

**LIBERIAN NATIONAL ACTION PROGRAMME  
TO  
COMBAT DESERTIFICATION  
2011 – 2018**

**STRENGTHENING CAPACITIES FOR SUSTAINABLE  
AGRICULTURE TO REVERSE THE TREND OF  
LAND DEGRADATION**

**Submitted to: Environmental Protection Agency  
4<sup>th</sup> Street, Sinkor  
Monrovia, Liberia**

**Prepared by: Dr. Henry M. Sibanda  
Jerome Nyenka**

**APRIL, 2011**

## TABLE OF CONTENTS

<b>Item:</b>	<b>Page:</b>
List of Tables	iv
List of Figures	iv
Acronyms	v
Glossary of Terms	vii
Executive Summary	1
 PART 1 – STRATEGY	 5
 Introduction	 5
 1. Overall Vision	 7
2. Strategic Objectives and Performance Indicators	7
3. Priority Thematic Interventions	9
4. Priority Areas and Approaches for SLM	11
5. National Action Programme	15
6. Financing	19
7. Integrated Investment Framework	20
8. Key Stakeholders and Roles and Responsibilities	21
9. Monitoring and Evaluation	29
Conclusion	30
 PART 2 - NATIONAL ANALYSIS	 31
 1. Country Context	 31
1.1 Socio-Economic Conditions Influencing Land Degradation	31
1.2 Biophysical Conditions	35
2. Analysis of the Causes of Land Degradation	44
2.1 Natural Causes of Land Degradation	44

2.2	Anthropogenic Causes of Land Degradation	46
2.3	Extent of Land Degradation, Geographical Distribution and Communities Under Threat	55
2.4	Land Degradation Trends and Geographical Targeting	67
2.5	Costs of Land Degradation	69
3.	Community Practices, Previous and Current Programmes, and Lessons Learned	72
4.	Analysis of the Enabling Environment Influencing SLM	73
4.1	Policy Frameworks Influencing SLM	73
4.2	Regulatory Frameworks Influencing SLM	79
4.3	Institutional Context Influencing SLM	85
4.4	National Planning Processes	89
4.5	Coordination Mechanisms Influencing SLM	90
4.6	Incentive Frameworks Influencing SLM	92
5.	Past and Current Financial Flows for Natural	93
5.1	Resource Management	93
6.	Sources of Financing for SLM	93
6.1	Internal	93
6.2	External	97
6.3	Innovative	100
	Conclusion	103
	References	113
	Annexes	
1.	Process of NAP Elaboration	

## **List of Tables**

<b>Table 1. Population, Surface Area and Density (1984 and 2008)</b>	<b>32</b>
<b>Table 2 Soils of Liberia</b>	<b>40</b>
<b>Table 3: Average Global Value of Annual Ecosystems Service</b>	<b>70</b>
<b>Table 4: Land Cover Class Environmental Value Weights</b>	<b>71</b>
<b>Table 5: Funds Allocated to Relevant Sectors that Address Land Related Issues</b>	<b>93</b>
<b>Table 6 Table 6. Donor contribution to the Liberian budget.</b>	<b>99</b>

## **List of Figures**

<b>Figure 1. Political Boundaries map</b>	<b>32</b>
<b>Figure 2. Rainfall Map of Liberia</b>	<b>37</b>
<b>Figure 3: Temperature Map of Liberia</b>	<b>38</b>
<b>Figure 4: Destructive Logging Practices: Unselective logging</b>	<b>49</b>
<b>Figure 5: Shifting cultivation</b>	<b>49</b>
<b>Figure 6: Destructive logging; damage to secondary growth and the soil</b>	<b>50</b>
<b>Figure 7: Illicit Mineral Mining in Grand Cape Mount County</b>	<b>51</b>
<b>Figure 8: Deforestation due to refugee / IDP camps</b>	<b>52</b>
<b>Figure 9: Soil erosion in Refugee / IDPs camp</b>	<b>53</b>
<b>Figure 10: Map showing land-use patterns in Liberia in 2004</b>	<b>56</b>
<b>Figure 11: Afforestation nursery</b>	<b>59</b>
<b>Figure 12: LAMCO exploration tunnel (over 30 years)</b>	<b>63</b>
<b>Figure 13: Map showing mineral deposits all over the country</b>	<b>64</b>
<b>Figure 14: Alluvial mining causing extreme environmental degradation</b>	<b>65</b>
<b>Figure 15: Woodfuel causing deforestation</b>	<b>66</b>
<b>Figure 16: Stone quarrying for construction</b>	<b>67</b>
<b>Figure 17: Trends of Deforestation: forest cover over 1180 years</b>	<b>68</b>
<b>Figure18: Mangroves clearing and solid waste dumping to reclaim land in Paynesville/Congo Town</b>	<b>69</b>



## **ACRONYMSs**

CARI	Central Agricultural Research Institute
CI	Conservation International
EPA	Environmental Protection Agency
ERADRO	Environmental Relief & Development Research Organization
FAO	Food and Agriculture Organization
FDA	Forestry Development Authority
FFI	Fauna and Flora International
GEF	Global Environment Facility
IUCN	International Union for the Conservation of Nature and Natural Resources
LDC-SIDS	Least Developed Countries-Small Island Developing States
LIFE	Liberia Indigenous Forum for the Environment
MDG	Millennium Development Goals
MIA	Ministry of Internal Affairs
MOA	Ministry of Agriculture
MOCI	Ministry of Commerce and Industry
MSP	Medium Size Project
NAP	National Action Programmes
NAPA	National Adaptation Program of Action
NBSAP	National Biodiversity Strategy and Action Plan
NCC	National Coordinating Committee
NGO	Non Governmental Organization
POCAL	Pollution Control Association of Liberia
SAMFU	Save My Future Foundation

SCNL	Society for the Conservation of Nature of Liberia
SDI	Sustainable Development Institute
SLM	Sustainable Land Management
SOLF	Society of Liberian Foresters
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change

## **Glossary of Terms**

**Ecologically sensitive area** – Habitats such as wetlands, aquifer recharge zones, important wildlife habitats and so forth which are, or might be, sensitive to degradation or destruction by human activities.

**Ecosystem** – A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, as well as the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest, or the Earth's biosphere – but it always functions as a whole unit. Ecosystems are commonly described according to the main type of vegetation (e.g. forest ecosystem, range ecosystem).

**Ecosystem services value** – A measurement of the economic value (expressed in this instance per hectare per annum) of specific ecosystems such as a wetland or tropical forest (based on Costanza et al., 1997).

**Participation** – A process by which stakeholders are active and equal partners in decision-making, and may have shared ownership and control over project/programme design and implementation (and also eventual evaluation).

**Protected area** – Portions of land protected by special restrictions and laws for the conservation of the natural environment. They include large tracts of land set aside for the protection of wildlife and its habitat; areas of great natural beauty or unique interest; areas containing rare forms of plant and animal life; areas representing unusual geologic formations; places of historic and prehistoric interest; areas containing ecosystems of special importance for scientific investigation and study; and areas that safeguard the needs of the biosphere.

**Rehabilitation** – The full or at least partial restoration of (in this instance) degraded landscapes and/or impaired ecosystem services to their state prior to human derived degradation.

**Vulnerability** – The extent to which a community, structure, service or geographic area is likely to be damaged or disrupted by the impact of a particular hazard (Tobin and Montz, 1997).

**World Heritage Site** – A designated and protected site of great cultural significance or a geographic area of outstanding universal value. Mount Nimba (shared between Guinea, Côte d'Ivoire and Liberia) is a World Heritage Site recognized by Guinea and

Côte d'Ivoire, but not by Liberia.

**Carrying capacity** – Capacity of an ecosystem to support healthy organisms while maintaining its productivity, adaptability and capability of renewal. OR the number of animals/people which can be maintained on a given area of land without disturbing the equilibrium of plant growth and livestock production on the range.

**Semi-arid areas** – zone receiving 500–1,000mm rainfall annually (arid, sub-humid, humid areas).

**Improved Stove** – General description for any cooking device designed to reduce energy consumption. Usually intended for woodfuels as an improvement on traditional open fire systems, and made with metal, clay, ceramic or a combination.

**Insolation** – Degree of exposure to the sun's rays. Important in assessing a site's potential for solar cooking.

**Afforestation** – The establishment of a more-or-less continuous tree cover, normally by planting, in areas which have previously been without trees.

**Agroforestry** – Land-use system in which woody perennials are maintained or planted, in some form of spatial arrangement or temporal sequence, on the same land as agricultural crops and/or livestock.

**Biodiversity** – The variety of life on Earth. In practical terms, biodiversity comprises genes, species and ecosystems. Genetic diversity refers to variations within or between populations of the same species; species diversity refers to the number of different species (plants, animals or micro-organisms) in a site habitat; ecosystem diversity refers to the variety of ecosystems, habitats, forest types or communities, each of which is composed of a distinctive set of genes and species, and of distinctive elements of soil and climate.

**Community forestry** – A generic term for forestry where people as user groups, communities and individuals are the main actors. It includes village woodlot establishment, farm forestry, tree planting in private fields and joint management of public forests by communities and governments.

**Coppicing** – Traditional method of forest management in which shoots are allowed to grow up from the base of a felled tree.

**Deforestation** – The depletion of tree crown cover to less than 10 per cent.

**Desertification** – Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities – total removal of vegetation cover by agriculture or overgrazing, for example.

**Exotic species** – Species introduced from another ecological zone; usually the opposite of ‘indigenous’.

**Forest degradation** – The change of forest class (from closed to open forest) which negatively affects the stand or site and lowers production capacity.

**Forest management** – Development and implementation of plans to protect, enrich, manipulate and exploit wood and non-wood products from natural or plantation forest resources.

**Harvesting** – Involves all activities required in the removal of both timber and non-timber forest products from the forest, including onsite treatments to prepare the products for transport to primary processing sites.

**Multipurpose tree species** – Species providing several different products and benefits, such as timber, fuelwood, fodder, shelter and soil improvement.

**Plantation forests** – Forests established artificially, either by afforestation on land which has not carried forest within living memory or by reforestation of land which carried forest before but where the indigenous species are replaced with a new species or genetic variety.

**Poles** – Small-diameter wood used in an unprocessed form for construction, fence posts and other purposes.

**Shifting cultivation** – A farming system in which land is periodically cleared, farmed and then returned to fallow. Synonymous with slash-and-burn and swidden agriculture.

**Social forestry** – Farm, community and rural development forestry.

**Sustainable forest management** – The management and use of forests and wooded lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, without causing any damage to other ecosystems.

**Sustainable use** – Use of an organism, ecosystem or other renewable resource at a rate commensurate with its capacity for renewal.

**Watershed** – A watershed or catchment is an area of land with common drainage. It is considered both as a physical-biological unit and as a socio-economic-political unit for planning and management of natural resources.

**Watershed management** – Planning and implementation of natural resource utilisation in a catchment area, without adversely affecting the soil and water resources.

**Woodland** – Open stand of trees up to approximately 18 metres in height in which tree crowns cover at least 30 per cent of the land area but are, generally, not overlapping.

## **EXECUTIVE SUMMARY**

### **Sustainable Land Management (SLM) Strategy**

Since desertification is one of the serious causes to land degradation, Liberia signed to be a member of the UNCCD allowing the implementation of the convention to become a high priority. Due to the unsustainable agricultural, unsustainable logging practices and unregulated mining Liberia has become susceptible to climate change which has the following consequences: changes in rainfall patterns, extreme coastal zone flooding and rise in sea-level.

The overall vision of the SLM program is “the extent and intensity of land degradation will be significantly reversed” with the following strategic objectives (i) improvement of the standard of living of the people (ii) improvement of the condition of the affected biodiversity and ecosystems (iii) contributing to global benefits, (iv) improvement in the mobilization of financial and human resources. This results in the program having the following priority thematic interventions areas a) policy and legislation, b) land-use planning c) institutional coordination d) capacity building e) knowledge management network f) waste management g) SLM mainstreaming h) M & E.

The national action program is an eight (8) year program with the following phases (i) inception phase or the short-term activities (ii) implementation phase and (iii) the consolidation and recommendations phase. The financing of the SLM program is a three pronged approach with the national budgetary allocations playing a major role. This will be complemented by the external/donor financing as well as the innovative financing mechanisms.

The stakeholders who will work on the SLM program have been divided into the following categories, Community Based Organizations, Civil Society Organizations, International NGOs, National NGOs, Research and Academic Institutions, Private Sector and UN organizations.

The M&E is seen as an integral part of the NAP. It will be set up following the toolkit recommended by the Global Support Unit of UNCCD.

### **National Analysis**

Liberia lies between the longitudes 7° 30' and 11° 30' west and latitude 4° 18' and 8° 30' north, with an area of 96,160sq km. It is partitioned into 15 counties, with an estimated population 3.6million, 70% of which are rural with an average annual growth of 2.7%. It has a per capita income USD199 and 76% of the population lives below the poverty datum level after the 14 year civil war. This rural population is heavily dependent on natural resources like forests.

Liberia lies in the West African monsoon climate with rains falling between May and October and the dry Harmattan winds blowing from the Sahara desert between November and March. The rainfall ranges from 1700mm in the dry north to over 4500mm in the wet south. The day temperatures range between  $28^{\circ} - 33^{\circ}\text{C}$  and night temperatures of  $24^{\circ} - 27^{\circ}\text{C}$ . The country is divided into 4 major agro-ecological zones namely Coastal Plains, Inundated Plateau, Rolling Hills and Plateau and Mountain zones. The country has the following major soil types, the regosols forming 20%, latosols forming 75%, the swamps forming 5% of the total. The Liberian forest is one of the 25 global hotspots. Currently 50% of the country is still covered with forests and is home to over 2200 flora and fauna species. Currently only 1.3% of the land is protected namely Sapo National Park and the East Nimba Nature Reserve.

### **Causes of land degradation**

The causes of land degradation are either biophysical or anthropogenic. The potential hazards are the high intense rainfall totaling over 4770mm a year couple with the high daily temperatures that cause laterisation of the latosols. The laterite form soil capping which increases runoff resulting in soil erosion. The regosols are susceptible to water and wind erosion and their high infiltration rates resulting nutrient leaching leading to infertility and low productivity. Pollution of water bodies and swamps due to the dumping of solid and liquid waste destroys the breeding grounds for fish and crustaceans.

The anthropogenic causes of land degradation have the human being at the centre. This is due to bad policies and laws, lack of land-use plans, knowledge gaps. These have resulted in continued slash and burning, deforestation, bad mining practices, the destruction of wetlands etc. all these are fuelled by food insecurity for the human beings. The trend shows that degradation is on the increase as can be evidenced by increase in deforestation, increase in slash and burn as well as increase in woodfuel and charcoal use during the civil war when there was no electricity. The cost of land degradation is a complex subject since it can only be determined indirectly using methods like the Ecosystems Services Value (ESV). The ESV increases with the increase in land cover with cropland having the lowest value and the estuaries and mangrove swamps having the highest values. Alternatively the cost of land degradation can be determined by assessing the total cost of rehabilitation of degraded land.



## **Community Practices**

Shifting cultivation is the most common practice, but with population increases the fallow periods have reduced from about 15 years to about 4 or 5 years. Since it accounts for 90% of upland agriculture with this decline in fallow period it is no longer sustainable. (Lesson Learnt: It was a good system which allowed nutrient recycling, but is now under pressure. Agroforestry fallow planting can reduce the fallow period to about 3 years with no negative impacts on soil fertility). Lowland agriculture is practiced in Foyah district, Lofa County, as well as in Voinjama, Kolahun, Zorzor districts. Although lowlands in Liberia only account for 6.1% of the land area very little of this is utilized. (Lesson Learnt: the swamp soils can be managed effectively so it can be used all over the country to produce alternative/cash crops without having to cut down any trees in the process).

