively delegated and are individuals held accountable?
- Access to information: Is there adequate access to needed information?

- Personal/professional networking: Are individuals in contact and exchanging knowledge with appropriate peers?
- Performance/conduct: Is performance effectively measured?
- Incentives/security: Are these sufficient to promote excellence?
- Values, integrity and attitudes: Are these in place and maintained?
- Morale and motivation: Are these adequately maintained?
- Work redeployment and job sharing: Are there alternatives to the existing arrangements?
- Inter-relationships and teamwork: Do individuals interact effectively and form functional teams?
- Interdependencies: Are there appropriate levels of interdependence?
- Communication skills: Are these effective?

#### **(4) Identifying Opportunities for Capacity Building to Address the Identified Capacity Constraints for each Thematic Area**

The final step of the assessment process involves the identification of opportunities for capacity building in the three (3) thematic areas. This exercise can be best achieved through the use of a Capacity Constraints Matrix presented below. Through the use of this matrix, the relationships between the three (3) capacity levels can be easily seen and this will greatly facilitate the developments of a common approach to the issues. This last stage of the exercise is an important component for action plan development.

<b>Capacity Constraints Matrix</b>			
Once capacity constraints are identified, they can be grouped under the appropriate categories of Individual, Institutional and Systemic Capacity Constraints. It may be possible that a priority issue pertains to only two of the three levels of capacity constraints. The Capacity Constraints Matrix will help to organize the capacity constraints categories and will facilitate the identification of related opportunities for capacity building			
Priority Issues	Individual Capacity Constraints	Institutional Capacity Constraints	Systemic Capacity Constraints
<ul style="list-style-type: none"> <li>• Issue 1: development of economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.</li> </ul>			
<ul style="list-style-type: none"> <li>• Issue 2: preservation of traditional knowledge and coping mechanisms.</li> </ul>			

• Issue 3: ...			
• Issue 4: ...			
Common constraints within Thematic Area			

**(5) Indicative Reference Lists to Define Substantive Context for Capacity Development under each Thematic Area.**

**Biodiversity**

1. Effective National Biodiversity Planning;
2. Identification and monitoring of components of biological diversity important for its conservation and sustainable use;
3. In-situ conservation of biological diversity;
4. Respect for, and preservation of knowledge, innovations and practices of indigenous and local communities;
5. Ex-situ conservation of components of biological diversity, including the collection of biological resources from natural habitats for ex-situ conservation purposes;
6. Develop and introduce economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity;
7. Establish and maintain programmes for scientific and technical education and training;
8. Promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity;
9. Introduce appropriate arrangements to ensure that environmental consequences of relevant programs and policies are subject to environmental impact assessment and that significant adverse impacts on biological diversity are minimized;
10. Develop and introduce appropriate measures to ensure safety regulations in handling living modified organisms resulting from biotechnology;
11. Develop and introduce measures regulating the access to genetic resources and to provide access for and transfer to other parties of technologies that are relevant to the conservation and sustainable use of biological diversity;
12. Take legislative, administrative or policy measures, as appropriate, with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources;

13. Establish and operate Clearing-house Mechanisms to promote and facilitate technical and scientific cooperation;
14. Implement the Cartagena Protocol on Biosafety;
15. Access financial resources provided via the financial mechanisms of the convention and/or via other donors;
16. Other National priorities (ABS Regime).

### **Climate Change**

1. Institutional capacity-building, including the strengthening or establishment, as appropriate, of national climate change secretariats or national focal points;
2. Enhancement and/or creation of an enabling environment;
3. National Communications;
4. National Climate Change Programmes;
5. Greenhouse gas inventories, emission database management, and systems for collecting, managing and utilizing activity data and emission factors;
6. Vulnerability and Adaptation Assessment;
7. Capacity-building for implementation of adaptation measures;
8. Assessment for implementation of mitigation options;
9. Research and systematic observations, including meteorological, hydrological and climatological services;
10. Development and transfer of knowledge;
11. Clean Development Mechanisms;
12. Needs arising out of the implementation of Article 4, and 4.9 of the convention;
13. Education, training and public awareness;
14. Information and networking, including the establishment of databases.

### **Desertification/Land Degradation**

1. Education and public awareness;
2. Transfer, acquisition, adaptation and development of environmentally sound, economically viable and socially acceptable technology;
3. Training and technology regarding the use of alternative, renewable energy sources (aimed particularly at reducing dependence on wood for fuel);
4. Promotion of alternative livelihoods, including training in new skills;
5. Training of decision-makers, managers and personnel responsible for collection and analysis of data for disseminating and issuing early warning information on drought conditions, water resources and for food production;

6. Information collection, analysis and exchange (relevant short-term and long-term data and information; particularly to ensure systematic observation of land degradation in affected areas and to better understand and assess the processes and effects of drought and desertification);
7. Effective early warning and advance planning for periods of adverse climatic variations (provided in appropriate forms);
8. Research and development;
9. Technical and scientific cooperation in the fields of combating desertification and mitigating the effects of drought through appropriate national, sub-regional and international institutions;
10. Joint research programmes (also involving public and private sector) for the development of improved, affordable and accessible technologies for sustainable development.

**ANNEX 1.1.2: GUIDELINE FOR CONDUCTING A CAPACITY ASSESSMENT ACROSS THE THEMATIC AREA OF BIODIVERSITY, CLIMATE CHANGE AND DESERTIFICATION/LAND DEGRADATION**

**TERMS OF REFERENCE FOR THE ASSESSMENT ON SYNERGIES**

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**Introduction**

The second stage of the NCSA process involves the assessment of synergies across the three thematic areas of Biodiversity, Climate Change and Desertification/Land Degradation. There are many common areas of concerns among the three conventions and it would be of major advantage to identify those areas in order to come up with a common approach of developing strategies to addressing them.

The thematic assessments provided many useful insights into the capacity constraints within each convention, and the areas of cross-cutting concerns which will be the subject of the assessment on the synergies. By identifying the linkages within the conventions, a greater understanding of the commonalities and overlaps between the conventions will be enhanced and a co-coordinated and harmonized implementation approach at the local, national and international levels can be facilitated. Such a programme has the main advantage of among other things, reducing costs; relieving the burden of multiple reporting, and overall, can produce greater effectiveness and efficiency.

**Overall Objective**

The main objective of the assessment on synergies would be to identify, confirm or review constraints and opportunities and priority needs to strengthen national capacities to address issues of cross-cutting concerns across the three conventions for global environmental management.

### **Specific Tasks**

The assessment on synergies would be achieved through the following tasks:

1. Conduct a review of the existing institutional framework for managing the conventions at the national level. Further identify the opportunities to enhance/ensure integration of cross-cutting issues of the conventions into existing planning and decision-making structures and processes;
2. Based on the outcomes of (1), determine what the constraints and limitations are to ensure better integration of cross-cutting issues across the three conventions and synergy;
3. Assess the level of awareness of cross-cutting issues for the three conventions, and how much attention is given to them based on current national legislations, institutional arrangements, lines of reporting, programmes and projects;
4. Conduct a review of the thematic reports of the three conventions to identify and confirm the cross-cutting issues. These issues could be presented in the matrix below to illustrate the relationships among the three conventions and to better design strategies to addressing them in a holistic manner;
5. Conduct a final assessment of priority capacity needs for synergies based on review and consultation. The assessment should cover all three basic levels of capacity building, individual, institutional and systemic;
6. Based on the findings of the above, propose ways of integrating the cross-cutting issues to attain maximum synergistic effects among the three conventions; and,
7. Facilitate a workshop and present the findings to a combined group of the Assessment Teams to review, confirm and identify priority issues for capacity building to enhance synergy among the three conventions.

### **Useful Hints/Suggestions**

A useful starting point for the assessment on synergies might be to consider the following indicative listing of the cross-cutting capacity constraints. The issues are considered to be of exemplary nature and the national consultants are encouraged to identify other areas which may be relevant to the assessment.

The indicative list of cross-cutting issues is as follows:

- Awareness and exchange of information;
- National policy, legal and regulatory framework;
- Institutional mandate, co-ordination and processes for interaction and co-operation between all stakeholders;
- Information management, monitoring and observation;
- Mobilization of science in support of decision-making;
- Financial resources and technology transfer;
- Incentive system and market instruments;
- Negotiations;
- Co-operation and networking with regions;
- Institutional management and performance and;
- Individual skills and motivation.