## **Enabling Environment**

The government vision for development is spelt out in the Poverty Reduction Strategy (PRS) and has the following priorities i.e secure, sustainable and equitable growth and to rebuild the capacities of the Liberian people and to establish responsible institutions. The PRS has 4 pillars (i) expanding peace and security (ii) revitalizing the economy (iii) strengthening governance and the rule of law (iv) rehabilitation of infrastructure and delivering basic services.

It is envisaged that the possible entry points for SLM could be in the following ways: in programs and plans of the Environment Units in all the ministries or through the EPA budget or mainstreamed into the PRS II due to start in later part of 2011.

The following institutions have been identified to have the mandate to make policies relating to SLM i.e Environment protection Agency (EPA), Ministry of Agriculture (MOA), Forestry Development Agency (FDA) and the Ministry of Lands Minerals and Energy (MLME).

The following legislations have been identified to have influence on SLM i.e. National Environment Policy of Liberia (2003), Environment Protection and Management Law (2003), Act establishing land Commission (2009), New Forestry Reform Law (2006), Draft Wildlife Conservation and Protection Areas Management (2009), New Minerals and Mining Law (2002), Liberia Extractive Industries Transparency Initiative (2009).

Institutional Context: The following is a run-down of institutions that will work hand in hand with the SLM project and have a role to play in the sustainable management of the land and the natural

resources i.e Land Commission, Min of Agriculture, CARI, Min of Work, Min of Internal Affairs and Academic Institutions.

Coordination Mechanism: It is envisaged that the SLM will be coordinated in the following possible ways. It could be coordinated through the existing bodies the Environmental Units found in all the ministries or through the Agriculture Coordinating Committee, or through the National Coordinating committee of the UNCCD. It could also be coordinated through the Steering Committee of SLM, but the Ministry of Finance will have to coordinate the finances through its External Support Monitoring and Coordination which monitors the donors funds.

### **Financial Flows for NRM and Sources of Finance**

The current government has been increasing the allocation for the sectors that deal with SLM and related issues. The combined allocation the following agencies EPA, FDA, MOA, MLME, MIA has steadily increased from mere 5% in 2005 to over 18% in the 2011 budget.

The sources of finance for SLM related activities, comes for wide range of funders who have been categorized into the following: Internal funding comes from GOL budget allocated to EPA, FDA, MOA, MLME, MIA and the Land Commission. There is also decentralized budget ie. local development fund by UNCDF, County Development Fund, US-ADF etc. National NGOs can also apply for funds for external organization that have indicated interest to fund.

External funding comes from donors who indicated during the Round table process ie World Bank, EU, AfDB, as well as the main donor the USA as shown in the table 6. Other funders to the SLM process include CI, IUCN, FFI and Birdlife International. Finally the innovative finance is inclusive of Civil Society Organizations, private companies and farmers as well as carbon markets and debt-for nature swaps. All these funders need to be coordinate properly for the SLM program to succeed.

## **PART 1 - STRATEGY**

### **INTRODUCTION**

Desertification remains a major environmental hazard with adverse impacts on ecosystems and the livelihoods of people especially in Africa, and has contributed to increasing poverty. The global concern about the menace of desertification attracted the attention of the United Nations and after a number of actions to deal with the scourge, in 1994, the United Nations Convention to Combat Desertification (UNCCD) was adopted and opened for signature. Liberia signed the Convention on March 3, 1998.

The country committed herself to the terms and conditions of the Convention, and soon began taking actions for the implementation of her obligations. In October 1998, a National Coordinating Committee was established, and a National Focal Point appointed. The implementation of the Convention is now a high priority. The country is well on course with sustainable poverty reduction and development. Land and forest resources quality and quantity are central UNCCD. Most of the upland agriculture in Liberia is slash-and-burn. Under current population densities, it is highly unsustainable and characterized by a continuing decline in soil fertility and crop yields. Much of the clearing of new forest land for slash-and-burn agriculture is driven by the need to compensate for these declining yields combined with rapid population growth of about 3% per year. The continued intensification of slash-and-burn agriculture could destroy all of the remaining forest land in the country over the next few decades. The ongoing declines in yields also contribute directly to rural poverty and food insecurity that the country is experiencing.

The UNCCD provides an excellent platform for addressing land degradation. The adaptation of its principles and concepts will contribute to the mitigation of land degradation and promote ecosystem integrity and stability; enhance ecological functions; and strengthen policy, regulatory and economic incentive frameworks to facilitate wider adoption of sustainable land management practices across sectors.

Liberia has become susceptible to the adverse effects of climate change. Contributing factors include ill-adapted agricultural activities, unsustainable logging practices, unregulated coastal

mining, high levels of biomass consumption, and decreasing river flows due to high evaporation. Each of these contributing factors is further aggravated by inadequate infrastructure, low levels of social development, population displacement, low institutional capacity, and inadequate meteorological and hydrological data.

The adverse effects of climate change variability and extreme climatic events are already significantly impacting sustainable development priorities. Future climate change is expected to result in an intensification of hazards. These hazards were identified during the NAPA process.

- *Changes in rainfall patterns:* Preliminary results indicate that average projected rainfall under climate change conditions will sharply increase from baseline conditions. Results from some of the models show average rainfall increase of about 684mm/month during the rainy season. Moreover, temperatures are expected to rise significantly relative to baseline conditions. By 2050, projected warming ranges from 29<sup>0</sup>C to 32<sup>0</sup>C during August to 33<sup>0</sup>C to 43<sup>0</sup>C during the month of January. Severe heat waves are expected.
- *Extreme coastal flooding events:* Increasing climatic variability will likely involve a greater frequency and intensity of storm surges and torrential rainfall. Overtime, this would likely result in a redistribution of sediment and lead to loss of beaches, and chronic storm-related infrastructure damage. Biodiversity would be at increasing risk, as would key socio-economic activities such as fishing, hunting, farming and harvesting of periwinkles.
- *Sea level rise:* Most of Liberia's population live in close proximity to the coast and would experience serious consequences from sea level rise. Low-lying lands such as Bushrod Island, West Point, Cestos City, and many other parts of Liberia will likely be impacted by direct inundation or submergence. Coastal erosion would also increase, as would salinity levels of rivers and aquifers.

Vulnerability to climate variability and climate change is already impacting key development sectors including agriculture, forestry, fisheries and public health. Changes in rainfall patterns have resulted in low agricultural crops yields as farmers find it difficult to identify the optimal time to cultivate crops. Higher temperatures facilitate the spread of forest pests, impeding the growth of certain tree plant species. It is estimated that the combined effects of changing water

temperatures and rainfall patterns are adversely affecting fish stocks in terms of declining levels of certain species. Changes in rainfall and temperature patterns are expected to lead to increased levels of water-borne diseases including cholera, giardiasis, dysentery, amebiasis, typhoid, and malaria, particularly among the rural population.

Liberia being party to the three RIO Conventions: the United Nations Convention on Biological Diversity (UNCBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD) has instituted some measures to effectively build linkages and synergies to implement these Conventions in a collaborative manner. It is within the said framework that the National Action Programme is woven to achieve improved Sustainable Land Management outcomes.

## **1. OVERALL VISION**

Considering the impacts of land degradation in Liberia and conscious that sustainable economic growth, social development and poverty reduction are current national priorities, and are essential to meeting sustainability objectives, it is envisaged that eight (8) years after the NAP implementation, the trend and extent of land degradation would be significantly reversed.

It is also envisioned that upon the implementation of the NAP, the following would also need to be strengthened; the policy, legal, regulatory and economic incentive frameworks necessary to facilitate wider adoption of sustainable land management practices across sectors are strengthened; capacities in both the agricultural and forest management sectors are strengthened; effective knowledge management network of Sustainable Land Management/agricultural development institutions and projects is established; sustainable agricultural extension packages are improved to ensure high agricultural production, food security, and enhanced livelihoods.

**Sustainable Land Management:** An approach to land management that is economically viable, socially acceptable and environmentally sound.

## **2. STRATEGIC OBJECTIVES AND PERFORMANCE INDICATORS**

The following are the strategic objectives for Liberia to achieve Sustainable Land Management within the eight (8) years of the National Action Plan (NAP). These strategic objectives are based

on the national analysis and are in harmony with the UNCCD 10 year strategic objectives and indicators.

**Strategic Objective 1: Improvement of the standard of living of the people in the areas affected by the land degradation and its associated Negative impacts.**

Intended impact 1.1: People living in degraded lands have improved and diversified livelihoods and benefit from SLM

Indicator 1.1: A decrease in the number of people living in degraded lands in Liberia

Intended Impact 1.2: Population in Liberia affected socially, economically and environmentally by climate change and variability reduced

Indicator 1.2: Number of persons living below the poverty datum line reduced in the affected areas in Liberia.

**Strategic Objective 2: Improvement of the condition of the affected biodiversity within its habitats and affected ecosystems within the political boundaries of Liberia and its political sphere like the Liberian air space and the Liberia's continental shelf.**

Intended Impact 2.1: Land productivity and ecosystems goods and services in affected areas in Liberia will be enhanced in a sustainable manner.

Indicator 2.1: Reduction in total area under desertification or land degradation

Intended impact 2.2: Vulnerability of ecosystems to climate variability reduced.

Indicator 2.2: Increase ecosystems productivity of affected areas in Liberia

**Strategic Objective 3: Generation of the global benefits like improve biodiversity in the regional and reductions in climate change accrue from the implementation of the NAP on SLM**

Intended Impact 3.1: Sustainable land management contribute to conservation and sustainable use of biodiversity and the mitigation of climate change.

Indicator 3.1: Increase carbon sinks / trees or carbon stocks/soil and plant biomass in the degraded areas

Intended Impact 3.2: Biodiversity hotspots are sustainably managed

Indicator 3.2: Well managed biodiversity hotspots attract more tourists annually

**Strategic Objective 4: Mobilization of resources financial and human for the implementation to the SLM, NAP are effected through partnerships bilaterally and multilaterally as well as within the country**

Intended Impact 4.1: More financial, technical and human resources are made available to Liberia through global mechanism and other ways

Indicator 4.1: Increase in the level and diversity of available funding for Liberia

Intended Impact 4.2: enabling policy environment is improved for implementation of SLM and related programs

Indicator 4.2 : Development of policies for SLM implementation and mitigation of climate change

## **2. PRIORITY THEMATIC INTERVENTIONS**

Considering the national situation analyses carried out, it is expected that the priorities below will address community and ecological needs as well as challenges associated with the enabling policy, regulatory and incentive frameworks; and meet other objectives of related Multilateral Environmental Agreements:

### **(a) Policy and legislations on Sustainable Land Management (SLM)**

Areas of concentration will include revision of existing policies and legislations, and picking up lessons from the Land Commission with the aim of determining which legislations hinder or facilitate SLM implementation in order to fill in the gaps. Issues surrounding Land Tenure will also form a major focus.

### **(b) Land Use Planning**

The SLM implementation will be guided by a national Land Use Plan, which will be tapping from the existing land uses but focusing on land suitability and sustainability and taking on board climate change issues. In the absence of such plans, existing regional and local land use plans will be followed. There shall be efforts to carry out rudimentary land suitability assessment nationwide to enhance and expedite the process.

### **(c) Institutional Coordination**

The primary activity will be to formulate an approach that will make coordination of SLM effective and bring the will of various stakeholder institutions to an appreciable level and have them take ownership of the process. The issue of financing and institutional capabilities will be addressed and coordination modalities worked out.

(d) Capacity Building at all Levels

There shall be a comprehensive capacity needs assessment at policy, institutional, local community and individual levels followed by capacity building initiatives to address the capacity gaps.

(e) Monitoring and Evaluation System

In order to facilitate an effective monitoring and evaluation regime, an M & E system will be designed; presided by a baseline data collection, and key indicators determined.

(f) Knowledge Management Network

This will focus on public information dissemination; development of extension packages to support SLM Implementation in identified sectors; design of dissemination system; collaboration with training and research institutions to mainstream SLM into various curricula and programs.

(g) Support to Trans-boundary Natural Resources Management

This will focus on issues that will require a wider audience than the people within the political boundaries of Liberia. This is an issue necessitated by the fact that to achieve success or make an impact on the global scene, it necessary to collaborate with others in the same region who share similar resources. This will deal with issues connected to watersheds, air and water pollution i.e. upstream downstream issues and so on.

(h) Support to the Waste management

This will focus on the issues related to air and water pollution all over the country since a neglect in this aspect will result in the undoing of a number of advances that might have been made in other areas like forest management etc. It will also focus on issues of waste disposal of liquid, solid and gaseous waste without producing adverse effects in the areas of disposal and the surrounding areas. It will achieve this by taking on board technologies like the Clean Development Mechanisms



(CDM). This support will be all encompassing from policy and legal framework development on waste management to capacity development.

#### (k) Mainstreaming of SLM

This will focus on the mainstreaming of SLM into all the sectors that have an impact on the land and its resources. These sectors include agriculture, forestry, mining, energy, local government but are not limited to these only. In summary this would be mainstreaming SLM into the Poverty Reduction Strategy (PRS) which is looked at as an all-encompassing strategy for the Government of Liberia.

### **4. PRIORITY AREAS AND APPROACHES FOR SLM**

An Integrated Ecosystems Management approach to address the social, economic and ecological issues within the carrying capacity of the ecosystems will be achieved through the government's all-encompassing Poverty Reduction Strategy (PRS). This is a strategy that brings together the entire government by making the people of Liberia's well being and welfare the centre of the development agenda of the country. *A simplistic analysis of the problem would easily say that poverty leads to degradation as people extract more and more natural resources and this in turn leads to a reduction or a decline in the welfare of the people.* The strategy has to take cognizance of the fact that it doesn't matter which way one looks at it, the human being is at the centre of the problem and hence he has to be put at the centre of the solution if the approach is to succeed. The complex relationship simply says a hungry man will move into the forest / his environment and help himself with as much as he can by extracting the products of the forestry/environment. This scenario has been exacerbated by the population increase. Whilst man has to fill these many stomachs, he has to avoid being too heavily dependent on natural resources. Therefore the PRS emphasises that above all the development that aims at improving the wellbeing of the Liberian people, this development should be done in a sustainable way to ensure that the future generations have their wellbeing catered for as well. In the same token this is what Sustainable Land management is all about as has been defined in the EPA to be *“an idea or strategy that is globally employed to improve and sustain the productive capacity of the land thereby supporting the food production, biodiversity conservation and eco systems functions and services.* It can also be defined as *“An approach to land management that is economically viable, socially acceptable*

*and environmentally sound. Or simply a way of managing land that allows the present generation to produce and enjoy the benefits without curtailing the future generations from enjoying the same benefits*". The common factors between the two definitions are that the wellbeing of the people has to be improved and the ecosystem or land on which this is dependant on has to be kept intact or remain in a state that would not jeopardize the wellbeing of the future generations. Therefore the high similarity between these two concepts makes it opportune for them to be planned together and implemented together.

**Definition: Ecosystem Approach (EA):** *A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.*

The strategy will address the three pillars of Sustainable land management i.e. social, economic and ecological. It will use the Land-User Role Approach where the focus primarily looks at what the land user is intending to produce or do, how is he/she doing it and why are they doing it that way. *(The land user approach focuses on increasing his/her benefits/productivity in the short-term through either increased extraction rate or increased inputs like fertilizers and pesticides, which then threatens the basis of production i.e. the environment/land)* It would then analyze his/her economic and social benefits from the system and what impact is he/she making on the environment. Hence it will desist from the usual Top-down and technical based approach which has always led to the failure of most programmes and projects. It will then zero down on information transfer to the land user on the how to improve his wellbeing (economic and social) and how he/she can reduce the negative impacts on the land/environment.

The four main land users in this context are the farmer, the miner, forester and the urban dweller, which then zeros down the primary partners to be the Ministries of Lands, Mines and Energy, Agriculture and the Forestry Development Authority and Local Government. Going back to the principle of putting the user at the centre of the whole process, the needs of each of the these land users would now be looked into and how they are guided and governed by the sector, which would then necessitates the revision of the sector policies, legal frame works and regulations.

The approach will also focus on the land issues like the tenure, the ownership, and access or user right issues. It has to take into cognizance the fact that what is referred to as State Land is actually

the “Commons” and this has always been the zone of conflict. In reality, the four land users are competing on the land, so the approach has to take off that potential friction between the users and turn it into complementarity. They have to learn to live side by side by respecting each other’s activities and boundaries. The land tenure issues should make the landuser feel secure and have a sense of belonging in order to make him/her appreciate his environment and want to protect it for himself and his generations thereafter. The strategy will also complement the Land Commission’s work by adopting and implementing the land-use plan they are working on, which will encompass the land suitability and current land uses in the country.

**The priority areas of intervention will be grouped into the following programmes or clusters to enable the programme achieve its objectives.**

***Capacity Building and mainstreaming of SLM:*** This will be done within the 6 targeted ministries and agencies which have a major stake in the management of land. SLM will also be mainstreamed into NGOs, Private Sector right up to the community level and the capacity built.

***Policy and legal Framework:*** It will also assist agencies to synchronize and make in-depth analysis on the enabling environment in terms of policy and legal frameworks as well as regulations.

***Adherence to the Land-Use Plan:*** The approach will take into cognizance the current work of the Land Commission, i.e. of producing the Land-Use Map of Liberia, and then SLM will be mainstreamed into it.

***Mainstreaming SLM into the Agriculture Sector:*** This will involve introducing SLM approaches into all types of agriculture like Shifting cultivation, rangeland management, commercial farming etc

***Mainstreaming SLM into Forests, Woodlands and Wetlands:*** This will incorporate SLM approaches into the forest logging operations, the management of the forests, woodlands and wetlands.

***SLM mainstreamed into Protected Areas and Biodiversity Conservation Areas:*** This will involve the introduction of more sustainable approaches for Protected Areas and special approaches to species conservation.

***SLM into Remediation and Rehabilitation Areas:*** This will be a two step process of first rehabilitating the damage which could be in a mining area or forest areas etc and then instituting a management regime for the area.

***Targeted Research for SLM:*** This will involve the research into socio-economic and biophysical aspects of the land degradation and the management aspects of all the sectors and areas that will be brought under the SLM programme. It is an indispensable part of the program.

***SLM into the Integrated Land Management system:*** This will look into the areas that will require a concerted effort from many sectors e.g. watershed approach to stabilize the area in terms of forest, water conservation, rangeland conservation etc. This might even require the involvement of transnational partners. It has to be noted here that Traditional Land use practices will be dealt with in this section to complement the current methods since these are practices that have withstood the test of time.

***Mainstreaming SLM into the National Coordination of the Program:*** This is an essential part of the operation, that will bring together the various implementing agencies on a regular basis, as well as help to define the roles and responsibilities of the different agencies, as well as defining the monitoring aspects for each agency. The already existing Agriculture Coordinating Committee (ACC) will be part of the coordination system and will lend its experience to the process.

## 5. NATIONAL ACTION PROGRAMME

PROGRAMME /YEAR	Phase 1		Phase 2				Phase 3	
	1	2	3	4	5	6	7	8
<b>1.CAPACITY BUILDING – (A) Improving The enabling Environment</b>								
1.1.Capacity to mainstream SLM into the 6 major GOL institutions improved. (Min of Agric, Min Internal Affairs, Min of Lands Mines and Energy, Land Commission,Forestry Dev. Authority, Environ. Protection Agency) also into Research institutions and extension services	→	→						
1.2. Capacity to mainstream SLM into all relevant sectors of the communities improved(Awareness)								
1.3. Capacity to mainstream SLM into all others organizations ie NGOs, CBOs etc improved								
1.4 Capacity to mainstream SLM into the school curricula improved (primary and secondary&traditional)								
<b>1.CAPACITY BUILDING-(B) Improvement of the Policy and legal frameworks</b>								
1.5 The policy environment for SLM implementation improved	→	→						
1.6 Gender aspects incorporated into the SLM process								
1.7The legal environment for SLM implementation improved (laws on bush fires, bush meat trade)	→	→						
1.8 Enforcement unit on biodiversity conservation established								
<b>1.CAPACITY BUILDING – (C) Adhering to the Land Use Plan of Liberia</b>								
1.8 Production of a national Land use Plan ensured								
1.9 Mainstreaming the SLM into the national land use plan facilitated								
1.10 Socio-economic Environment for mainstreaming SLM into Poverty Reduction improved								
<b>2.Establish a Sustainable Agricultural production System</b>								
2.1 SLM is mainstreamed into the shifting cultivation system	→	→						
2.2 Sustainable Agroforestry technologies introduced as alternative								
2.3 Conservation technologies mainstreamed into dryland commercial farming								
2.4 A sustainable irrigation agriculture farms established								
2-5 A sustainable lowland/swamp cultivation technologies introduced								
2.6 A sustainable range management system is established								
<b>3.Establishing a Sustainable Forestry management System</b>								
3.1. A Sustainable forestry harvesting code is implemented								
3.2 Post harvest remedial measures instituted								
3.3 A Sustainable post logging forest management system is established	→	→						

3.4 Special measures for the protection of certain tree species during and after logging instituted								
3.5 A woodland management regime established for the forest sector								
3.6 A Sustainable wetland forest management regime instituted								
3.7 A viable community forest management system established								
3.8 A sustainable afforestation program established for the advancing savannah region								
3.9 A countrywide sustainable reforestation programme instituted								
<b>4.Sustainable Management for the Protected Areas and Biodiversity conservation Areas</b>								
4.1 All Protected Areas and Biodiversity conservation Areas legally instituted								
4.2 All Protected Areas and Biodiversity Conservation Areas demarcated on the ground								
4.3 A buffer zone system is established for all Protected Areas and Biodiversity Conservation Areas								
4.4 A Sustainable ecosystem management approach is implemented for each areas								
4.5 A community based resources management system is established for the buffer zones								
4.6 Specific Species conservations measures established where necessary for these areas								
<b>5 Remediation / Rehabilitation of Degraded Lands</b>								
5.1 Degraded lands identified throughout the country								
5.2 Causes for the degradation those areas established by research								
5.3 Remediation and management of Industrial degraded lands instituted								
5.4 Remediation and management of agriculture degraded land instituted								
5.5 Remediation and management of forestry degraded lands instituted								
5.6 Land polluted with urban waste rehabilitated and managed in a sustainable way								
5.7 Land degraded due to mining activities rehabilitated and sustainably managed	→							
<b>6.Targetted Research for All Sectors</b>								
6.1 Economic, social and poverty related research instituted								
6.2 Research into climatic and agricultural issues instituted								
6.3 Research into forestry activities instituted								
6.4 Research into the activities of the protected areas and biodiversity conservation areas instituted								
6.5 Research carried out into the different mining activities								
6.6 Research and monitoring of the advancing desert carried out								
6.7 research into the effects of the urban and various industrial waste instituted								
<b>7.Instituting Integrated Land Management Systems</b>								
7.1 Areas for integrated land management approach identified through the country								
7.2Watershed management systems introduces in the illicit mining watersheds								

7.3 Integrated land management systems instituted for different types of wetlands								
7.4 Integrated land management approach for the former refuge and IDP camps								
7.5 Traditional/indigenous								
<b>8. Knowledge management</b>								
8.1 Knowledge management network established								
8.2 Network of people promoting Best Practices on S.L.M created								
8.3 Economic incentives on SLM implemented								
8.4 Sustainable Traditional /Indigenous knowledge systems documented and uploaded								
8.5 Coping mechanisms to Climate Change adaptation improved and uploaded into the knowledge network								
<b>9. National Program Coordination and Management for the SLM</b>								
9.1 A national coordination mechanism is established	→							
9.2 A Program Management unit established								
<b>10. Monitoring and Evaluation of SLM</b>								
10.1 M & E system designed	→							
10.2 Baseline data collected for M&E	→							
10.3 M & E Implemented								

## **PILOT PROJECTS**

The pilot projects that will be carried out during the inception or phase 1 of the SLM's 8 year period will be carried out in the areas selected for being so badly degraded. The pilot areas were geographically selected and associated with priority communities of our interventions which are based on the phased activities of the work plan. The priority areas for the inception phase are as follows and will constitute the pilot projects.

### **PILOT PROJECT 1: SLM mainstreamed into Agriculture**

In one, two or all of the identified sites in the districts listed below, pilot projects on how to run different types of sustainable agriculture production systems will be established. These could either be carried out on crop or livestock production or even horticultural activities. Since the identified sites are badly degraded lands due to agriculture, these will be brought back into production in a sustainable manner.

Agriculture degraded Areas:

- Foya District in Lofa County
- Gibi District in Margibi County
- Zoe-Geh District in Nimba County
- Salala District in Bong County
- Clay District in Bomi County

### **PILOT PROJECT 2: SLM into Forestry management**

In these degraded forests sustainable re-afforestation projects will be carried out to re-establish forests or plantations and a sustainable management system that could be used as a best practice in the future put into place.

Degraded Forest Areas:

- Cestos/Senkwen forests areas in Rivercess/Sinoe Counties
- Kumbo forest in Gbapolu County
- Morweh District in Rivercess County
- Tratweh District in Sinoe County

### **PILOT PROJECT 3: SLM into the Mining sector**

These are areas with different types of degradation due to mining activities, hence the pilot projects in these areas will establish the causes of the degradation and establish a rehabilitation methods and sustainable management regimes

Degraded Mining Areas:

- Weasua in Gbama in Gbapolu County
- Sapo National Park in Sinoe County
- Zolowee in Geipa in Nimba County
- Government Camp in Gbokongedeh in Sinoe County

### **PILOT PROJECT 4: SLM into Urban Areas**

These will be urban areas with different types of land degradation either due pollution resulting from Air or Liquid or Solid waste. These areas will be rehabilitated and managed in a sustainable way.

Degraded Urban Areas:

- Mangrove swamps in Sinkor and Pennysville in Monrovia
- Sand beaches around the Hotel Africa and former OAU village in Monrovia
- Seaport in Buchanan in Grand Bassa county
- Town of Gbanga in Bong county
- Town of Zwedru in Grand Gedeh County



## 6. FINANCING

It is expected that during the national budgetary process, the Government of Liberia will allocate at least half the funds required for the implementation of the NAP on Sustainable Land Management. Line ministries and agencies having specific tasks and responsibilities shall also budget for NAP. Donors from Round Table Process, who have shown interest in environmental, agricultural, forest and other SLM related areas are expected to finance the bulk of the SLM budget. The donors who showed interest are as follows EU, AfDB, Germany, Denmark, Norway, Sweden, USA, World Bank while the interested NGOs are as follows FFI, CI, IUCN, in the UN System there are as follows UNDP, UNEP, UNHCR, WFP and other partners have allocated financial resources for the implementation of the SLM NAP related activities in accordance with their roles and responsibilities as spelt out in the strategy. In order to attract funding outside government budgetary allocations, a modality for aligning donor priorities with national priorities will be put in place through the Poverty Reduction Strategy II (PRS).

The Government of Liberia will enter into bilateral arrangements and partnerships with national and international NGOs, UN agencies, community based organizations (CBOs), and the private sector for their participation in the implementation of the NAP. This could either be by mainstreaming of Sustainable Land Management into bilateral and multilateral development assistance programs or by direct co-financing.

**Innovative Financing ways:** Since the EPA will coordinate the entire financing strategies for SLM program, under this section it will coordinate the national NGOs to source funding from external organizations and international NGOs to supplement the government budget and the donor funding. The activities for national NGOs will focus on specific areas in the country or specific issues eg funds from Cities Alliance could be used for the management of cities. The following are other organizations which will be earmarked for the financing of national NGOs: Toyota Environment Grant, European Development Fund(EDF), African Development Fund (ADF), African Enterprise Challenge Fund (AECF). EPA will train them in the preparation of project proposals for specific organizations.

The other innovative ways of finance the implementation of SLM will focus on the debt-for-nature swaps, carbon markets to protect the remaining Equatorial Guinea forest in Liberia. Conservation

easements, fines for negatively impacting on the environment as well as punitive incentives to prevent damage to the environment eg the polluter-pays-principle will be gazetted and enforced as per the provisions in the Liberia's Environmental Law of 2004. Also private sector companies and farmers will be encouraged to finance specific SLM related aspects in the locality or issues that teach them to put something back to the environment. This approach is geared at getting the whole nation involved in SLM and to make it part of every person's life.

## **7. INTEGRATED INVESTMENT FRAMEWORK**

Presently, the Short-term funding sources and plans for UNDP-GOL-EPA driven programs will be financed and implemented by the sector ministries, NGOs with SLM geared programs as can be seen in the projected donor allocations for the 2010/11 budget in the table below (not clear). Each ministry and government agency will be assisted by EPA and the project staff on how to reprioritize part of their budgets towards SLM activities without having any negative impacts on their other budgeted activities. Private Sector will be engaged to finance specific activities to complement the government and donor funding as well as engage them in adopting SLM friendly approaches and technologies in whatever they do. This will be linked to incentives for the private sector and communities to commit themselves to SLM.

## **National Action Plan for SLM 2011 to 2018**

The 8 year SLM programme of work will be divided into three phases, i.e. Phase 1 or Short-term Activities that are expected to take place in the first 2 years, Phase 2 or the Medium-term Activities will be 4 years and Phase 3 or the Long-term Activities will be the last 2 years of the program.

### **PHASE 1: Short term Year 1&2: The Inception phase will cover the following activities.**

- Rationalize the Policy and legal frameworks
- Capacity building of 6 ministries and agencies –carry out needs assessment at agencies HQ and local levels
- Design M&E for the SLM program
- Baseline data collection for M&E
- 4 small pilot projects in the four areas i.e. agriculture, forest, mining, urbanization
- Start the Coordination of agencies

*It is envisaged that the activities in phase 1 will be financed mainly from the existing government and donor allocations with a little financing from UNDP/GEF to bridge the gap between the NAP preparation phase and the main NAP implementation phase. Phase 1 is an enabling period to keep the SLM momentum going while the government is refocusing its budget for the SLM period and that one of the donors and other partners. The project staff will produce a modest interim budget for UNDP/GEF to finance those activities while the rest of the finances should be coming from the existing ministry and agency budgets for the next two years.*

**PHASE 2: Medium term Year 3 to 6: Implementation phase will cover the following activities**

- Capacity building – counties, districts, communities
- SLM mainstreamed into Land use planning activities
- SLM mainstreamed into Agriculture production
- SLM mainstreamed into Forestry and Woodlands and Wetlands activities
- SLM mainstreamed into Protected Areas and Biodiversity conservation Areas management
- SLM mainstreamed into Remediation Sites activities
- Continue Coordination SLM activities
- Research into needed aspects
- SLM mainstreamed into Integrated Land Management Systems
- M&E implementation

**PHASE 3: Long term Year 7 & 8: Consolidation phase will cover the following activities.**

- All activities brought to a conclusion
- Documentation of lessons learnt
- Knowledge consolidation and dissemination.