Once the cross-cutting issues have been identified, it may be useful to further identify concrete opportunities for capacities building across the three conventions for the realization of maximum synergistic effects. It is proposed that a table be developed outlining the various areas of cross-cutting capacity constraints and corresponding opportunities for capacity building which cut across the three thematic areas as illustrated in the box below:

**Box 1: Identifying Capacity Constraints and Opportunities for Integrated Capacity Building**

For each area of cross-cutting capacity constraints listed in the first column, enter related details under the corresponding thematic areas to indicate what, if any, are the related opportunities for capacity building within each thematic area (analysis can take place at various levels: countries can look at capacity constraints and/or opportunities for capacity building already identified). Looking across each row, it should then be possible to determine where opportunities exist for cross-cutting capacity building. These cross-cutting opportunities can be considered in the last column.

Cross-cutting capacity constraints examples	Biodiversity	Climate Change	Desertification/Land Degradation	Opportunities for Cross-cutting Capacity Building
-Information management				
- Negotiation skills				
Planning skills				
- Global environmental issues low priority				

## **Qualification and Experience of National Consultant**

For the assessment on synergies and cross-cutting issues, the EPA is looking for a two-man team of national consultants. The lead consultant should hold a Masters Degree in the following areas: Natural Resources Management, Environment, and Agriculture or in the Physical Sciences with a minimum of at least 10 years working experience. Previous work experiences in the preparation of environmental action plans/strategies would be an added advantage.

The consultants would be expected to work closely with the focal points for the conventions and the assessment teams for each convention during the course of the assessment on synergy.

### Time Frame

The duration of the consultancy will be six weeks.

## **ANNEX 1.1.3: National Capacity Self Assessment Project Consultancy for Action Plan Development**

### **Terms of Reference**

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#### **Introduction**

The National Capacity Self Assessment Project (NCSA) is a GEF-funded project and is being implemented by the EPA. The main objective of the NCSA project is to assess the capacity constraints and needs of the three Rio Environmental Conventions on Biological Diversity, Climate Change and Desertification/Land Degradation. The main outcome of the project will be an action plan for capacity building to protect the global environment.

As part of the capacity needs assessments, three major assessments have been conducted and they were:

- a. A stocktaking exercise which reviewed the legal and institutional framework of each convention and past capacity building programmes which had been carried out;
- b. Thematic assessments of each convention to identify and review their capacity constraints; and,
- c. An assessment of synergies to identify common capacity constraints and needs as well as the opportunities for capacity building across the three conventions.

The results of these assessments are expected to form the elements for the proposed action plan. The action plan should be result-oriented and should identify the roles and responsibilities of the key players. It should also

identify the role and contributions of government as well as other potential donors and partners.

The action plan should be based on the outline illustrated below:

## **Outline of the NCSA Action Plan**

### Executive Summary

- Summary of NCSA including proposed next steps.

### **1. Introduction and Background**

- Rationale and context of the NCSA
- Overview of participation and preparation processes

### **2. Identified Thematic Issues**

- Summary overview of the existing situation and identified, confirmed or reviewed priority issues for climate change, biodiversity and desertification/land degradation (**thematic profiles to be included as Annex**).

### **3. Summary of Capacity Constraints and Opportunities for Capacity Building in the Three Thematic Areas**

- Detailed description of capacity constraints for the three thematic areas; and,
- Presentation of thematic project opportunities identified for capacity building.

### **4. Opportunities for Synergistic and Cross-cutting Capacity Building Approaches and Projects.**

- Presentation of opportunities for synergistic and cross-cutting capacity building approaches and projects.

### **5. Elements of a Strategy for Capacity Building to protect the Global Environment**

- Presentation of a strategy for capacity building and sustaining the capacity developed, both within and across the thematic areas, including, where applicable, overall goals, specific objectives, and elements of an action plan.

### **6. Proposed Next Steps and Follow-up**

- Brief description of next steps that needs to be taken in order to be in a position to begin developing and/or implementing proposed strategies.

## **7. Monitoring and Evaluation**

- Brief outline of monitoring and evaluation procedures to ensure effective and timely implementation of strategy/action plan.

### **Qualification and Experience of National Consultant:**

The national consultant should possess a Masters Degree in one of the following areas: Natural Resources Management, Environment, and Agriculture or in the Physical Sciences with a minimum of at least 10 years working experience. Previous work experiences in the preparation of environmental action plans/strategies would be an added advantage

### **Time Frame**

The duration of the consultancy will be six (6) weeks

### **Method of Application**

The application should be in two (2) separate bids: The Technical proposal and the financial proposal, and should be in two (2) separate envelopes which should be clearly labeled.

### **Deadline**

The closing date for the application is noon 30 July 2005.

## **ANNEX 1.2 CONTACT AND DETAILS OF PARTICIPANTS IN THE NCSA PROCESS**

### **Thematic Assessment Team**

#### **Members of the CBD Assessment Team**

Focal Point/Team Leader	- Ben Turtur Donnie
Patrick Kiadii	- Environmental Protection Agency
James T. Kpadehyea	- LIFE
Boima Bafaie	- LIFE
Ella Y. Johnson	- Civil Society
Rebecca Doo	- EPA

#### **Members of the UNFCCC Assessment Team**

Focal Point/Team Leader	- Benjamin Karmorh
Anthony D. Kpardeh	- Ministry of Lands, Mines & Energy
Eunice Dagbe	- Environmental Protection Agency
Varney Corneh	- EPA/FFI
David Kigsley	- Ministry of Planning & Economic Affairs
Fabien Kieh	- Civil Society
Roland Dahn	- Lawyer

#### **Members of the UNCCD Assessment Team**

Focal Point/Team Leader - Jerome Nyenka  
 Alfred K. Fayia - Ministry of Lands, Mines & Energy  
 Deddeh A. Mulbah - Civil Society  
 McAlbert Donnie - LIFE  
 Darius Toe - Ministry of Education

**Annex 1.2.2 NCSA First National Meeting**

19-20 October 2004  
 YMCA, Broad Street  
 Monrovia, Liberia

<u>Name</u>	<u>Ministry/Institution</u>
1. Jonathan Davies	Environmental Protection Agency
2. Ben T. Donnie	National Programme Coordinator
3. Joan M. Gbakoyah	Pollution Control Association of Liberia
4. Nathaniel Ketteh	Ministry of Agriculture
5. Flomo P. Molubah	Society for the Conservation of Nature of Liberia
6. Joseph M. Ballah	University of Liberia
7. Paul Hance	A.M.E Zion University
8. James Makor	Save My Future Foundation
9. J. Jaffa Gbafor	Liberia Environmental NGOs
10. Joan Taylor	Environmental Protection Agency
11. Rodney P. Kuow	Environmental Protection Agency
12. Tommy Teah	ERADRO
13. Matthew J. Boe,II	Monrovia Breweries
14. Basil G. Vani	Firestone Plantations Company
15. Eben Moses	Center for Environmental Education & Protection
16. Mawolo Kpawor	Society Against Environmental Degradation
17. Kebbeh W. Baysah	CAFSA/University of Liberia
18. Victor N'gorbu	CAFSA/University of Liberia
19. Varney Conneh	Environmental Protection Agency
20. Henry Larway	Environ-Link
21. C. Morlee Mendscole	CAFSA/University of Liberia
22. Joseph G. Raye	Environmental Protection Agency
23. John Conteh	Environmental Protection Agency
24. James Z. Aquoi	Liberia Community Development Foundation