**8. KEY STAKEHOLDERS AND ROLES AND RESPONSIBILITIES**

Several stakeholders, groups including Community Based Organizations, Civil Society Organizations, academic and research institutions, the private sector, and international and national NGOs, and some development partners are expected to participate in the SLM process. The following are some of the organizations that are known to have been engaged in SLM related activities or have shown interest in SLM activities.

## **8.1 Community Based Organizations**

### **Liberia Community Development Foundation (LCDF)**

Working with local communities in disseminating appropriate information and piloting projects to enable them alleviate poverty and secure lasting improvement in their quality of lives.

### **Grand Gedeh Community Servant Association (GECOMSA)**

Based in Southeastern Liberia, GECOMSA is the forerunner of community-based initiatives to promote the sustainable management of wildlife through a sustained awareness campaign and identification of alternative programs. They conduct campaigns on sustainable bush meat consumption. They are involved in bush meat consumption awareness and sustainable development in Southeastern Liberia, as well as environmental education in Grand Geddeh and River Gee Counties.

### **Civil Society Organizations:**

#### **Save My Future Foundation (SAMFU)**

The Foundation's mission is to promote sustainable development of Liberia's natural and human resources. The activities are mostly community-based, involving indigenous and local community people. SAMFU's major technique is the participatory rural appraisal method.

#### **Association of Environmental Lawyers (GREEN ADVOCATES) INC.**

The Association works with stakeholders in Liberia to promote environmental protection and provides primarily but not exclusively, legal support to green groups and parties who suffer environmental inequity. It also advances creative ideas and innovative strategies for biodiversity conservation and sustainable livelihood options such as ecotourism, scientific research concession, and conservation.

#### **Sustainable Development Institute (SDI)**

SDI gathers and disseminates information on sustainable development approaches and works with relevant stakeholder groups to achieve sustainability objectives. It is based in Monrovia but works nationally

## **8.2 National Non-governmental Organizations:**

**Society for the Conservation of Nature of Liberia (SCNL)**

SCNL conducts research on natural heritage of Liberia and makes the results widely public. SCNL promotes conservation of the forest and associated resources, especially wildlife. It also has expertise in bio-monitoring and socio-economic surveys.

**Farmers Associated to Conserve the Environment (FACE)**

This organization endeavors to empower local farmers in appropriate farming practices that are sustainable and environmentally ethical. FACE is involved in seed rice multiplication and mangrove conservation.

**Society Against Environmental Degradation (SAED)**

SAED promotes environmental awareness, education and action oriented projects in urban and grass-rooted communities. SAED is involved in working in wetlands and water birds management, promoting the alternative sources of energy.

**Liberia Indigenous Forum for the Environment (LIFE)**

LIFE strives to work with local communities to bring about awareness and empowerment on matters of environmental and conservation concerns. One of its major thrusts is to ensure that traditional knowledge is respected and maintained in Liberia, and promoted in conservation of biodiversity, especially promotion of medicinal plants.

**Center for Environmental Education and Protection (CEEP)**

CEEP has the mission to contribute to poverty reduction through environmental education and public awareness, lobby and advocacy in sustainable development. CEEP has been engaged in teaching principles and concepts of environment in schools and the communities.

**Environmental Relief and Development Research Organization (ERADRO)**

ERADRO is involved with the promotion of extension services in the field to identify and resolve environmental health problems. Its activities include research, social mobilization, animation of health/hygiene education, solid/domestic waste programmes in schools and communities.

**Enviro-link Liberia, Ltd**

This organization links people and communities to the environment through advocacy, awareness, education, training and research. It is also involved in environmental impact assessment in collaboration with the EPA and other environmental institutions.

**Pollution Control Association of Liberia (POCAL)**

POCAL is involved in advocacy for waste management and disposal and organizes nature clubs in schools and supports drama clubs in communities. It has also established a botanic garden, in Johnsonville, Montserrado County.

**8.3 Research and Academic Institutions:****University of Liberia**

The University of Liberia attracts many hard-core professionals in the Colleges of Science and Technology, Agriculture and Forestry and the Business and Public Administration. The College of Science and Technology offers bachelor's degree in biology, zoology, engineering, chemistry, geology, physics and mathematics. The College of Agriculture and Forestry offers bachelor's degree in agronomy, general agriculture, general forestry, wood science and technology, while home sciences and community development are offered by the College of Medicine. The College of Liberal and Fine Arts, the College of Business and Public Administration offers bachelor's degree in accounting, management, economics and public administration.

**Cuttington University College**

The Cuttington University College in Central Liberia offers bachelor's degree in general science, biology, chemistry, physics and mathematics. Other relevant courses offered in the area of biodiversity are agriculture and integrated rural development.

**Stella Maris Polytechnic**

It conducts bachelor's degree in health sciences (including degree in nursing), engineering, business management, and accounting.

**United Methodist University (UMU)**

The mission statement of UMU is “to provide quality education within a Pan African context through which persons can acquire general and professional knowledge and skills within the framework of Christian values and ethics. This level of education is built on the foundation of Christian and moral principals”.

#### **Society of Liberian Foresters (SOLF)**

SOLF conducts research in forest and forest products utilization and creates public awareness about the economic, environmental, aesthetic, cultural and recreational values of the forest resources through education. It prioritizes wider stakeholders’ participation especially rural and forest dwellers in forestry management.

### **8.4 International Non-governmental Organizations:**

#### **Conservation International (CI):**

CI utilizes science, economics, policy, and community involvement to promote biodiversity conservation in tropical rain forests and other endangered ecosystems worldwide. CI works in 23 countries in Latin America, Africa, and the Asia Pacific Region. It is a field-based, non-profit organization that protects the Earth’s biologically richest areas.

#### **Flora and Fauna International (FFI)**

The FFI’s role is to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable and are based on sound science and takes account of human needs. The institution has been conserving wildlife in Liberia since 1996 when it contributed to restarting management of Sapo National Park, following the civil war of the 1990s.

#### **World Vision International (WVI)**

World Vision is a Christian relief, development and advocacy organization dedicated to working with children, families and communities to overcome poverty and injustice. Inspired by Christian values, WVI is dedicated to working with the world’s most vulnerable people.

WVI serves all people regardless of religion, race, ethnicity or gender and is an international partnership of Christians whose mission is to “follow our Lord and Saviour Jesus Christ in

working with the poor and oppressed to promote human transformation, seek justice and bear witness to the good news.”

### **Catholic Relief Services (CRS)**

Catholic Relief Services carries out the commitment of the Bishops of the United States to assist the poor and vulnerable overseas. They are motivated by the Gospel of Jesus Christ to cherish, preserve and uphold the sacredness and dignity of all human life, foster charity and justice, and embody Catholic social and moral teaching as they act to:

- Promote human development by responding to major emergencies, fighting disease and poverty, and nurturing peaceful and just societies; and,
- Serve Catholics in the United States as they live their faith in solidarity with their brothers and sisters around the world.

As part of the universal mission of the Catholic Church, CRS works with local, national and international Catholic institutions and structures, as well as other organizations, to assist people on the basis of need, not creed, race or nationality.

## **8.5 PRIVATE SECTOR:**

### **Liberia Agriculture Company**

Liberia Agriculture Company operates a rubber plantation in Grand Bassa County and has developed pasturelands and once dealt in raising cattle. The company develops rubber clones for its own use.

### **Firestone Plantations Company**

Established in 1926, Firestone Plantations Company operates the world’s single largest rubber plantation at Harbel in Margibi County. It establishes nursery for rubber clones and once was involved in botanical research and owns and operates the largest private hydro electric plant in the county.

## **8.6 United Nations Agencies:**

### **UNDP**



The six (6) pillars of UNDP's mission are to fight poverty, build good governance, engage in crisis prevention and recovery, combat HIV/AIDS, gender mainstreaming in development and environmental sustainability and rational management of natural resources. Within the framework of the Convention on Biological Diversity, UNDP in Liberia is one of the three implementing agencies for the Global Environment Facility (GEF) to assist countries to meet the challenges they face in conserving their various environments. The other two are the United Nations Environment Programme (UNEP) and the World Bank. UNDP implemented the process, but went slightly beyond the call of duty. Aside from project funds, UNDP provided a field vehicle for the project and later provided office space for the staff and consultants. At this stage of Liberia's history, coming from a long conflict, which now involves United Nations Peacekeeping for Liberia, the country will definitely continue to look up to UNDP for support to biodiversity conservation.

## **UNHCR**

UNHCR is the agency within the United Nations System responsible for refugees. It was established to respond to and address refugee crises that have evolved over the years. The primary objective of UNHCR is to ensure respect and active recognition for the basic human rights of refugees, including the ability to seek asylum, and to help make certain that no refugees are returned involuntarily to a country where they have reason to fear persecution. UNHCR established its presence in Liberia in 1991. Since then, the nature of UNHCR's operations in the country has evolved and adapted to address the variety of humanitarian challenges that have faced Liberia. UNHCR is expected to respond to the need for rehabilitating lands degraded as a result of refugees and internal displacement.

## **FAO**

The FAO is mainly responsible for promotion of agriculture, with emphasis on food security. FAO ensures that the quest for food security does not compromise sustainable development. FAO has been involved in a national forestry programme, and they served on the steering committee to the project. Assistance will be needed from FAO to enhance agriculture productivity and forestry reform.

## **UNESCO**

UNESCO is involved in the conservation of biodiversity by providing support to education and training on the importance of environment and biodiversity, which should be incorporated in school curricula and research programmes. UNESCO has funded the tri- national meetings involving Guinea, Liberia and Ivory Coast for the conservation of Mount Nimba, and contributed in efforts for Liberia's accession to the World Heritage Convention in 2002.

## **United Nations Environment Program (UNEP)**

The United Nations Environment Program was established in 1972, as the voice for the environment within the United Nations system. UNEP acts as a catalyst, advocate, educator and facilitator to promote the wise use and sustainable development of the global environment.

To accomplish this, UNEP works with a wide range of partners, including other United Nations entities, international organizations, national governments, non-governmental organizations, the private sector and civil society.

UNEP mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. Its priorities are: Climate Change, Disasters and Conflicts, Ecosystem Management, Environmental Governance, Harmful Substances and Resource Efficiency. To date UNEP has sponsored a number of studies and research into environmental aspects including the first State of Environment Report for Liberia.

## **United Nations World Food Program (WFP)**

The World Food Programme is the world's largest humanitarian agency fighting hunger worldwide. In emergencies, WFP get food to where it is needed, saving the lives of victims of war, civil conflict and natural disasters. After the cause of an emergency has passed, WFP uses food to help communities rebuild their shattered lives. WFP is part of the United Nations system and is voluntarily funded.

Established in 1962, WFP pursues a vision of the world in which every man, woman and child has access at all times to the food needed for an active and healthy life. It works towards that

vision with other sister UN agencies in Rome -- the Food and Agriculture Organization (FAO) and the International Fund for Agricultural Development (IFAD) -- as well as other government, UN and NGO partners.

In 2010 WFP aimed to reach more than 90 million people with food assistance in more than 70 countries. Around 10,000 people work for the organization, most of them in remote areas, directly serving the hungry poor. During the past Civil Wars in Liberia and Sierra Leone WFP has continuously provided food for the Sierra Leone refugees and Liberian IDPs.

## **9. MONITORING AND EVALUATION**

The Monitoring & Evaluation will proceed using the toolkit provided by the Global Support Unit. An Annual Project Review Form will be completed and submitted to the UNDP-CO each year for review and subsequent transmittal to the Global Support Unit. The Annual Project Review Form, which must be filled out in its entirety, will provide information regarding project identifiers, impact and performance monitoring, adherence to GEF conditions, project processes monitoring, adaptive management, and lesson learning.

Monitoring and evaluation is an integral part of the NAP implementation process intended to improve efficacy and efficiency. M&E activities will be carried out according to existing UNDP and GEF procedures, in collaboration with the UNDP Country Office and with the support of UNDP-GEF. All such activities will be guided by the strategic objectives and performance indicators spelt out in the strategy of the NAP.

The evaluation will capture the relevance of the NAP, appropriateness and quality, efficiency and effectiveness of implementation and management, the level of stakeholder participation and the potential for sustainability. It will assess the progress made towards the production of the intended outputs and the achievement of the desired results; the potential for scaling up; and specific emphasis on the extent to which the activities are carried out.

The flow of finance will be monitored. Each activity report shall be accompanied by a corresponding financial statement, showing the amount of money spent and the activities executed. The progress of implementation of the budget against proposed time schedules will be

measured as well as an analysis of any variance in budget execution against the planned schedules. The work plan and budget will be reviewed periodically by the National Coordinating Committee (NCC) and a project specific Steering Committee.

In order to ensure that the M&E process is efficiently and effectively carried out it is essential that a baseline survey or baseline data should be collected. It is against this baseline data that the progress or achievement of the program activities will be measured against. On obtaining this baseline data, Objectively Verifiable Indicators (OVI) will be drawn to be used by the monitoring team. It is therefore pertinent that the baseline data collection is one of the activities to be carried out during the inception phase.

## **CONCLUSION**

**The National Action Program for the implementation of the Sustainable Land Management in Liberia has two important aspects (i) It is an inward looking program that encourages every person in the country to contribute towards SLM in the best and possible way that they can. (ii) It is a people-centred approach which focuses on what the human being wants from the environment first and then stresses on how he/she can get that with the minimal negative impacts on the environment. It is encouraging the people to utilize the land and its resources in such a way, those future generations who will come after them will be able to have similar benefits like this present generation is having.**

## **PART 2 - NATIONAL ANALYSIS**

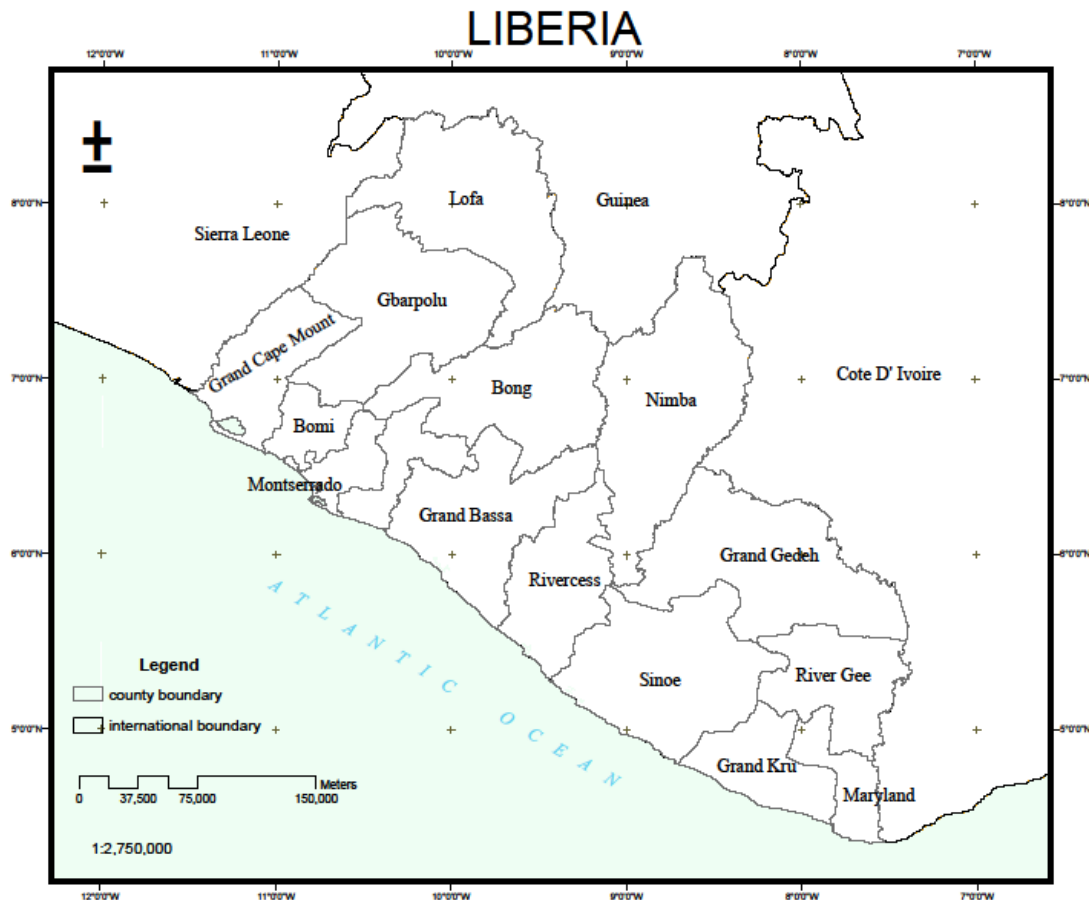
### **1. COUNTRY CONTEXT**

**This section provides a detailed analysis of the national issues that influence and /or are influenced by SLM. It elaborates on how the factors influence or are influenced by the land degradation and on how heavily dependent they are on natural resources. A good understanding of this section will lead the program to address the causes adequately.**

#### **1.1 SOCIO-ECONOMIC CONDITIONS INFLUENCING LAND DEGRADATION**

Liberia is a country situated on the West African Coast between longitude 7<sup>0</sup>30' and 11<sup>0</sup>30' west and latitude 4<sup>0</sup>18' and 8<sup>0</sup>30' north. Liberia covers a surface area of about 111,370 km<sup>2</sup> (43,506 square miles) of which 96,160sq.km (37,570 sq. miles) is dry land, constituting 86.34% of the total area. The balance is rivers, lakes and swamps. It shares a border with Sierra Leone to the west, Guinea to the north, Côte d'Ivoire to the east and the Atlantic Ocean to the south. The country is divided into 15 political sub-divisions, referred to as counties.

Figure 1: Political Boundaries map



Source: Field Survey, 2010

The counties are subdivided into districts. Each county and district is headed by County Superintendents and District Superintendents. The districts are divided into Chiefdoms and further into Clans and Towns. The chiefdoms are headed by paramount chiefs while the clans and towns are headed by chiefs.

The population of Liberia was 3,476,608 as per census of March, 2008 (LISGIS, 2008), while the official population projection puts it at 3,238,000 and the household survey derived from geographic mapping puts the population at 3,511,618. The UNDP's HDR 2007/2008 gives an estimated population of 3,442,000, hence with a population growth of 2.7% currently there could be a population of around 3 666 879. Given that the population in 1984 was 2,101,628, there has been a rise of 1,374,980 people, an increase trend that has been observed since 1962.

Table 1. Population, Surface Area and Density (1984 and 2008)

**Table XY: Population, Surface Area and Density (1984 and 2008)**

COUNTY	POPULATION		PERCENT		AREA (SQ. M)	DENSITY	
	1984*	2008	1984*	2008		1984*	2008
Bomi	66,420	84,119	3.1	2.4	750	89	112
Bong	255,813	333,481	12.2	9.6	3387	76	98
Gbarpolu	48,399	83,388	2.3	2.4	3741	13	22
Grand Bassa	159,648	221,693	7.6	5.4	3064	52	72
Grand Cape Mount	79,322	127,076	3.8	3.7	1993	40	64
Grand Gedeh	63,028	125,258	3.0	3.6	4048	16	31
Grand Kru	62,791	57,913	3.0	1.7	1504	42	39
Lofa	199,242	276,863	9.5	8	3854	52	72
Margibi	151,792	209,923	7.2	6	1010	150	208
Maryland	69,267	135,938	3.3	3.9	887	78	153
Montserrado	491,078	1,118,241	23.3	32.2	737	666	1,517
Nimba	313,050	462,026	14.9	13.3	4460	70	104
Rivercess	37,849	71,509	1.8	2.1	2160	18	33
Rivergee	39,782	66,789	1.9	1.9	1974	20	34
Sinoe	64,147	102,391	3.1	2.9	3914	16	26
<b>NATIONAL TOTAL</b>	<b>2,101,628</b>	<b>3,476,608</b>	<b>100.0</b>	<b>100.0</b>	<b>37482</b>	<b>56</b>	<b>93</b>

Source: LIGIS, 2008

\*The populations used were those that were derived for the respective counties after accounting for boundary changes between 1984 and 2008

Although the table above shows relatively high densities for certain counties, it has to be borne in mind that these are presumably spreading the population for that county over the area when in reality there are much higher densities in urban areas within the county and lower densities in the rural areas. This is highly magnified in Montserrado County because of Monrovia city. Therefore when we look at the farming and forest activities we would be looking at much lower population densities than those portrayed above.

Liberia has a free enterprise economy, and is largely dependent on extractive industries primarily rubber, timber, gold, diamond and agricultural crops. The country is currently considered a low-

income nation. By mid 2004, Liberia's GDP stood at 207million USD with an inflation of between 14 to 15% (NHDR 2006). It has a per capita income of USD199.30 which is far below the poverty line estimated at approximately US\$ 360.00. About 41% of the population has access to health services and life expectancy at birth is only 47.7 years. The adult literacy rate is estimated at 37%. Over two-thirds (76.2%) of the Liberian people are living below the international poverty level of less than US\$ 1.00 per day.

After decades of economic mismanagement and 14 years of intermittent civil conflicts, Liberia has successfully transitioned to peace and sustainable development since 2003. A democratic government was inaugurated in January 2006. The economy is expanding rapidly, with growth accelerating to over 9 percent in 2007. The Government is introducing a broad set of policies to foster peace, accelerate reconstruction and development, and build strong systems of governance. Liberia has launched its recovery and is poised for rapid, inclusive, and sustainable development in the years to come.

Liberia's Poverty Reduction Strategy (PRS) 2008-2011 states that, the overall vision and major strategies is to move towards rapid, equitable, and inclusive growth and development during this period. This period is of critical importance as Liberia transitions from **post-conflict** stabilization to **sustained and shared growth, poverty reduction, and progresses towards achieving the Millennium Development Goals (MDGs)**. The PRS builds on the Government's "First 150-Day Action Plan" and its interim PRS (iPRS), and has been formulated through broad-based consultation with Liberian citizenry in cities, towns, and villages throughout the country, members of the business community, civil society groups, the legislature, and international partner organizations. The Government sees this three-year PRS not as an end in itself, but as a step in a process towards long-term development that will continue long beyond 2011, when it will develop the next phase of its PRS.

About 70% of the population lives in the rural areas and depend on the products and services of agriculture, forestry and other extractive activities for their livelihood. Their traditions and culture are built around the use of the resources found in their immediate environment. The commercialization and utilization of food plant species, medicinal plants and other Non-Timber



Forest Products (NTFPs) are a source of income and services to both rural and urban communities, and aggregate into the national economy.

Since the people are by enlarge rural, and especially the poor are critically dependent on the natural resources for their livelihoods i.e. fertile soil for their food, clean water and health and for general wellbeing. This reliance of natural resources creates complex, dynamic interactions between environmental protection, the people's access to and control over the natural resources, and poverty. In addition to being heavily dependant on the environment they are also vulnerable to environmental hazards, the poor are usually heavily affected by an environmental disaster, economically as well as socially. They lack the technological knowhow and policy and regulations to derive full benefits from their environment. It is therefore necessary to apply the interventions that will address all the factors that are likely to cause environmental degradation. These factors include abusive exploitation of natural resources, loss of biological diversity, soil degradation, pollution, especially of water bodies by dumping of toxic chemicals, insufficient enforcement mechanisms, inadequate waste management, etc.

## **1.2 BIOPHYSICAL CONDITIONS (as they affect and impact on SLM)**

### **Climatic**

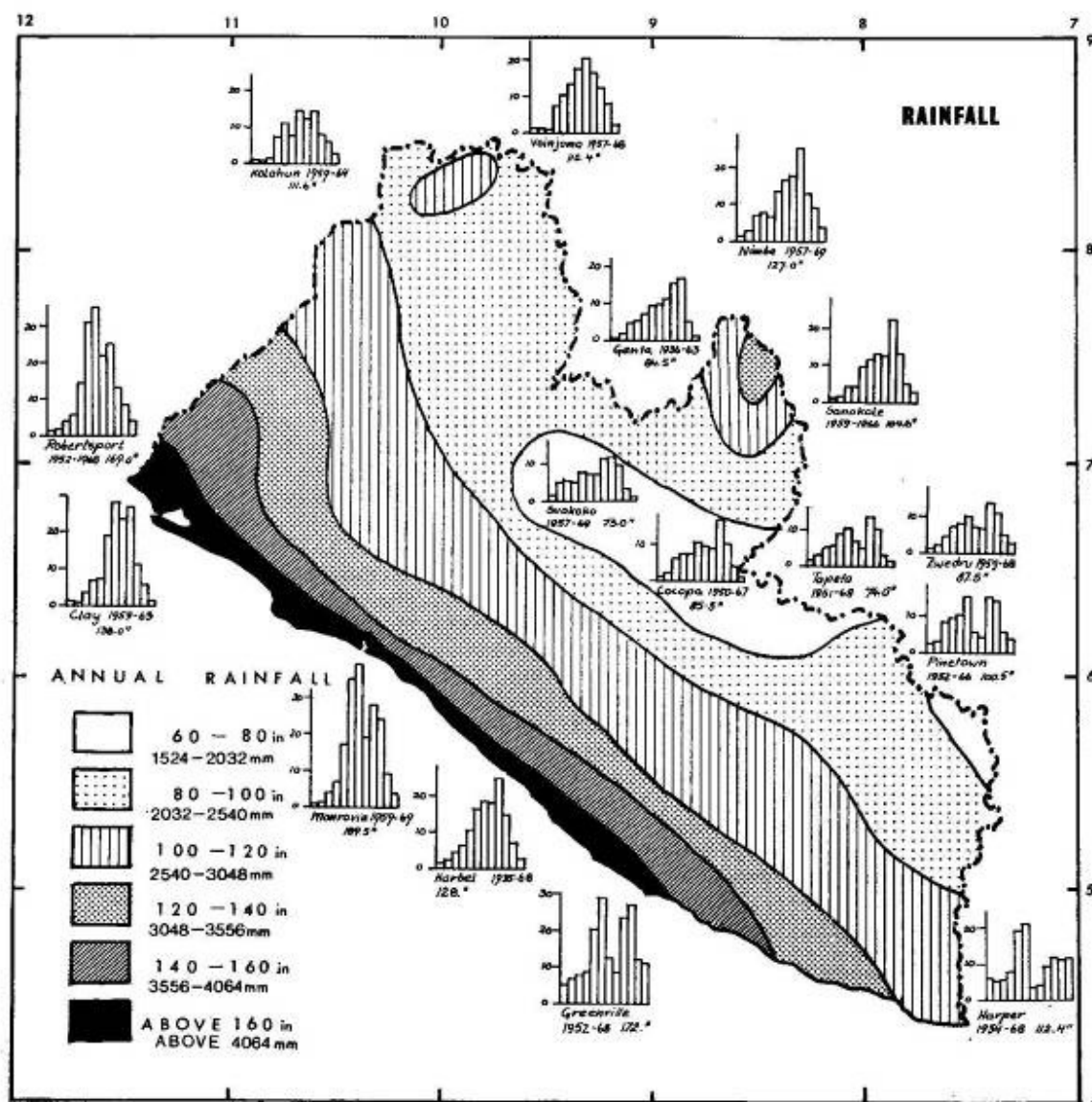
Liberia falls within the West African Monsoon Climate, which alternates between wet and dry periods, with intermittent rains and dry spells. The seasons do not necessarily depend on changing temperature but are determined by the prevailing moisture-laden monsoon winds that come from the southeast, which on hitting the Liberian coast rises, and then condenses into heavy precipitation. During the months of November-March, the dust-laden Harmattan wind originating from the Sahara desert blowing in from the northwest resulting in chilly dry climate.

The annual rainfall is approximately 1700mm in the dry North and in excess of 4500mm in the wet south. The rain falls mainly from June to October when 80-95 % of the annual total is recorded. Although data are scarce, evapo-transpiration is estimated at between 3mm and 4.5mm per day during the wet season, and it is generally accepted that most days have a water surplus for the 5-8 months each year, with November to February being particularly dry months.

Consequently this rainfall pattern, period of fall and the reliability of the rains will have large implications on what the environment is capable of holding/producing. This is shown in figure 2.

The southern parts of Liberia, closest to the equator, receive rainfall throughout the year. The seasonal rainfall in this region is associated with the Inter-Tropical Converging Zone (ITCZ), and also to variations in timing and intensity of the West African Monsoon. The most well documented cause of these variations is the El Niño Southern Oscillation (ENSO) which is associated with drier conditions in West Africa. Temperatures in Liberia are generally higher on the coast than inland. Temperatures range from 24to 27°C in the dry season and 24 to 25°C in the wet season.