25. Matthew F. Konai	Liberia Electricity Corporation
26. Roger W. Luke	Environmental Protection Agency
27. Peter W. Simujla	Don Bosco Polytechnic
28. David Wiles	Environmental Protection Agency
29. J.S.D Cammue	Environmental Protection Agency
30. Peter N. Korvah	Ministry of Agriculture
31. Tarpeh Chea	Liberia Marketing Association
32. Actebeouson Nyema	Ministry of Foreign Affairs
33. Harrison Sleweon	National Transitional Legislative Assembly
34. Amanda Padmoore	Federation of Trade Union of Liberia
35. Gibson Yangain	Liberia Indigenous Forum for the Environment
36. Jeremiah Sarnor	Royal Communication Network
37. David Y. Kenkpen	Cuttington University College
38. James Gayflor	A.M.E. University
39. Raphael Uray	Grand Gedeh Community Services Association
40. Peter Kieh	Labour Union
41. Ernest Paye	Liberia Petroleum Refining Company
42. Winston Kaine	Ministry of Health and Social Welfare
43. Julia Ciapha	Ministry of Lands, Mines and Energy
44. George McGee	Ministry of Rural Development
45. Sumo Kellen	Sustainable Development Promoters
46. Alexander Kingston	Society of Liberian Foresters
47. Richanrd Kollie	Ministry of Foreign Affairs
48. Matthew Kolleh	Ministry of Internal Affairs
49. Thomas King	Ministry of Planning and Economic Affairs
50. Horace Sackie	Ministry of State for Presidential Affairs
51. Lesley Smith	Ministry of Finance
52. Christian Freeman	CEMENCO
53. Joseph Fahn	Ministry of Education
54. Steve Jubwe	University of Liberia
55. Dismas Cupson	Sustainable Agriculture Promoters
56. Arthur Tucker	Food and Agriculture Organization
57. James Kollie	University of Liberia
58. Johansen Voker	Environmental Protection Agency
59. Prince Dunbar	Radio Veritas
60. Raymond Kreleh	Tribute Newspaper
61. Dargbeh Toby	Ducor Broadcasting Station
62. J. Caesar Padmoore	Tidings Newspaper
63. George Chenpoyee	New National Newspaper
64. Menslega Karnga	Analyst Newspaper
65. Baltimore Verdier	Radio LIJ
66. Maxwell Johnson	Liberia Broadcasting Station
67. Peneca Sakor	Poll Watch Newspaper
68. J. Grody Dorbor	The Inquirer Newspaper

**Caterers/attendants**

1. Arina T. Browne
2. Gitty Saydee
3. Helena Garty

4. Tayennoh Quaye
5. Oretha Zangai
6. Hannah Benson
7. Etta Benson
8. Sarah Baryogar
9. Precious Willie
10. Ursina Saye
11. Mamie Browne
12. Majorette Gibson
13. Nyamah Weaver
14. Julia Cole
15. Hawa Johnson
16. Mary Boima

### **NCSA Regional Workshop**

Regions 1, 2 & 3

8 November-12 December 2005

<u><i>Name</i></u>	<u><i>County</i></u>
1. Gbellay Karnley	Bomi County
2. D. B. Juwillie	Bomi County
3. Teresa Zinnah	Bomi County
4. William S. Johnson	Cape Mount County
5. William Mentee	Cape Mount County
6. Chaety Kyne	Cape Mount County
7. David Koffa	Cape Mount County
8. Eric V. Pinney	Cape Mount County
9. E. Johnny Jones	Cape Mount County
10. Josiah Davies	Gbarpolu County
11. Sylvester Wah	Gbarpolu County
12. Stephen Selewegar	Gbarpolu County
13. Steve Kroma	Gbarpolu County
14. Samuel Morris	Gbarpolu County
15. A. Nagbe Mineajue	Gbarpolu County
16. Botoe Massaquoi	Grand Cape Mount County
17. Foday Kaiwu	Grand Cape Mount County
18. Momoh Sambah	Grand Cape Mount County
19. Hawa Mentee	Grand Cape Mount County
20. Joseph L. Sneh	Bomi County
21. Seh A. Nelson	Bomi County
22. Tumu Konneh	Bomi County
23. Alipine Solo	Bomi County
24. A.B. Sando Jones	Bomi County
25. R. Medesco Lekpeyee	Grand Bassa County

26. James S. Flomo	Grand Bassa County
27. Joseph J. Tally	Grand Bassa County
28. Obediah Zangar	Grand Bassa County
29. M. Obediah Gbayeoga	Grand Bassa County
30. Deratus S. Bull	Grand Bassa County
31. Thomas Barchue	Grand Bassa County
32. H. Gbellay Marshall	Bomi County
33. Alphonso Caine	Bomi County
34. Emmanuel Wlue	Bomi County
35. Momo G. Seh	Bomi County
36. Joseph Morris	Bomi County
37. Kandy Jones	Bomi County
38. Winston Kanneh	Gbarpolu County
39. Stephen Quie	Gbarpolu County
40. A. Kube Patoh	Gbarpolu County
41. Meatta Zinnah	Gbarpolu County
42. Gbeyelh Synean	Montserrado County
43. Momo G. Bass	Montserrado County
44. J. Momolu Bass	Montserrado County
45. Sampson Nyema	Montserrado County
46. Francis K. Kpade	Montserrado County
47. Joseph Morris	Montserrado County
48. Samuel Davis	Montserrado County
49. Morris Watson	Montserrado County
50. Tumue Kanneh	Montserrado County
51. D. Aloysius Kroma	Montserrado County
52. O. Bismark Diggs	Grand Bassa County
53. Abel F. Giahgee	Grand Bassa County
54. Angeline Luseni	Grand Bassa County
55. Aloysius J. Y Bull	Grand Bassa County
56. James S. Harris	Grand Bassa County
57. Arthur D. Totimeh	Grand Bassa County
58. Samuel Boyah	Grand Bassa County
59. Rodney Massaquoi	Margibi County
60. Alfred Mulbah	Margibi County
61. Danilette N. David	Margibi County
62. Emmanuel Kemo	Margibi County
63. John Z. Buway	Margibi County
64. Martaley B. Cheayee	Grand Gedeh County
65. Samuel S. Pennoh	Grand Gedeh County
66. Joseph B. Kula, Sr.	Grand Gedeh County
67. Otis C. Zarzar	Grand Gedeh County
68. William Wulue Dorbor	Grand Gedeh County
69. Samuel Gaye	Grand Gedeh County
69. Joseph Kolubah	River Cess County
70. Joseph Morgan	River Cess County
71. J. Roosevelt Kouviakue	River Cess County
72. Charles Toe	River Cess County
73. James Baryougar	River Cess County

74. Simeon Simoke John Anderson	River Cess County River Cess County
75. Edmond Jones	Margibi County
76. A. Clement Morris	Margibi County
77. David L. Sumoiwuo	Margibi County
78. Sokowuah Subah	Margibi County
79. Othello H. Davies	Margibi County
80. D. Advertus Gueh	River Cess County
81. Hamilton Wesseh	River Cess County
82. Saytue Clarke	River Cess County
83. T. Marvin Goah	Grand Gedeh County
84. Reanal J.D. Quiah	Grand Gedeh County
85. Philip G. Dorbor	Grand Gedeh County
86. J. Lawrence Yarshe	Grand Gedeh County
87. Philip K. Joekloh	Grand Gedeh County
88. David Grear	Grand Gedeh County
89. Peter Boduo	Grand Gedeh County
90. Morias Waylee	Grand Gedeh County
91. Henry B. Freeman	Grand Gedeh County
92. Allyson G. Waylee	Grand Gedeh County
93. Henry Bolue	Grand Kru County
94. Daylead Kanioh	Grand Kru County
95. Phillip Grear	Grand Kru County
96. Sam Dixon	Maryland County
97. Francis Jabba	Maryland County
100. Winston P. Nyanford	River Gee County
101. Theodore T. Walker	River Gee County
102. Charles D. Toquie	River Gee County
103. Jarpu B. Wesseh	River Gee County
104. Abraham Chadah	River Gee County
105. Lasanah Zoba	River Gee County
106. Peter Quiee	Sinoe County
107. Alexander Ako	Sinoe County
108. Randolph F.K. Sambolah	Lofa County
109. Emmanuel Scott	Bong County
110. Stephen T. Seleweyan	Nimba County
111. Zlenyonoh Tarlue	Bong County
112. Steve G. Kroma	Nimba County
113. Gorma-Torkpa Gweibeic	Bong County
114. Moses Fegurson	Bong County
115. Robert B. Waum	Lofa County
116. Stanley Y. Zahn	Lofa County
117. Joseph Lee Rogers	Bong County
118. Sedekie L. Kromah	Bong County
119. Emmen M. Sackor	Bong County
120. Fobay F. Dorbor	Lofa County
121. Samuel Benson	Bong County
122. Henry G. Kleeme	Bong County
123. J. Cammue Dormea	Bong County

124.S. Toe Wah	Bong County
125.Nyan Dolo	Nimba County
126.Jesse D. Wratue	Nimba County
127.Emmanuel K. Dahn	Nimba County
128.G. Patrick Vanleh	Nimba County
<b>129.</b> Saye Duo	Nimba County
130.Charles F. King	Bong County
131.Joko Moses Kuyon	Bong County
<b>132.</b> Esther Walker	Bong County
133.Jefferson Massah	Bong County
134.Peter Kpainkpa	Bong County
135.Clarence Kpana	Bong County
136.Joe P. Tokpa	Bong County
137.Thomas K. Cisco	Bong County
138.Joseph Korvah	Lofa County

**Second National Workshop  
22-23 August 2005  
Held at Jesus Christ Church of Latter Days Saints  
Horton Avenue  
Monrovia, Liberia**

<b><u>Name</u></b>	<b><u>Ministry/Institution</u></b>
2. Ben T. Donnie	United Nations Development Programme
3. Kamil Kamaludden	United Nations Development Programme
4. Moses Massah	United Nations Environment Programme
5. Tommy Teah	ERADRO
6. S. Edward Kamara	Farmers Associated to Conserve the Environment
7. Jonathan Davies	Environmental Protection Agency
8. George O. Anderson	Global Community Link
9. George Weaymie	National Charcoal Union of Liberia
10. Joan M. Gbakoyah	Pollution Control Association of Liberia
11. Eben Moses	Center for Environmental Education and Protection
12. Victoria Cole	Forestry Development Authority
13. Joshua N. Quawah	Forestry Development Authority
14. Henry Larway	Environ-Link
15. George K. Sar	Ministry of Planning and Economic Affairs
16. Ralph Woods	Concerned Environmentalists for the Enhancement of Biodiversity
17. Solomon Gofleetee	Union of Rural Farmers
18. Erastus S. Wieh	Ministry of Planning and Economic Affairs
19. Jerome Nyenka	Environmental Protection Agency
20. Bracelia J. Bropeh	Center for Environmental Education and Protection
21. Victor N'gorbu	College of Agriculture and Forestry Students Association / University of Liberia
22. Oretha Kennedy	Environmental Protection Agency

23. William Mentee	Society of Liberian Foresters
24. Matther J. Boe,II	Monrovia Breweries
25. Joseph Boiwu	Food and Agriculture Organization
26. Peter G. Mulbah	Center for Environmental Education and Protection
27. James Z. Aquoi	Liberia Community Development Foundation
28. Eugene Caine	Monrovia City Corporation
29. Stephenett C. Weah	Ministry of Gender and Development
30. John Woods	Liberia Forest Initiative
31. Johansen Voker	Environmental Protection Agency
32. Joseph B. Dennis	Liberia Petroleum Refining Company
33. Abraham Washington	Ministry of Health and Social Welfare
34. Jamesetta Williams	OXFAM (GB)
35. David Wiles	Environmental Protection Agency
36. Thomas Mawolo	Society Against Environmental Degradation
37. Joseph Karr	Sustainable Development Promoters
38. Hopkins Badio	Ministry of Youth and Sports
39. Harry M. Attoh	Liberia Agriculture Company
40. James Makor	Save My Future Foundation
41. Flomo P. Molubah	Society for the Conservation of Nature of Liberia
42. Mulbah Freeman	Liberia Mining Company
43. Horace Sackie	Liberians Associated to fight Hunger
44. Joseph Thor	CEMENCO
45. Lasana Siaka	Liberia Water and Sewer Corporation

### **Rapporteurs**

1. Varney L. Conneh
2. Leo B. Cole
3. Deddeh A. Mulbah

### **Facilitators**

1. Boima Bafaie
2. Jonathan Davies

## **ANNEX 2.1: THEMATIC PROFILE (BIODIVERSITY)**

Forests are fundamental to the Liberian society. They are a source of subsistence, economic activity, and cultural identity for rural dwellers. They also provide medicines, construction materials, fuel, food, and other commodities for sale. This report classifies five ecosystems of biological significance as follows:

### **Forest Biodiversity**

It is believed that Liberia is the only country in West Africa that was once covered entirely with rainforest. This cover is being reduced at the rate of 1-2% annually. To date, more than 50% of the forests have been destroyed. The two remaining dense forest areas are found in the northwestern and southeastern regions of the country, separated and isolated from each other by a corridor extending from Monrovia to Nimba County. They are further fragmented and dissected by advances of shifting cultivation along existing roads and by the construction of logging paths. By the end of the millennium, Liberia contained 42% of the Upper Guinea Forest of West Africa, the largest portion possessed by a single country in the region.

Liberia's forest ecosystem can today be divided into four classes: Primary dense forests, climax secondary forests, secondary forest that has not reached climax and other mixed vegetation.

This forest ecosystem is a major component of one of the biodiversity hotspots identified globally by Conservation International. The Mount Nimba, Cestos-Sankwein River Shed, Lofa-Mano, and Sapo National Park

areas contain many endemic species. These four areas are among the 14 centers of plant endemism within the Upper Guinea Hotspot.

The 1960-1967 inventories put the attractive potential of matured timber at 80,000,000 cubic meters, and recommended a 25-year felling cycle for concession areas. Sixty forest tree species are frequently harvested in Liberia, ten (10) of which accounted for 67% of the total harvested volume of 2001. However, the extent of forest cover removal does not match replacement. Up to about 480,000 acres (192,000 hectares) of forestland is lost annually due to logging, shifting cultivation and other activities. Government has been able to replant less than 27,000 acres (10,927 hectares) since the inception of its reforestation programme in 1971.

### **Agriculture Biodiversity**

The agro-ecosystem of Liberia contains four major zones, namely: the costal plain, hilly zone, mountain and plateau zone, and the northern highland zone. Thirty percent of the land area is arable, while 2.5% is pastureland.

The agricultural biodiversity of the nation encompasses rich fauna and flora population which is characterized by domesticated plant and animal species, soil micro-organisms, pollinators, pests, wild relatives of domesticated crops and animals, as well as plant and animal genetic materials including varieties, hybrids, and different types of germplasm.

Major crops grown are rice, cassava, maize, cocoa, oil palm, coffee, rubber and sugar cane. About 90% of the locally produced rice is grown upland. Most of the upland soils are lateritic, acidic, infertile, and low in humus. The swamp soils are comparatively better in nutrients and hummus, but are waterlogged from May to October. Traditional farming with its low technologies still dominates the agriculture sector. Livestock production in Liberia has always been the least prioritized as compared to crops. It plays a minimum role in the agriculture industry. The high annual importation of livestock and livestock products is indicative of this. Cattle, goat, sheep, pig, rabbit, guinea pig, chicken, duck, and guinea fowl are the main animals used in Liberia livestock agriculture. Although local breeds are well adapted to the local conditions, their productive capacity is lower than the exotic breeds. Local breeds have been recorded as producing stunted babies and the maturity period is longer. Research in animal husbandry is very weak. Livestock feeding, housing, and health are major problems in the sector.

### **Aquaculture/Fisheries**

Aquaculture was established in Liberia in the early 1950s. Institutions involved in aquaculture include the Central Agriculture Research Institute (CARI), Bong County Agriculture Development Project (BCADP), and the Klay Agriculture Fishery. These institutions were all functional in constructing breeding facilities and supplying local indigenous fingerlings such as tilapias

and clarias to local fish farmers in aquaculture production. Presently, they are all in ruins due to the civil crisis. Although the Klay Fishery was rehabilitated by the Lutheran World Service in 2000, it was later destroyed. Aquaculture production contributed immensely in providing protein for rural families, thus contributing also to poverty reduction.

Marine Fisheries account for most of the fish catch of the country. The continental shelf provides habitat for various fishes such as tuna, shrimp, lobsters and fishes with fins. It covers 70,000sq miles, but it is of irregular shape. Artisanal fisheries cover about 20,000 km<sup>2</sup> of fishing grounds. This sector accounts for a workforce of 10,000; including full, part-time, sports fishermen and fishmongers.