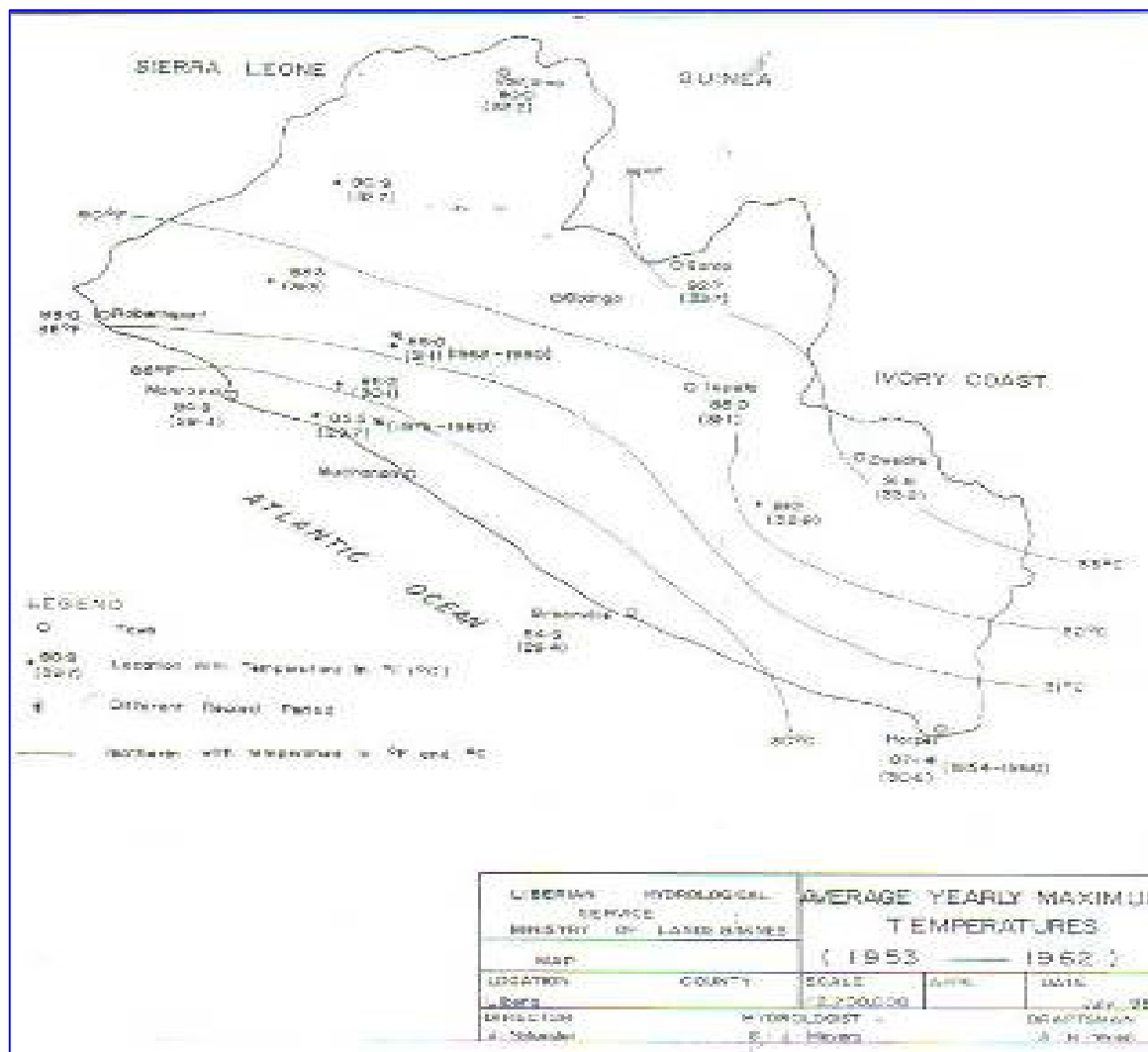
**Figure 2: Rainfall Map of Liberia**



Source: Liberia Hydrological Service, 2009

Consistent with the equatorial climate, the sun is almost over head at noon throughout the year, insolation is very intense in all parts of the country. Therefore, high temperatures with very little monthly variations occur. However, it varies from 28<sup>0</sup>C to 33<sup>0</sup>C during the day and 24<sup>0</sup>C to 27<sup>0</sup>C at night. This can be seen in the isohyets map in figure 3.

Figure 3: Temperature Map of Liberia



Source: Liberia Hydrological Service, 2009

There is very little evidence of climate change since only a 0.8°C temperature increase has been recorded between 1960 and 2006. Available data, however, suggest that the annual average number of “hot” nights per year in Liberia has increased by 57days (15.7 %) between 1960 and 2003. There are no officially observed increases in hot day mean temperatures, nor significant increase in the frequency of hot days.

## Geophysical

There are four agro-ecological zones in Liberia with each zone having its own distinct physical features and height above sealevel.

(1) *The Coastal Plains stretch* the whole 350miles (560 km) coastline of an almost unbroken sand strip ranging from 0 to 30 meters above sea level. It is characterized by a relatively straight coastline with sand bars and long beaches (with a near unbroken sand strip), salt and fresh water lagoons and a few promontories like Cape Mount, Cape Mesurado and Cape Palmas. These promontories and beaches together with Lake Piso and Lake Shepherd are points of high attraction and could play an important role in the future of tourism in the country.

(2) *Belt of inundated plateaux* is followed by the belt of high lands and rolling hills in the north and northwest. The highest elevation is the northern highlands, which includes Mount Wutivi (1350 meters), the maximum elevation in Liberia.

(3) *The Belt of Rolling Hills* runs parallel to the coastal zone and has elevations rising to 90metres. There are numerous hills, valleys and watercourses in this zone which is covered with forest around Grand Cape Mount County and in the eastern part of the country. Most of the private agricultural concessions are located in this belt where both agriculture and forestry are favored by the prevailing topographical and climatic conditions.

(4) *The Plateau and Mountain Ranges* behind the rolling hills reach heights of up to 300m while the mountain ranges reach up to 600m. Important ranges are the Mano River Mountain, the Bea, Bong, Gibi, Kpo, Putu and Tienpo ranges. The widest part of this zone is about 130km between the Lofa and St. Paul Rivers. Within this area, farming dominates, hence it presents the different forms and causes for biodiversity loss. Logging is slightly hindered by relief in the eastern part of the country. Exploitation of the forest is more difficult in central and Upper Lofa County, due to topographic conditions.

The Northern Highland Zone is situated in Upper Lofa and Nimba Counties and comprises Wologisi range with a height of 1,350m and Nimba range with an elevation of 1,385 meters on the Liberian side, as the mountain is shared by Cote d'Ivoire, Guinea and Liberia.

## Soil types

Generally, there are three types of soil types in Liberia, i.e. the Lateritic soils or latosols, Sand soils or regosols and Swamp soils. The Lateritic soils cover about 75% of the country. These are reddish-brown in color and quite hard on the surface due to the laterisation process.

The latosols have been classified into seven series/types, named after places of occurrence, such as Kakata, Suakoko and Voinjama. They are very acidic and lacking in most nutrients like phosphates and nitrogen. Thus continuous farming requires the constant use of fertilizers. However, the Latosols are more productive for agriculture purposes than the other 2 types of soils in the country. Normally, latosols are not very well suited for agriculture due to their low humus contents on one hand and low pH on the other hand but they provide valuable materials for road construction.

Sandy soils or regosols consist of more than 60% coarse and fine sand and contain a small amount of clay. The white to gray color of the sandy soils predominates the coastal plain up to about 16km from the sea and they contain little humus and mineral nutrients. They are porous and also do not retain moisture, hence they are not fertile for agriculture production but are only suitable for pastures, oil and coconut palms.

Table 2: **Soils of Liberia (Summary)**

Soil Type	Liberian Classification	% Area	Area (ha)	Properties
Lateritic soils or latosols	Kakata, Suakoko and Voinjama Series	75%	8,352,750	Reddish brown, leached 10cm topsoil, 4-6% OM, acidic, well drained productive agricultural soils
Regosols or coastal soils	Clara Town, Sinkor and Freeport series	20%	2,227,400	Well-drained, 60% coarse sand, very low water holding capacity, little humus and few mineral nutrients, not productive

				agricultural soil
Alluvial soils or swamp soils	Gbelle, Ballam, Grayzohn and Cuttington series	5%	556,850	Waterlogged, grey hydromorphic soils, poorly draining, thick dark layer of loamy-peaty organize material with relative high humus content

Source: **CAADP, 2009**

Swamp soils are found along the coast and in the interior; they account for about 4% of all soils. The most frequent are the water logged gray hydromorphic soils in the floors of the valley, which are flooded in the rainy season. Swamp soils also include a so-called half-bog soil. These occur in swampy areas where drainage is poor and the level of water in the upper layer of the soil is high. Consequently, the decay of plant materials is slow, and a thick dark layer of loamy-peaty organic materials develops which has high humus content. This type of soil, when properly drained, provides good condition for the cultivation of swamp rice, similar crops and tree crops like mangoes. These soils consist of a series of layers of decaying plant materials, salt, mud, grave land peat and they could be adapted to large-scale paddy rice production. In general, Liberian soils are characterized by a shallow layer of humus, a low humus content and high acidity as a result of the lack of magnesium and calcium.

### **Mountain ranges**

Up to eleven mountains ranges have been identified in Liberia. They are Nimba mountain, Wologisi mountain, Bong range, Gibi mountain, Putu mountain, Bomi mountain, Wutivi mountain, Mano mountain, Bea mountain, Kpo range, and Wenegissi mountain, These mountain ranges are known to possess mineral resources. Four of these mountains have been exploited for iron ore i.e. Bong Range, Mount Nimba, Mano Mountain and Bomi Mountain. The Mountain Ecosystems contain outstanding resources, both biological and nonbiological. There exist valuable plants and animal species, which are representatives of biodiversity species found in the tropical rainforest regions of the world. The fauna species include mammals, reptiles,

amphibians, birds, and insects. The flora species include highvascular plants of the deciduous, semi-deciduous and savanna woodland species, riverine plant species, shrubs and herbs. From about 60 years ago, both indigenous plants and animals which were in abundance had their status begin to change for the worst in mountain communities when mining, shifting agriculture, commercial logging and uncontrolled bush-burning activities. Several valuable non-biological resources are also found in mountain ranges, including iron ore, diamonds and gold.

### **Wetlands**

Kromah (2002) identified eight (8) wetlands in Liberia; five of which are now designated as Ramsar Sites. These are Lakes Piso, Marshall, Mesurado, Gbedin, and Kpatawee. Mangroves ecosystem characterize the wetlands in 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. According to Gatter (1988), mangroves cover 0.5% of the land surface of Liberia. This is a fragile ecosystem which is vulnerable to invasion by humans.

Thirteen and a half 13.5% of the nation's total area is covered with water. There are six (6) major rivers. These are Cavalla, St. John, Mano, Lofa, Cestos and St. Paul but their potential for complete navigability is yet to be fully explored. However, most of the rivers are navigable up to 20 miles from the coast, except for Cavalla, which is navigable up to 50 miles. The ecosystem has great potential for fishing, but the potential is yet to be fully developed. These waters contain plant species (mangroves, raphia palm, etc.) and animal species (fish, crabs, shrimps, water snail, etc.), which are harvested and used by local dwellers and artisanal fisherman for both food and commerce.

### **Biological**

Voorhoeve (1979) distinguished two forest types: the evergreen forest and the moist semi-deciduous forest. According to him, very little true deciduous forest exists in Liberia and the deciduous forest found is actually a transitional forest between the evergreen and the semi-deciduous forest. Liberia's forest ecosystem can today be divided into four classes: primary dense forest, climax secondary forest, secondary forest, which has not reached climax, and other



type mixed vegetation. This forest ecosystem is one of the 25- biodiversity hotspots identified globally by Conservation International (CI).

The Forest Estate of Liberia is made up of natural (indigenous) and plantation/artificial forests. According to FDA (1999) the natural forest covers approximately 4.8 million hectares (12,167,900 acres) which amounts to 50% of the total land area of 96,180 km<sup>2</sup>. The artificial/plantation forest covers roughly 10,158 hectares (25,000 acres) of reforested land. FAO report of 2007, describes the Liberian biodiversity as follows: Liberia is home to 881 amphibian, birds, mammals, reptiles species of which 0.8% are endemic and 4.2% are threatened. It is also home to over 2200 species of vascular plants of which 4.7% are endemic, adopted from World Conservation Monitoring Centre Report. Currently only 1.3% Liberia's land resources is protected under IUCN (categories I –V)

There are two protected areas in the country, the Sapo National Park and the East Nimba Nature Reserve. The two areas are among seven areas “**bright spots**” recommended for strict nature conservation in a joint Government of Liberia/IUCN/WWF survey carried out from 1978 to 1979.

**Sapo National Park** encompasses 180,363 ha of lowland rainforest, including swampy areas, drylands and riparian forests, and **represents one of-if not the most - intact forest ecosystem in Liberia**. Notable fauna within the park include forest elephant (*LoxodontaAfricana cyclotis*), Jentink's (*Cephalophusjentinki*) and Zebra duikers (*C. zebra*) and large primate populations, including the Diana monkey (*Cercopithecusdiana*), red colobus (*Procolobusbadius*), black and white Colobus (*Colobuspolycomos*) and the western chimpanzee (*Pan troglodytes verus*). Also found within the park are several populations of the endangered pygmy hippopotamus (*Hexaprotodonliberiensis*), signifying a climax state of the ecosystem.

**The East Nimba Nature Reserve** is dominated by a semi-montane and deciduous forest and it is one of the 14 centers of plant endemism within the Upper Guinea Hotspot. The Mount Nimba Massif is located within the Sanokole quadrangle and is found on the north eastern border of Liberia. Due to the mountainous effect/high altitude, the area has mild temperatures during most

of the year than the rest of the country. The hills and mountain ranges with their special vegetation are the favorite migration and winter destination sites for palearctic migrants such as European pied flycatcher, (*Ficedulahypoleuca*), spotted flycatcher, (*Muscicapastriata*), Garden warbler and rock thrushes *monticola* found in rocky areas. It is believed that the Nimba Range does not have the full height to develop a true montane rainforest. The Nimba slope between 500 and 700 meters contains a large number of plant species, representing not fewer than 82 genera of trees and brushes. *Piptadeniastrum*, *Heritiera*, and *Lophira* are common. Between 700 and 900 meters *Parinari* becomes increasingly common, as well as *Parkia* and associated species. There is an ecological boundary at about 850meters above which a dense layer of clouds usually covers the slope and ridges except during the dry months. Nimba is an important bird area and a designated world heritage site.

The Aquatic Systems are characterized by Freshwater and Coastal and Marine habitats. There are about 166 species of freshwater fish in Liberia, and of this number, one species, *Barbustrispiloides* is endemic, and another species, *Oreochromis macrochir* was introduced. The remaining 164 are native. Average Annual Capture (Aquaculture Production) is 22 metric tons.

The 560km coastline has a continental shelf of 14,894 sq. km, and Territorial sea of up to 159,200 sq. km, it produces annually 7,616 metric tons of fish and 126 metric tons of marine invertebrates, including Mollusks and Crustaceans. The Marine/Brackish water fish species are all native species. Fishing industry for both freshwater and marine employed 5,143 people annually between 1995 and 1998 and the number of docked fishing vessels recorded was 14. It should be noted that five of the seven turtle species worldwide are found in Liberia. They are *Dermochelyscoriacea*, *Cheloniamydas*, *Lepidochelysolivacea*, *Eretmochelys imbricate* and *Carettacaretta*. The *Cheloniamydas* and the *Dermochelyscoriacea* species are endangered.

The aquatic ecosystem i.e freshwater as well as coastal wetlands and near-shore marine communities are clearly affected by upstream changes in terrestrial environments as well as contamination due to liquid and solid waste disposal into the water system especially within the vicinity of urban areas. This happened mostly during the civil war years.

## **2. ANALYSIS OF THE CAUSES OF LAND DEGRADATION**

### **2.1 NATURAL CAUSES OF LAND DEGRADATION**

The major natural hazards and environmental conditions which act as predisposing factors for land degradation can be classified into two, i.e. climatic factors and biophysical predispositions.

The current major climate hazards consist of rainfall intensities since Liberia receives upto 4770mm that falls in intensity storms over a seven months period giving a high potential for soil erosion. This also causes a high potential for extreme coastal flooding especially where vegetation is scant or has been removed. The high temperatures during the day results in the formation of lateritic concretions which combine with some algae growth forming a hard soil cap, which is impervious to water infiltration. This soil cap encourages runoff which then results in surface erosion and eventually into gully erosion. In the north of the country where there are periodic droughts, the soil tends to dry up in areas where there is very little or no vegetation at all. As animals move on these dry brittle soils, they break the surface, making it vulnerable to wind erosion as well as the first rains which then carry away the pulverized loose top soil.

The biophysical attributes that predisposes the Liberian landscape and vegetation are as follows:

- The regosols are loose sandy soils that are easily washed away especially in the sloppy areas along the coast where they are found.
- Secondly the infiltrations of the regosols is very high, allowing all the fertilizers from cropped areas in this soil type to seep through into the river systems resulting in polluted ponds therefore negatively affecting the aquatic life especially with nitrates.