Although this sector accounted for up to 12% of GDP of the agriculture sector, and accounted for 85% of the annual fish consumption, it was negatively impacted by the civil crisis; thus in 2002, a reduction in the total annual marine catch was recorded. The pelagic and some demersal fish species are being exploited. They include: sardinellas, (*sardinella maderenensis* and *sardinella aurita*) club or Spanish mackerel (*scomber japonicus*), bronga (*ethmalosa fimbriata*) and anchovy (*engraulis ecorcrasicolus*). Species of the families' *carangidae* and *thunidae* are also recorded. Other important demersal fish groups exploited by marine artisanal fishermen belong to the families *sparidae*, *pomadasidae*, *scienidae* and *serranidae*.

### **Mountain Biodiversity**

There is very limited and scanty data on mountain ecosystems in Liberia. The concept of conservation and sustainable use of mountain biological diversity is recent and has not been extensive. Except for the rapid assessment of Mount Nimba for the Tri-National Planning Meeting January 2002, no assessment has been done specifically for the management of mountain ecosystems.

Despite the above, some of the mountains are known to possess mineral resources. Four of these mountains have been exploited for iron ore. They are the Bong Range, Mount Nimba, Bomi and Mano Mountains. There are also valuable plant and animal species, which are representatives of biodiversity found in the tropical rainforest regions of the world. Their status began to change for the worse when mining, shifting agriculture, commercial logging, and uncontrolled burning progressed in mountain communities.

### **Wetlands and Mangroves**

Mangroves characterize the wetlands of Liberia, and cover a small area along the coast from Cape Mesurado to Cape Palmas, at the edges of lagoons, riverbanks and river estuaries and in widespread areas of swamps.

Wetlands cover 0.5% (500 km-wide belt extending along the total length of the coastline) land surface of Liberia. The most common mangrove species is *Rhizophora racemoza*; but six (6) other species occur in the country. Mature mangroves, reaching heights up to 30m were found along the lower Sankwein and neighboring rivers where species such as *Rhizophora harrisonii*, *Rhizophora mango*, and *avicennia* occur together with impressive tracts of *pandanus*. Except for few places in the central part of the country, primary mangrove forest has been replaced by secondary ones. Much of the mangrove destruction appears to be concentrated along the edges of creeks, and particularly more widespread around the larger towns and cities, such as Monrovia, Robertsport, Buchanan, Greenville and Harper. Mangroves are degraded due to urban expansion, collection of fuel-wood and construction of makeshift homes and establishment of unplanned human settlements.

### **Coastal and Marine Biodiversity**

The coastline of Liberia is 560km (350 miles) long and about 58% of its population lives along this coast. With a continental shelf of 14,894 km<sup>2</sup>, and a territorial sea of up to 159,200 km<sup>2</sup>. It produces 7,616 metric tones of fish and 126 metric tones of molluscs and crustaceans annually. The coastline consists of swamp related vegetation, which includes mangrove forests and savannah related vegetation, extending up to 25 km inland. The coastal and marine environments are subjected to a variety of pressures: erosion due to sand mining, oil pollution, waste dumps, human settlement and the discharge of municipal waste water. Although fishing has not exerted significant pressure on the fish population, no stock assessment has been undertaken for the country to make informed decisions on the management and utilization of the resources.

### **Fresh Water Biodiversity**

Thirteen and a half (13.5%) percent of the nation's total area are covered with water. There are six (6) major rivers, which originate from mountains in the north and empty into the Atlantic Ocean. They are the Cavalla, Mano, Lofa, St. John, Cestos and St. Paul; but their potential for navigation is yet to be fully explored.

The ecosystem has great potential for fishing, but this potential is yet to be developed. The aquatic ecosystem, freshwater as well as coastal wetlands and near-shore marine communities are clearly affected by upstream changes in terrestrial environments. There are about 166 species of freshwater fish which provide about 65% of the protein needs of the country, and of this number, one species, *barbus trispoloides* is endemic, and another species, *oreochromis macrochir* was introduced. The remaining 164 are native species.

### **Capacity Building**

Capacity building for Liberia involves improving the abilities of individuals, institutions and systems, to make and implement decisions, and perform functions in an effective, efficient and sustainable manner. But, as the workshop results indicate, there is a good level of human resources available for biodiversity management, however, some key disciplines, such as taxonomy, siculture, soil science, and other disciplines are extremely inadequate. There is a need to develop these areas. Furthermore, institutions and systems were significantly affected during the civil crisis. Presently, the Forestry Training Institute, the College of Agriculture & Forestry was damaged, the Central Agriculture Research Institute, Liberia Institute for Biomedical Research, Kpatawee Rice Development Project, BCADP, LCADP, NCRDP and are all destroyed.

### **Public Participation**

The conservation of biodiversity in Liberia has largely been the concern of sectoral agencies of government. A few conservation NGOs like SCNL and POCAL have been in the forefront of biodiversity conservation since the mid eighties. Later, after RIO, the World Summit on Sustainable Development, many local NGOs began to spring up. Today civil society groups, professional, associations, the private sector, are performing in the sector. However, there is no policy governing environmental/biodiversity oriented NGOs. Most NGOs lack the technical capability to cope. Moreover, there is a serious need to decentralize biodiversity conservation to ensure the participation of the rural populace where most of the biodiversity is located. Respondents at the workshops agreed that since their livelihood depends on these resources, it is essential to include them at all levels.

### **Identification/Monitoring**

Effective conservation and sustainable use of biodiversity is dependent on proper identification and monitoring tools as recognized in Article 7 of the CBD, and recently at workshops around the country. These tools help to assess the status and trends of biodiversity, analyze threats and help to evaluate progress towards realizing the conservation goals and objectives. Relevant data must be gathered on a regular basis, and criteria and indicators need to be established against which the status, needs and threats to biodiversity are measured.

As stated under past initiatives, the Liberia Forest Re-assessment initiatives by Fauna & Flora International have been the only assessment program. There is a need for legislations to address requirements for identifying and monitoring biodiversity programmes. Apart from inadequacies in sectoral policies and laws, the study also identified a general lack of taxonomic capacity at the national level for the characterization, conservation and sustainable use of biodiversity. There is therefore the need to build and/or strengthen national capacities to identify, assess, and monitor on a regular

basis, the nature, status and trends of the components of biodiversity, based on strategies defined in the NBSAP.

### **Access & Benefit Sharing**

Respondents at the various consultations and workshops recognized the fact that genetic resources are an important and valuable component of biodiversity and access to these resources are a primary means of promoting benefit sharing. They also recognized the fact that the results of bio prospecting are never known by rural dwellers, much more benefiting from any such initiative. For the Liberian situation, benefit sharing would consider benefits that may be shared for collection of plant specimens, royalties, data, technology, capacity building and joint research. Access and Benefit Sharing is usually facilitated through legislative, administrative, or policy measures at the national, local and sub-regional levels. For Liberia, sectoral legislations like forestry, mining, fisheries, wildlife and water resources have not adequately addressed these concerns.

### **Sustainable use of Biodiversity Components**

Biodiversity components in Liberia are used for different purposes and by different users and sectors including agriculture, forestry, mining, industries, and others. There are various sectoral and sub-sectoral policies, plans and programs, which regulate the management and exploitation of biological resources in the country and promote sustainable use of biodiversity. However, due to the isolated and fragmented nature of these legislations and policies, their enforcement is often poor, and too often biological resources are not harvested appropriately nor utilized modestly and efficiently. As a result, the integration of biodiversity management principles into national development planning is non-existent, and is a major impediment to the conservation and sustainable use of biodiversity. In other words, biodiversity has not been valued in economic terms as a key national resource, which requires regular monitoring and evaluation. The perception that biological resources are public goods has encouraged illegal prospecting for rare and highly valued biodiversity products without benefits to indigenous and local communities who are stewards and custodians of these resources. This point was strongly emphasized at the workshops.

### **Biodiversity Planning**

The 2003 consultative report identified biodiversity planning, as one of the areas where expertise is required for biodiversity management. Biodiversity Planning is an important element highlighted by Article (6a) of the CBD. This article urges parties to develop national biodiversity strategies and action plans. Prior to the development of the NBSAP, comprehensive Biodiversity planning has been lacking in Liberia. Although sectoral and

sub-sectoral management plans were available, they did not adapt an integrated planning and management approach.

Though the Environmental Protection and Management Law and the NBSAP are both advocating for the integration of biodiversity into sectoral and cross-sectoral policies, plans, and programmes as required by Article (6) of the CBD, implementation in the practical sense is still far fetched.

### **Incentive Measures**

An incentive is an economic or legal instrument, designed to encourage beneficial activities and to discourage harmful practices. The Environmental Protection and Management Law does not provide for incentive measures. Explicit policy, strategy or programme on incentive measures were recently introduced in the NBSAP. These measures are yet to be implemented. Consequently, there is an urgent need to identify, promote and implement economic and social instruments for the promotion of biodiversity conservation and sustainable use. Workshop participants agreed that they are important tools for conservation and sustainable use of biodiversity and natural resources.

### **Research and Training**

Research helps to improve the understanding of the fundamental structure and functioning of biodiversity components, and to help generate data to support the formulation of realistic objectives, policies and decisions. Liberia's potential for research is currently low. Three key institutions which handled research activities in the past, College of Agriculture & Forestry of the University of Liberia, the Central Agriculture Research Institute and the Liberia Institute for Biomedical Research were seriously impacted by the civil crisis, and lost most of their facilities and equipment.

In order to facilitate biodiversity research, the rehabilitation of infrastructure, provision of equipment, and sufficient scientific expertise to undertake state of the art research in several disciplines of relevance to biodiversity conservation must take precedence. There is need to build national capacity in scientific research and training in relevant fields.

### **Public Education and Awareness**

Poverty, illiteracy, ignorance and lack of awareness constitute major threats to biodiversity conservation. These issues cut across the thematic areas during the workshops. The majority of local people in the rural areas are poor and illiterate, and the awareness about the importance of biodiversity and the need to protect it is still low. The average Liberian farmer believes that biodiversity exists to be exploited regardless of whether it is kept within the right equilibrium.

The environmental education and awareness programmes designed by the EPA are yet to receive support. Those done under projects have not yielded the desired results in terms of changing people's attitudes towards biodiversity, nor have they succeeded in raising the political will to any significant level.

Both the NBSAP and the NCSA stocktaking exercises recognize the importance of public education and awareness for meaningful conservation of natural resources, and recommends that national capacity be built to promote public education and awareness about the importance of biodiversity and the appropriate measures for its conservation and sustainable use.

### **Impact Assessment**

Along the workshop trail, several human activities, (including projects, policies and practices), which have significant impact on Biodiversity, were identified and stressed. The forum recognized that to save the remaining biodiversity, every major land use activity must be preceded by an environmental impact assessment. Already, many activities in the past (iron ore and diamond mining, plantation development, road construction and industrial activities) have had serious impact on natural resources including the rivers. The NCSA exercise recognizes the need to build capacities at national level and to establish mechanisms to enable timely identification of impacts, and institute mitigation measures for processes and activities that have, or are likely to have, significant adverse impact on biodiversity.

### **Financial Resources**

As stated earlier, the civil crisis destroyed many biodiversity institutions and systems in place prior to the war. There are many stakeholder groups from all sectors of society involved in drawing up plans and accessing funds for implementation. Government resources are rarely adequate to meet recurrent costs of financing even the key developmental sectors, and are generally inadequate to meet biodiversity conservation needs. Because substantial investments are required to address the enormous threats and challenges to the conservation of biodiversity in Liberia, a vigorous fund-raising strategy needs to be adopted and an efficient and sustainable financial mechanism established to mobilize adequate financial resources to support the country's biodiversity programmes.

### **Indigenous Knowledge, Innovations and Practices**

The cultural and ethnic diversities of the people of Liberia have considerable volumes of indigenous systems and knowledge relevant to biodiversity. Very little, however, of this knowledge, has been documented and integrated into national programmes or institutions. Although Liberia acceded to the World Cultural Heritage Protocol, no program is in place. Local communities are

not organized to protect biodiversity and ensure the protection of their rights under the Convention on Biological Diversity. Traditional Healers' Association has not been established as called for by the Conference of the Parties.

The issue of the protection of indigenous, local knowledge and traditional intellectual property, and the need for adequate compensation of rights, must be addressed because communities must be protected against exploitation. The NCSA, therefore, recognizes the urgent need to build national capacities to document and promote the application of indigenous and local knowledge, practices, and innovations, and at the same time, establish a legal and policy framework to protect illegal access to, and use of this knowledge and to ensure that holders of such knowledge are adequately protected and equitably compensated.

### **Technical and Scientific Cooperation**

Technical and scientific cooperation are important instruments in shifting the direction of biodiversity conservation in Liberia, especially in agriculture and forestry. There are no clear guidelines on how this cooperation (which include savings in time and resources and optimizing the use of available facilities) can be achieved. Even among local groups and institutions, cooperation is quite limited.

### **Protected Areas**

#### **In-situ Conservation (Inside Protected Areas)**

Liberia has designated five (5) protected areas as important for conservation purposes. They include National Park, Reserves and Ramsar Sites. The key issues identified in the management of protected areas include:

- Weaknesses in the enforcement of policy and regulatory mechanisms;
- Lack of institutional arrangements to effectively collaborate and network;
- Inadequate financial resources;
- Lack of adequate cadre of professionals; and,
- Inadequate political will.

In addition, there are gaps in biodiversity research (both institution and human resources), which would require urgent attention. Major efforts are also required to involve local communities in wildlife management. There is a need to establish/improve, and harmonize disaster preparedness mechanisms.

#### **Ex-situ Conservation (Out Side Protected Areas)**

Liberia considers the protection of sites of high biological diversity outside of protected areas, because they may be unique endemic habitats, or they may be reservoir for threatened species, wild relatives of domesticated species, and/or seasonal habitats/staging grounds for migratory species. Buffer zones between protected areas and areas of human settlement can be zones of potential conflicts; particularly, with regard to lose of human life, farm crops, and other properties. Mechanisms must be established to safeguard these and other social interests.

### **Ex-situ Conservation (Gene Banks, etc)**

The value of ex-situ facilities such as gene banks, arboreta, botanical gardens, aquaria and sites for the breeding of endangered species is crucial to conservation initiative for Liberia. Although this country has not developed these facilities to any considerable level, there's need to expand whatever exists in order to facilitate the identification and collection of rare germplasm, threatened and endangered species as well as the captive breeding of the threatened animal species. Care should be taken to include medical aromatic, pharmaceutical and other plants providing special products.

### **Alien and Invasive Species**

Invasive species are recognized as one of the leading threats to biodiversity conservation, and pose economic costs on agriculture, forestry, fisheries and other human enterprises. They also have the potential to impact human health. The assessment recognized the need to control the introduction and/or impact of invasive like striga and water hyacinth etc. and monitor their effects on the native species and the environment in general. As determined by the process, National guidelines are required for the control of weeds and vermin.

### **Access to and Transfer of Biotechnology and other Technologies**

Liberia has just completed the development of a National Biosafety Framework to guard biotechnology investment in the country. The stocktaking exercise revealed that the country has huge genetic resources for biotechnology, many of which are yet to be exploited. Some of the major issues identified include:

- Lack of adequate human and institutional resources for biotechnology management;
- Lack of capacity for risk assessment, management and communication;
- Poor and/or inadequate infrastructures for biotech;
- Lack of guiding policies, regulations, standards, or set of procedures on Biosafety; and,

- Lack of comprehensive policies/investment on research and development, and the fair and equitable sharing of benefits.

### **Biotechnology/Biosafety (The Cartagena Protocol)**

Biotechnology has been practiced in Liberia in a limited way over the years in the brewing of beer, bud grafting, vaccines development, etc. Modern biotechnology, which uses biochemical by transferring genetic materials from one organism to another, is a relatively new discipline, which requires public education/awareness and participation. Because biotechnology has potential risks inspite of its advances in other areas, including medicine and agriculture, there is an urgent need to ensure safety in dealing with its products. Liberia lacks the required capacities (individual, institutional, and systemic) to deal with emergency problems/situations.

## **ANNEX 2.2 Thematic Profile for Climate Change**

### **Enhancement/Creation of enabling Environment**

On November 5, 2002, Liberia became party to United Nation framework Convention on Climate Change and a signatory to the Kyoto Protocol. Liberia is committed to fulfilling its obligation for reducing greenhouse gas emission into the atmosphere.