Both the regosols and latosols are susceptible to water erosion, with the regosols being easily carried away due to the fact that they are loose and the latosols due to laterisation and soil capping which reduces infiltration resulting in rill and gully erosion. Since the latosols are found on the hill slopes of all the mountain ranges, the erodibility of these areas become very high in areas where vegetation has been removed. The removal of forest cover and overgrazing of rangelands exposes the land to soil degradation under the heavy rainfall regime of Liberia. Due to the high acidity, these soils are predisposed to leaching under these humid climatic conditions resulting in low fertility which reduces the productivity of the land. This then forces the farmers to continuously cut down new areas after cropping the old areas for just four or five years. In turn this continually puts pressure on the forests.

Another form of land degradation that is common in Liberia is the land pollution due to the solid and liquid waste disposal into the rivers and the lagoons and the coast. This has been prevalent due the conflict years when the waste collection system in the urban areas broke down and the sewage systems broke down due to lack of maintenance. This resulted in polluted rivers, swamps and beaches, resulting in the destruction of the breeding habitats for fish, oysters etc. The polluted waterways compromised the food security for the people and their entire livelihood as disease outbreaks became common.

## **2.2 ANTHROPOGENIC CAUSES OF LAND DEGRADATION**

The anthropogenic causes of land degradation in Liberia can be grouped into the following classes: policy and legal aspects, improper land use and land use planning, knowledge gaps, flaws in technological implementation, food insecurity. As we try to look at the impact of the humans on the land degradation, it is important to note that *at the centre of any environment management or sustainable land management is the human being*. Understanding the human being and his ways and his needs, and learning his ways and technologies that have brought him this far will lead to success in sustainable land management. And ignoring the human being and all the facts above will limit success.

***Policy related causes:*** For the land to be utilized properly and conserved, the land policies should be clear and positive to allow the land user to use it profitably and look after it. The land tenure has to be clear to make the people feel secure on the land and the right of use and ownership should be coupled with responsibility to leave the land in a good state for future generations. The laws on the use of the land should be encouraging and allowing the user to protect it.

***Land use and planning:*** In order to reduce the susceptibility of the land to degradation, the land will have to be used according to what it is classified to be used for. The land should be planned properly and all mitigation measures to be put in place.

***Knowledge gaps:*** The land users should be capacitated to use the land properly, their awareness should be increased and they should be supervised or monitored on proper use to achieve sustainable land management.

***Technology and financial gaps:*** The technologies applied to the land should be appropriate to the people and their requirements and the financial support adequate to allow the people to attain food security.

***The human being and food security:*** First and foremost, the human being has to attain food security before he can think about proper land management. The local administration has to be conducive to produce food and protect the land. Since the human being is at the centre of the equation he/she has to be made to feel obliged or to feel that it is his duty to protect the land rather than for him/her to feel that land protection is an added burden on him and his resources.

Therefore the direct human related causes of land degradation in Liberia are (1) unsustainable slash-and-burn agriculture on the uplands; (2) deforestation for timber construction and fuelwood. (3) unsustainable use of forest resources; (4) unsustainable extraction of resources like minerals, timber, (5) land degradation caused by agricultural operations eg irrigation (6) land degradation caused by waste disposal or pollution.

**Unsustainable slash-and-burn agriculture** is one of the largest direct causes of land degradation in Liberia. Not only is there serious degradation of the agricultural lands themselves, but unsustainable agriculture is one of the main causes of deforestation in Liberia. Deforestation is driven by a combination of population growth and the lack of food security under rain fed conditions perpetuating slash-and-burn farming. In the past, population pressures were low and so was the slash-and-burn, resulting in very long fallow periods, which made the system sustainable. However, with today's higher population densities resulting in increases in land pressures, the soil fertility and productivity of slash-and-burn system is undergoing a continuous decline. Hence the food security is threatened. This system was sustainable also because the then land policy allowed the farmer to have control over the area of his slash-and -burn, but recently encroachments into the each other's territories discourages the farmers to properly manage the system. *(Lowland agriculture is a more sustainable and Liberia has huge areas of lowlands that could be developed for this type of agriculture. However, there are many barriers to lowland agricultural development).* If not monitored and controlled the slash-and-burn system could easily deforestation Liberia followed by continuing declines in agricultural productivity and an increase in food insecurity.

Of the 600,000 ha of lowlands, only 10,000 ha have been developed and half of that area has been abandoned because the people are not accustomed to lowland farming. It also has to be noted here that there is a potential of sustainably managing the land under slash-and burn with the introduction of Agroforestry practices which uses fast growing leguminous tree species. These would restore the fertility levels within a short period hence restricting the opening of lands to sustain the slash and burn.

**Deforestation:** About 70% of deforestation in Liberia is caused by clearing for agriculture – nearly all of it for slash-and-burn. The other recognized causes of deforestation are tree cutting for charcoal making, fuelwood in the vicinity of urban settlements, also tree cutting for construction in the areas around the urban centres which has taken a toll on the mangrove forests in the swamps. Furthermore the deforestation in Liberia has taken place in the mining areas for construction of low-cost houses and fuelwood for the same settlements. This is a scenario that dominated the landscape in the peri-urban areas. Wild fires that are started by illegal farmers and hunters and honey gatherers have led to a lot of deforestation, which indiscriminately destroy all tree type shrubs and the under growth.

In effect, unsustainable agriculture and deforestation are, by-enlarge, one and the same problem.

Figure 4: **Destructive Logging Practices: Unselective logging**



Clearing for rice cultivation in southeastern Liberia using the slash and burn technique



**Figure 5: Shifting cultivation**





**Figure 6: Destructive logging; damage to secondary growth and the soil**

**Unsustainable use and harvest of forest resources:** Large scale, uncontrolled, mechanized harvesting of tropical hardwoods from the humid forests took place during the recent period of civil war and the first six years of the post-civil war period when the country was under the leadership of Charles Taylor. The Oriental Timber Company (OTC) of Indonesia had an uncontrolled access to the timber in Liberia and they even had their own armed guards that restricted anybody's access to the area. The guards controlled the ports in Monrovia and Buchanan as well and therefore it will never be known how much timber was extracted during that time. It can only be summed with these few words from a visiting UN staff who managed to take a quick detour of the road to the loading area in the middle of the forest *"I have never seen so much timber cut and piled up at one spot in my life"* as they took a few snap shots of the stockpiled timber. The harvesting was clear felling and dragging with heavy machinery which left the land treeless and scared, a recipe for erosion of the top soil. This logging process was unmonitored with no management at all and with only superficial replanting from their nursery near the Sinoe river. In addition, this deforestation destroyed important habitat for species that are threatened by extinction like the forest elephant, the pygmy hippopotamus, short-horned



buffaloes, a number monkey species and chimpanzees, some of which are endemic to the Equatorial Guinea forest. There is currently a logging ban in place and such mechanized harvesting has ended. The existing localized over-harvesting for wood fuels and other forest products might not look like a major problem due to the small size of areas cleared but these become the nucleus for the soil erosion process which continues as gullies under the forest cover. However, with the lifting of the timber export ban in 2007, it was imperative for the government to develop sustainable forest management strategies before uncontrolled harvesting began anew.

**Land degradation caused by mining operations and other activities:** Although the deforestation and other associated land degradation has taken place due to a number of different activities, it has always been down played due to its localized form. Mining activities have been one of these e.g. the iron ore mining on the slopes of four mountain ranges in the interior reduced the vegetation cover significantly. Due to the steep slopes, this was followed by heavy soil erosion even after the operations had ended. During the recent civil war, the gold and diamond panning on the river banks resulted in heavy siltation of rivers. Heavy metal poisoning which is associated with gold mining also affected the downstream water of these rivers. Also the establishment of camps for refugees and Internally Displaced Persons (IDPs) resulted in extensive deforestation due to the need for fuel, wood. This led to soil erosion in areas like Grand Cape Mount, Lofa, Bomi and Gbarpolu counties.

Figure 7: **Illicit Mineral Mining in Grand Cape Mount County**



Source: **Field Survey, 2010**

**A wide range of agrochemicals** are known to percolate the soil and also contaminate the ground water.

**Civil and mechanical engineering activities** have serious impacts on the land, and where there is existence of inadequate environmental safeguards, the situation may be disastrous.

**Inappropriate disposal or use of gas and oil** thereby causing a flare over the land surface can destroy the integrity of the land causing widespread soil fertility problems.

**Community Rights at the Centre:** To substantiate this statement, the pictures below save to illustrate this fact. The diamond mining led to civil war in Liberia and the neighbouring Sierra Leone and this led to refuges and IDPs. The establishment of the refugee/ IDPs camps led to land degradation in the form of deforestation and soil erosion. On the other hand, the diamond mining directly caused land degradation i.e. deforestation, soil erosion and siltation which then led to Environmental IDPs which then led to land degradation.

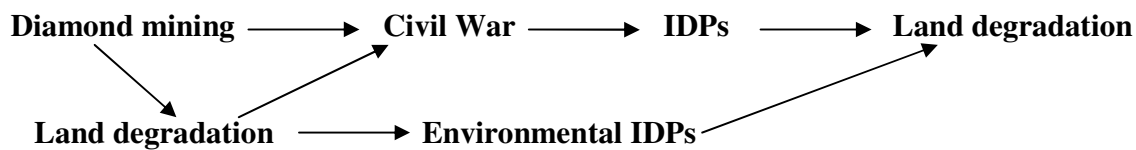


Figure 8: Deforestation due to refugee / IDP camps



Figure 9: Soil erosion in Refugee / IDPs camp





## **2.3 THE EXTENT OF LAND DEGRADATION, GEOGRAPHICAL DISTRIBUTION AND COMMUNITIES UNDER THREAT**

Due to the civil war, most of the evidence of land degradation is only qualitative and very few quantitative studies if any were carried out. Evidence presented here is only in the form of qualitative statements and pictures hence it might be difficult to use this as baseline data for monitoring during the implementation of the sustainable land management programme. It is currently estimated that only 5 – 7% of Liberia's landmass is affected by desertification, as such the impacts of drought and desertification are still minimal. However, the increase in commercial logging, increased arbitrary felling of trees for wood fuel, charcoal production, slash-and-burn agriculture, timber for construction, expanding industries, increase in artisanal mining and artisanal fishing coupled with the creeping northern savannah and the extending derived and coastal savannahs are giving reasons for serious concerns.

The first extensive forest inventory was undertaken in 1965. About two decades later, in 1985, a forest resources survey funded by FAO and FDA was carried out and it put the forest cover of Liberia at about 49.8% of the total land area i.e. 4 329 000ha. The annual deforestation rate was then estimated at about 0.5%. i.e. 21 6450 ha of forest lost per year. By 1998 annual deforestation had risen to an estimated 1%, i.e. 43 290 ha of forest lost per year, while recent estimates by World Resources Institute (WRI) put the rate at about 2%, i.e. 86 580 ha lost per year.

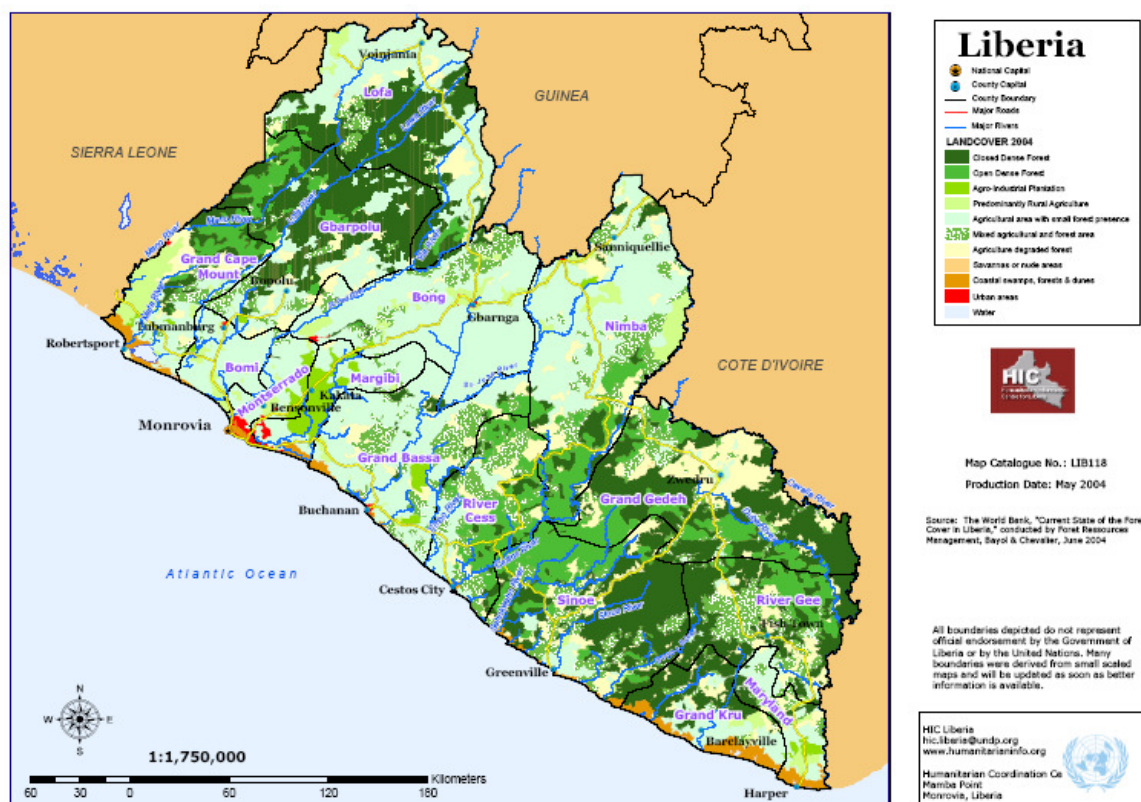
Another source, FAO has put the rate of deforestation for the period between 1990 and 2010 at 0.61% which is 26 407 ha a year giving a total for the 20 year period of 528 138 ha lost. The same report puts the woodfuel removal rate at 3843 metric tonnes in 1990 and that by 2005 it had



almost doubled at a figure of 6678 metric tones a year. This increase is partially attributed to the breakdown of the hydroelectric generation station during the civil war which resulted in more than 80% of the population resorting to wood fuel for their energy requirements for cooking throughout the country.

What has been noted here is that the rate at which the forest cover is removed heavily out-strips the rate at which it being replaced. Although in excess of 480,000 acres (192,000 hectares) of forestland is lost annually due to logging, shifting cultivation and other activities, the government has only replanted less than 27,000 acres (10,927 hectares) since the inception of its reforestation program in 1971. This is a mere mockery in mathematical terms.

**Figure 10: Map showing land-use patterns in Liberia in 2004**



## Forest Management Practices

Before 1960s, Liberia experienced insignificant forest depletion problems for several reasons the main ones being: the low human population density in forest areas, undeveloped interior part of the country which included limited access roads, limited information on the forest resources and low demand for timber products. The forest sector began to attract investors after 1968 when the German Forestry Mission to Liberia produced a twelve-volume comprehensive report on Liberia's forests. The report provided a wide range of information on the extent of the forests and the amounts of timber in the country including information on the distribution of timber tree species, the distribution and stocking of the forest, and statistics on the timber volume and wood qualities. This set of documents attracted loggers into the country and since then the rates of logging took an **upward trend** with corresponding increase in forest depletion. Until the forest reform in the early 2000s, forestry was comprehended as logging operations, except in isolated cases where reforestation was practiced in some areas. It was looked at as resource that could be tapped continuously with no management at all.