Following the 14-year devastating civil war, Liberia is now grappling with the plethora of environmental and other problems occasioned by the civil strife. Climate Change issues especially present a challenge because due to the Country's isolation during the war, Liberia seriously lags behind international efforts in tackling climate change problems. Consequently, as a party to the UNFCCC duly obligated to implement terms of the convention and its protocol, there are compelling needs for the country to ensure an enabling environment for capacity building through:

1. Establishment of a permanent climate change secretariat and strengthen its technical and human resources capacity
2. Supporting education and training in, and public awareness of, climate change related issues
3. Strengthening the appropriate legal and institutional framework to

- a. Identify and remove capacity building barrier
  - b. Strengthen and enhance environmental regulatory framework and legal systems through creation of supportive backup for their enactment and implementation
3. Strengthening existing and where necessary, establishing
- a. Research programmes on climate change variability and climate, oriented towards improving knowledge of the climate system and scientific capability;
  - b. Systematic observation and monitoring networks (climate and hydrological monitoring station, climate, fire hazards, sea-level rise, land degradation, floods, and droughts);
  - c. Centers and institutions for the provision of research, training, education and scientific as well as technical support in specialized fields relevant to climate change.

### **Institutional Capacity-Building to strengthen the National Climate Change Secretariat**

Liberia does not yet have a permanent institutional structure established for climate change activities; notwithstanding, frantic efforts are being exerted to put in place the necessary institutional framework. The Report on the Thematic Area of Climate Change recommends that to enable effective implementation of the convention at the national level, it is necessary to have a National Climate Change Committee or NCCC. Also recommended are a UNFCCC Secretariat and IPCC Secretariat; a Thematic Expert Group, and four Task Teams: A Task Force on Mitigation; Task Force on Vulnerability & Adaptation; Task Force on Green House Gases Inventory, and Task Force on Cross-cutting Issues. As with the CBD, The NCCC will report directly to the Environmental Protection Agency, the GEF Focal Point and the lead agency on the environment.

The National Climate Change Committee and the Task Teams will be multidisciplinary. They will comprise representatives from government agencies, non-governmental organizations, private sector institutions, civil society and academic institutions. The NCCC will be mandated to implement the UNFCCC in Liberia. Its responsibilities and roles will include:

#### **3.3.1 Liberia Initial National Communication**

##### **National Greenhouse Gas Inventory**

The stocktaking and stakeholder consultation on Anthropogenic Emission of Greenhouse Gases (GHG) which was held in September 2004, provides Liberia the opportunity to address the issue of Article II of the UNFCCC. Thus the issue of climate change level of greenhouse gases in the atmosphere, preventing dangerous anthropogenic interference with the climate system has scientific and political components. Both are important

for ultimate decision whether given the level is hazardous (dangerous) or tolerable.

The Greenhouse Gases Emission are usually estimated according to international methodologies on the basis of national statistics on energy balances industrial and agricultural production, waste management and land use, forest resources; quality of the environment from the perspective of human health, security of settlement, and safety of transport communication.

### **Results of the Stocktaking on Anthropogenic Emission of Greenhouse Gases**

1. Ministry of Transport, Bureau of Land Transport vehicle import statistics for the 2001 – 2004 into the country estimated 29,700 vehicles (10450 sedans, 7100 jeeps, 4950 pick-ups, 310 trailer, 3830 truck, 3060 buses);
2. Five years comprehensive analysis of log production estimated 2,502,068.603M<sup>3</sup>
3. The quantities of solid waste received at Fiamah disposal site between December 2003 to August 2004 estimated 17,965.856 cubic meters;
4. Gross energy production increased by about 10.3 percent from 520,614 KWH in 2003 to 574,129 KWH in June 2004. A total gross energy production is estimated 119,291.22 KWH (LEC Input Data June 2004).

### **Assessment and Implementation of Adaptation Measures**

To adapt to the strategies of climate change the following are some of the measures identified:

1. encourage the planting of resistant varieties of crops and animal breed;
2. encourage irrigation/drainage system;
3. provide trial on exotic three species;
4. awareness/participation of local dwellers in forest conservation;
5. encourage integration in fish culture;
6. rehabilitation and development of ponds and other inland water bodies used for spewing;
7. regulate the destruction of mangrove (fish nursery areas) and other fish habitats;
8. rehabilitation and development of hydro dam system in Monrovia and major cities of the country;
9. provide water supply to major cities of Liberia;
10. Construction (I.e. adequate ventilation in the energy sector)
11. Construction of breakwater in major coastal cities.

### **Cross-Sectoral Issues**

Cross-sectoral measures such as research, public awareness, technology development and transfer and capacity building are vital in addressing climate change issues of any nation or region.

The cross-cutting issues on Task Force (CITF) of the proposed National Climate Change Committee (NCCC) to be setup will undertake outreach activities, which included public meeting to solicit support and comment on the measures, educational campaigns and media events. This will strengthen the capacities, with the view of integrating issues related to climate change in national planning.

## **A. Research and Systematic Observations, including Meteorological, Hydrological and Climatological Services**

### **Research Issues and Constraints**

In Liberia, research activity is very low in the economic analysis of mitigation and adaptation measures. The hydrological/meteorological network and the improvement of existing network for providing the fundamental data needed in research activities is a serious constraint.

The national climate change committee on Task force mitigation of greenhouse gases and adaptation to climate change capacity needs are to be enhanced through training in economic assessment of measure and projects. Another serious deficiency is that, stations have not been in existence for fourteen or more years and needs to be rehabilitated. In view of the constraints of resources, however, the pace of development has been gradual. There is an urgent need of rapid expansion of data collection network on priority sectors. This could be achieved by international cooperation and technical assistance.

### **Systematic Observation**

Meteorological phenomena have been observed in Liberia since 1945 under the supervision of the United States of America (USA) Air Force during War World II and later named as Roberts International Airport. The hydrological phenomena have observed since 1972 with a small staff and particularly no usable equipment, under the supervision of the Ministry of Public Works, later transfer to Ministry of Lands and Mines and Energy, the Liberian Hydrological Services Bureau.

Hydrological and meteorological services in Liberia had two synoptic stations eighty hydro meteorological stations, thirty-six rainfall stations and eight climatologically stations operational before the outbreak of country civil crisis 1990.

By the end of 1989, Liberia government received from the World Meteorological Organization (WMO) a satellite ground receiver for weather forecasting, three set of microcomputer for climate data management, data

collection platform (DCP); data retransmission system (DRS); micro-computer for weather data transmission and a radar system for weather observation. All of these equipments were installed except the DRS. Presently with the help of United Nations Mission in Liberia (UNMIL) the airport is gaining its pre-war status.

The Ukrainian weather squadron is deployed in Liberia as apart of UNMIL. They are producing similar products from Sierra Leone. UNMIL do not currently make their forecast publicly available. They have deployed weather radar at Roberts International Airport (RIA). The UNMIL aviation section has expressed a desire to see project specification for redevelopment of aviation meteorology through out Liberia.

The water quality laboratory before the civil war had conducted considerable programs under the Liberian Hydrological Services at the Ministry of Lands, Mines and Energy. During the pre-war status, the LHS water lab tested 30 parameters surface and ground water from 400 points on their quality. About 150 observed boreholes, under EEC in the southern region, now 20 boreholes, were done by AICF in the Monrovia area and about 20 boreholes in other areas of the country.

Presently the water quality laboratories of LHS through the financial support from UNICEF/ECHO, the following laboratory equipment are available at LHS to perform quality and chemical analysis.

The Deluge testing kits for determining kits for determining (Bacteriological analysis, Tubility, Temperature, PH, Chlorine test) 2 calorimeter, 3 conductivity and 4 photometer

### **C: Regional Systematic Observational Network**

Liberia is to benefit from the European Organization for Exploitation of Metrological Satellite (EUM-SAT) meteosat second generation – MSG satellite by the end of the year 2005. The PUMA project is to ensure that up to 41 national meteorological centers in Africa sustain the delivery of the product. The overall objective of the PUMA project is to improve the standards of living and environmental Management in Africa and to provide information useful for development, environmental security and poverty elimination on the continent, through the satellite transition process.

#### **Priority activities related to systematic observation**

1. Re-establishment of hydrological and metrological stations throughout the county;
2. Generation of vital data for the planning of sustainable program in Agriculture, water resources management and hydropower supply;

3. Strengthening the human resources and capacity of the institutions involved in collection, processing and maintenance of data and information related to meteorology, hydrology and climatology
4. Link the various climate change institutions to the MSG satellite to provide a bigger capacity data processing and storage expansion for the upgrading. Networking and interconnectivity of the various data base systems of the departments and other collaborating institutions.
5. The replacement and upgrading of the convention equipment to digital equipment to minimize human interaction and also to provide continuous recording of the meteorological, hydrological and climatologically element and other atmospheric phenomena.

#### **D. Capacity Building and Technology Transfer**

Recalling the relevant provision of chapter 34 of Agenda 21 on transfer of environmentally sound technology, cooperation and capacity building, Liberia is committed to mitigate and facilitate adequate adaptation to climate change.

The biggest tragedy in the Liberia civil conflict was the mass exodus of many professionals and highly trained technicians. This resulted into a serious brain drained situation.

United Nations agencies and other international organization should train professional staff of sector involved in climate change activities. Such technology should shift from fossil to renewable (solar and wind) energy.

Solar energy technology will go along way in the health, communication, water resources, and commercial and Residential sector of the economy. Liberia is already aware and reception of clean technologies. The needed technologies are determined by the mitigation and adaptation options and capacity development activities identified in the National Communication documentation developed by Liberia in collaboration with multilateral and bilateral development partners.

#### **E. Education, Training and Public Awareness**

##### **Education**

Climate and climate change is very new in Liberia educational system. The subject like climatology is offered for two semesters by the Department of Geography at the University of Liberia. There is no institution in the country that offers degree Programme in Meteorology, Environmental studies and Hydrology. Liberia is for the first time to offer a degree Programme in Environmental studies as of the next academic school year (2006) at the University of Liberia. There is a need to build both the physical and human resources capacities of the University of Liberia and the Environmental Protection Agency to better handle climate change curriculum.

##### **Training**

### 1. **Training and Climate Change Vulnerability and Adaptation**

Participants to the two weeks workshop on the identification (mapping) of vulnerability with participatory appraisals randomly selected localities within the four regions of the county. The technical team comprising of resource persons was formulated and trained in techniques of participatory Assessment (PA) and the use of Geographic Positioning System (GPS) for vulnerability mapping purpose

### 2. **(Wagtech International Water Quality Testing Seminar)**

Participants to the one-day seminar were trained by and international expert from England on Wagtech Equipment (Water quality Kit). 20 participants from government, NGO and UNICEF attended the seminar.

### 3. **NAPA (workshops and seminars)**

For every National Consultant's report, workshop was held for two days each. 100 participants attended each workshop to review the consultant's reports and make recommendations. The participants included NGOs, Government Institutions and the private sector.

## **Public Awareness**

Public awareness and knowledge of climate variability issue should be promoted especially through media and seminars. It is particularly important to target decision- markers with accurate information on the causes and consequences of climate change..

## **ANNEX 2.3: THEMATIC PROFILE FOR LAND DEGRADATION**

Benchmarks are used as monitoring mechanisms in determining the level and characteristics of desertification since Desertification indicator parameters may not readily be observable or measurable as they vary from place to place and region to region. Indicators may be changes in rainfall pattern and traditional farming practices.

## **Environmental Management**

The Liberian Government has established several institutions engaged in addressing environmental issues in various thematic areas.

The EPA is the umbrella organization charged with the responsibility to use all practicable means possible, consistent with other essential components of national policy, to improve and coordinate government's plans, functions, programs and resources to the end that the nation may establish a sound and sustainable environmental management policy.

The Liberian Hydrological Service has over the years been actively involved in water table level changes determination. The data collected have been valuable in providing information to locate water wells for rural communities and of late for internally displaced people in camps around the country. This Bureau was active in collecting data on flooding, changes in river flow

rates and current velocities during the rainy and dry seasons as well as basement catchments parameters.

The major constraint of the Liberian Hydrological Service has been the destruction of its laboratories, the removal of all of its current flow gauges and rain gauges and the absence of requisite personnel who fled the country as a result of the war.

The Liberia Water and Sewer Corporation is engaged in the urban areas to determine the levels of city pollution versus the quality of water being supplied to the urban dwellers. The programs also include the rainfall and erosion patterns and sediment transport of the catchments areas of the Mount Coffee Hydro Dam. Also, the information gathered from this is now being utilized for the design of the new hydroelectric dam on the St. Paul River.

The Liberia Domestic Airport Authority, the Division of Meteorology at the Roberts International airport and the firestone rubber Company gather weather information that is utilized by the relevant agencies.

The Ministry of Agriculture over the years has initiated rural farmers' training programs in swamp rice cultivation in order to minimize soil erosion due to upland farming. The Ministry, in the bid to develop more technical capacities, established CARI in Bong County to cater to the unrelenting demands by farmers to understand and undertake more productive farming methods.

The Ministry of Lands, Mines and Energy correlate in land management and the environment and have division involved in the collection of data in the entire country.

The database established by the Ministry is shared with the ministry of Agriculture and the forestry Development Authority in measuring progress in desertification and drought matters.

The coordination of relationships in agencies involved in environmental management studies has greatly enhanced a better understanding of early desertification parameters in Liberia. The soil classification exercises, the rainfall patterns data and the basement catchments area characteristics were all being synchronized by the related agencies to set up a database on various aspects of land management.

### **Capacity Constraints**

The major constraints common to all of the above institutions have been the prolonged civil war that resulted to total destruction of all relevant infrastructure, the brain drain as a result of flight (from war) of trained

personnel from those institutions, and Government's poor financial position to reinstitute viable programs to correct the situation.

### **Public Awareness**

There was a vigorous land management public awareness campaign launched during the 1970s and 80s which led to establishment of several land management entities including the National Land Survey Institution under the auspices of the Ministry of Lands, Mines and Energy in Bomi County, the Road Maintenance Training Center in Grand Bassa County, the training centers established by the Lofa County Agricultural Development program, the Bong County Agricultural development program and the Nimba County Rural Development program. The Intofawor farmers Cooperative and the Gbandi Farmers Cooperative had establish training centers for farmers' awareness purposes.

Of late, the Government of Liberia and NGOs have carried awareness programs in land degradation/ desertification programs. In early 2004 the UNEP conducted a series of workshops in Monrovia, which culminated into the Desk for Liberia. This study provides an analysis of the environmental situation of the country.

The concept of sustainability has grown out of the need to reconcile conflicts between economic development and the conservation of the environment. Sustainable development is defined as development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. The ideal of sustainable development is not confined to agriculture, but is an important part of it.

Sustainable farming aims to balance agricultural development with the natural limitations of the environment, while feeding more people and providing many with a better diet. Organic farming, which uses no chemicals, is one form of sustainable development that is slowly being introduced into the countries which have alternative sources of food, in case the organic yields decline without the help of artificial fertilizers and pesticides. Others include integrated pest management, which combines the judicious use for strictly timed, narrow-spectrum pesticides with biological and cultural forms of control; and improved methods of irrigation, which deliver measured amounts of water directly to the roots of plants. Liberia being a sunshine-rainfall country to date does not have severe problems of irrigation but imprudent management of the environment could render the country vulnerable to effects of land degradation/ desertification.

### **Research and Technology Transfer**

A key concept of sustainable farming is environmental capacity, determined by assessing how much use a particular environment can withstand before it starts to decline in productivity. The overall aim is for an agriculture that

maintains the integrity of agro-ecosystems through a reduced dependence on chemicals, greater care of the soil, and conservation of water. Unfortunately, all these hopeful developments are still a long way from yielding food in the amounts to feed the country.

Notwithstanding, the Ministry of Agriculture, in its post-war agenda, is involved in agriculture development research programs including identification and control of pests and diseases, crop variety development, agro forestry, marketing and plant breeding. The reactivation of the Central Agricultural Research Institute (CARI) would be an important move in the realization of the research programs.

These programs, however, are only beginning to take shape as almost all essential infrastructure and personnel were of late non-existent in that sector.

The Disease Control Division of the Ministry has undertaken several tours of various vulnerable areas that are prone to plant diseases and taken specimens for analysis. Results from tests conducted on such samples could become important database for future disease identification and control for farmers.

Another important programme being implemented by the Ministry of Agriculture cardinal to sustainable land-use management is paddy rice production. The programme aims at providing farmers skills in paddy rice production to engender higher yields; it also seeks to curb the relentless degradation of upland soil through shifting cultivation.