***Forest Harvest Operations:*** As earlier mentioned, forestry in Liberia has been synonymous to logging, since it was the only activity concerning forestry in the country, as a result the harvesting methods were therefore considered to be major contributors to deforestation and general land degradation. Although, during the pre-civil war Liberia Forest Policy mandated all logging concessionaires to extract timber based on the ***concept of selective logging***, the truth is that clear logging or forest creaming was commonly practiced in most concessions. Selective logging can be a sustainable forest management practice if the rules are adhered to. It reduces the chances of degradation as opposed to forest creaming. The New National Forest Law of Liberia (2006) stipulates two forest harvesting types: (i) Timber Sales Contract (TSC) which allows all trees of commercial value to be harvested at the same time and (ii) Forest Management Contract (FMC) which restricts harvesting to selective logging. To curtail land degradation currently, the FDA is working on a **code of harvest** which emphasizes and enforces the following:

- residual plant species are not lost or destroyed to any significant level*
- sustainable land management is ensured in logging concession areas.*
- there is control over re-entry to logged forest blocks,*
- there should conduct post-harvest treatment in logged forest blocks,*

*-preventive measures against encroachment on areas when loggers leave the site (e.g, closure of logging roads and damaging of bridges on logging roads to prevent access to forest by farmers, hunters and other forest users).*

The code regulates that under the FMC the land is protected against other land uses like farming, mining, power-chain sawing. The harvest code which is modeled on the ‘**West African Code of Harvest Practice**’ is currently being practiced in countries like Cameroon and Ghana. It will contain information on environmentally friendly ways of constructing logging roads, constructing bridges, establishing landings, and building skidding roads to minimise damages to the soil and residue plants. The code will have best practices in timber concessions as well as financial and economic assessment of timber harvesting operations. Post-logging treatments will be mandatory to ensure the rehabilitation of logged areas as well as restoration to allow tree regeneration.

Post-logging treatments contained in the FDA Forest Management includes (among others) *slope management, soil replacement, vegetation replacement, and relief operations to rescue residual trees and regenerations of important economic tree species*. It recommends re-entry to previously logged areas, only after assessment to determine the pros and cons, but in general only 25 years after felling. Monitoring will be introduced to ensure that all concession operation guidelines are respected by loggers. The monitoring will also ensure that all access roads constructed during logging are closed and bridges in concession areas removed before loggers leave the site. This action is necessary to prevent encroachment by farmers, hunters and other unauthorized forest users that would then open the area to abuse and certainly to degradation.

A **Lesson learnt** is that extending logging roads increased access of farmers and poachers to forest concession areas by taking advantage to encroach on the forest and wildlife resources, thus contributing to the acceleration of forest depletion, deforestation and biodiversity depletion. The FDA 2009 Annual Report estimates deforestation in the late 1980s to have been 2% per annum, and that with the unregulated logging during the 14 year civil war, it increased to about 3%. The 2004 National Biodiversity Strategy and Action Plan (NBSAP) draft Report on Liberia indicated

that approximately 50% of the nation's forest cover had been lost due to logging, road construction in logging areas and shifting cultivation.

**Reforestation:** The FDA implemented a National Reforestation Program (NRP) between 1971 and 1989 and the main objectives of that program being to:

- (a) produce pulp wood for the external pulp industries
- (b) rehabilitation of sites degraded or deforested as a result of human activities (mainly logging and farming) or natural phenomena.

The reforestation program was implemented in Zaway (Grand Cape Mount County), Tubmanburg (Bomi County), Yekepa and Kpaytuo (Nimba County), Cavalla in Garley Town community (Grand Gedeh County, and Glaro (Maryland County). An afforestation nursery was established in Foya District (*See photo below*) where the northern savanna is spreading rapidly. Although this plantation was initiated to augment industrial wood production, it also served to halt the rapidly spreading desertification, which takes over farmlands and other deforested lands.

Figure 11: Afforestation nursery





In addition to reforestation and afforestation, site rehabilitation through tree planting has been a common practice in Liberia since the 1980s. It is now quite common in former refugee and IDPs camps like Senje in Grand Cape Mount. This was carried out by FDA, Society for the Conservation of Nature of Liberia (SCNL) Environmental Foundation for Africa (EFA) and Farmers Associated to Conserve the Environment (FACE) in several locations in Montserrado, Nimba and Grand Cape Mount Counties. The majority of the trees planted were fast growing species like *Acacia species*. Tree planting for site rehabilitation only became popular in post war Liberia.

### **Community Forestry**

Due to the realization of the encroachment that took place in the protected areas during the civil war, Fauna & Flora International (FFI) in collaboration with FDA are engaged in implementing a project geared towards the conservation of biodiversity of the Sapo National Park (SNP). The project, 'Biodiversity Conservation Around Sapo National Park' (BCASP), is integrating strictly protected zones in a community and commercial production system. Funded by the Global Environmental Facility (GEF) and the French Global Environment Facility (FFEM) for a period of four years (August 2006 – July 2010), the project is also engaged in community livelihood initiatives.

Community forestry programmes for the proposed Lake Piso Multiple Use Sustainable PA and Wonegizi communities is in the pipeline. The initial project, 'Liberia National Carbon Strategy: a Capacity Building and Design of Community Forestry Pilot' will be implemented at the first site by FACE and at the second site by Skills and Agriculture Development Service (SADS), both projects are in collaboration with Nature Conservation and Research Center (NCRC) based in Ghana. This will be a community based initiative which will see the communities taking it on themselves to protect an area within their areas.

### **Agricultural Practices**

There are four major agriculture production systems noticeable in Liberia. These systems are (1) **state-owned plantations**, (2) **foreign commercial plantations**, (3) **domestically owned, medium-sized commercial farms** and (4) **small household farms** which have all contributed to deforestation and land degradation. .

- a. **State-owned plantations:** About 35,000 ha of cocoa and 40,000 ha of forest were opened up and planted to coffee and cocoa by the Liberia Cocoa and Coffee Corporation (LCCC). These State-owned plantations suffered great setback during the civil crisis period.
- b. **Foreign commercial plantations:** Approximately 70,000 ha of forests were cut up and planted with oil-palm and 150,000 ha to rubber plantations. These plantations are established and sustainably managed until the start of the civil war. These are currently being rehabilitated.
- c. **Domestically owned, medium-sized commercial farms** produce cash crops and livestock. The primary environmental impact from this domestic agricultural practice is deforestation, which then leads into other forms of land degradation.
- d. **Small household farms** are established throughout the country. The majority are mainly by shifting agriculture system. Several hundred hectares of such farms with citrus, coconut, cola, mangoes, plantain and pineapple exist. Rice farms top the list of household farms in the country. Over the years, a lot of studies conducted in the country put traditional household rice farms to the average of about 1.5 ha per household across Liberia. Root, tuber and leguminous crops are also common in small household farms and backyard gardens. Where these crops are planted, the farmland is fallowed after 4 to 5 years to restore soil fertility . At this point, an equivalent piece of land is opened up in the forest. The farming rotation or fallow period is based on **tribal land tenure** arrangements and often discourages long-term investors in the agriculture sector. Shifting agriculture system has promoted deforestation, especially when fallow period reduces in a particular community as farming populations increase. In general, each family will own up to 4 or so plots at different stages of forest growth.

### **Private Plantations**

These also constitute large tracks of forest that were opened up to establish these plantations. A few examples are Firestone Rubber Plantations in Margibi County, the Charles D. Sherman oil-palm Plantation in Grand Cape Mount County, the Guthrie Rubber Plantation shed between Bomi and Grand Cape Mount Counties, and the Weala Rubber Plantation in Margibi County. Coconut plantations are commonly grown in the coastal belt communities. Except for Bomi

County in the northwest, rubber is mainly produced in central Liberia (Montserrado, Margibi, Bong, Nimba, Maryland and Sinoe Counties) although small plantations can be found in the other counties. Oil palm plantations are extensively established in Sinoe, Grand Gedeh and Grand Cape Mount Counties. In most cases, rubber, oil-palm and coconut are established and properly managed except during the civil war.

### **Mining**

Iron ore mining companies were operating at four sites in the country before the war. They were: the Liberia Mining Company (LMC) in Bomi County, the National Iron Ore Company (NIOC) in Grand Cape Mount County, Liberian-American Mining Company (LAMCO) in Nimba County, and Bong Mining Company (BMC) in Margibi County. Based on previous experiences, mineral exploration and mining has been a serious challenge to sustainable land management in Liberia in the following ways (a) deforestation of the area and its surroundings (b) sedimentation and pollution of rivers (e.g. St. John River) and creeks sourcing from iron ore mining communities that continue to suffer from past mining activities, (c) the land slide incidents as the Norway Camp (NIOC0) on October 6, 1981 as a result of over clearing, poor planning or lack of strategic plan to prevent risks (d) lack of land rehabilitation like the exploration tunnels left in mountainous communities are still a danger to forest dwellers. The photo shows one of the tunnels dug by LAMCO on the mountain top in Nimba County dating back to the 1980s (*See photo on left above of LAMCO tunnel on Kitoma Mountain in Nimba County*).



Figure 12: LAMCO exploration tunnel (over 30 years)

A mineral map by the Ministry of Lands, Mines and Energy (MLME) depicts that the entire country is covered with mineral deposits. It also indicates potential land-use conflict between the mining sector and other major land-use sectors such as forest and agriculture as well as a high potential for land degradation all over the country. In the post-civil-war period, a lot of mining licenses have been awarded. A few of the sites to be exploited under these licenses are the (a) Western Nimba deposit by Acelor Mittal, (b) Eastern Nimba deposit, (c) Wologizi East mountains and (d) the Goe Fantro Range by BHP Billiton. Unlike the past, these two seem to be very much concerned about the impacts of their operations on the natural environment. They have conducted a series of environmental and social impact studies to *establish baseline information* on their operational sites and to design *environmental management plan (EMP)*, with works handbooks and compliance documents. This set of documents will ensure that only

insignificant or minimum negative impacts of the mining activities to the environment (i.e. soil, vegetation, hydrologic systems etc) mitigation and offset measures for any negative impacts resulting from its operations are planned for. There are already facing soil erosion and pollution challenges inherited from past iron ore operations.

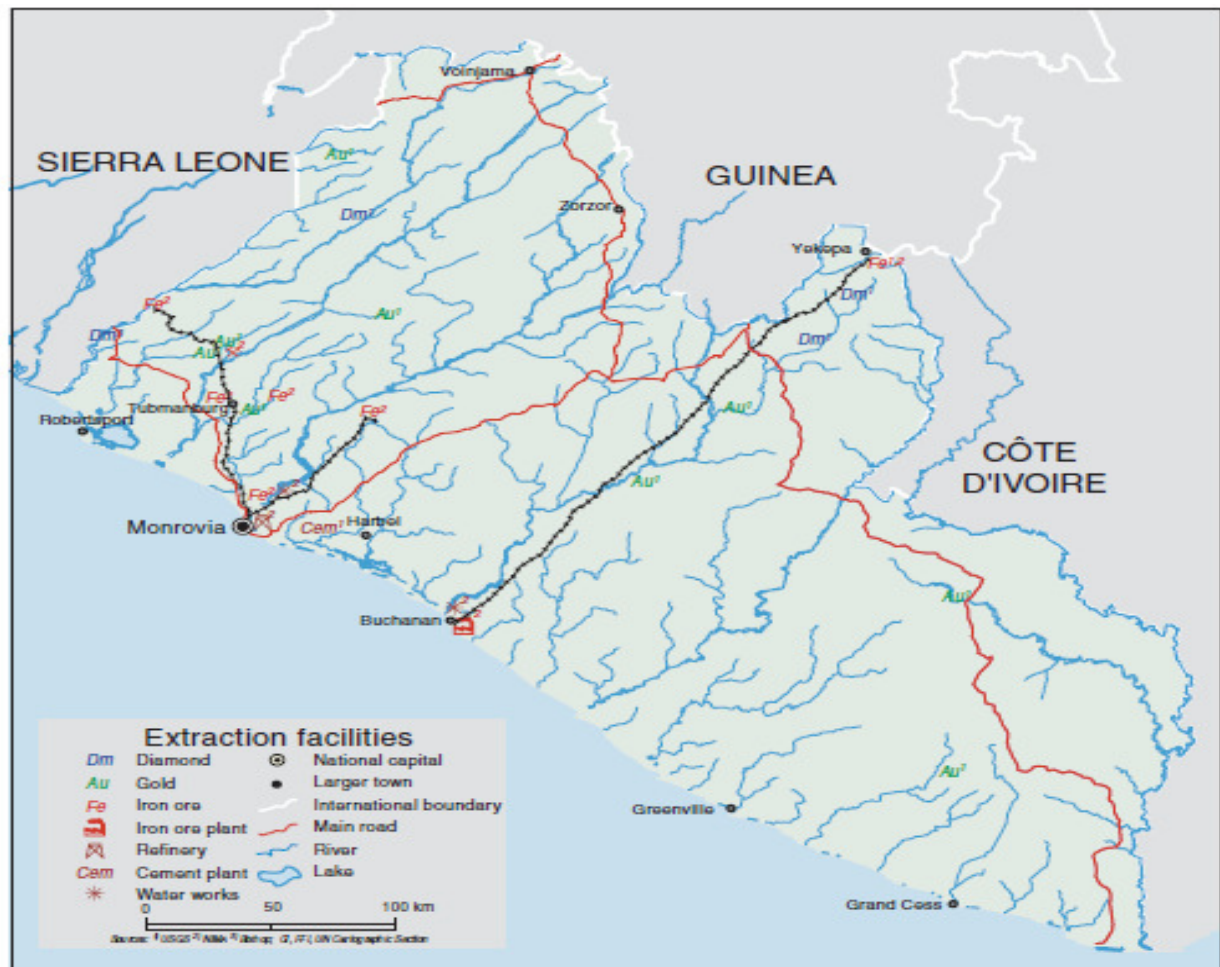


Figure 13: Map showing mineral deposits all over the country

Apart from iron ore mining, diamond and gold mining activities are prevalent in most parts of Liberia. Most of these activities are alluvial mining. For example, some alluvial mining pits were recently observed in Gbarpolu and Grand Bassa (See picture below for one of the alluvial mining sites in Grand Bassa County). Alluvial mining has become an environmental challenge to



Figure 14: Alluvial mining causing extreme environmental degradation



**Alluvial mining poses threats to water quality and riparian habitat**

Protected Areas Management in Liberia. For example, the Sapo National Park has been invaded by alluvial gold miners since 2003. About four major mining sites are illegally established inside the park. They do not only dig up the land but cut the trees for construction and woodfuel as well as poach the protected animal species in the park. The EPA reported in February 2009, that Komblo International (KBI) had been involved in mineral exploration in the Proposed Lake Piso

a PA without the knowledge of the local communities and local authorities. About 68 exploration pits were discovered dug by KBI between the towns of Gbesseh and Sawilor in Tewor District.

### **Other Land-Use Practices**

Other harmful land-use practices in Liberia are (a) sand extraction (mining) along the beaches, lakes, rivers and creeks, (b) garbage/ solid waste disposal or dumping into the lagoons and mangrove swamps, (c) reclamation of wetlands for settlement establishments in forest communities and mangrove swamps, and (d) rock quarrying in and around the urban areas where quarry stone for building is required. These activities usually make the land more susceptible to more degradation and pollute the swamps as well as destroying of special habitats.

Figure 15: Woodfuel causing deforestation



Wood saving cooking stoves



Open-fire cooking



Figure 16: Stone quarrying for construction



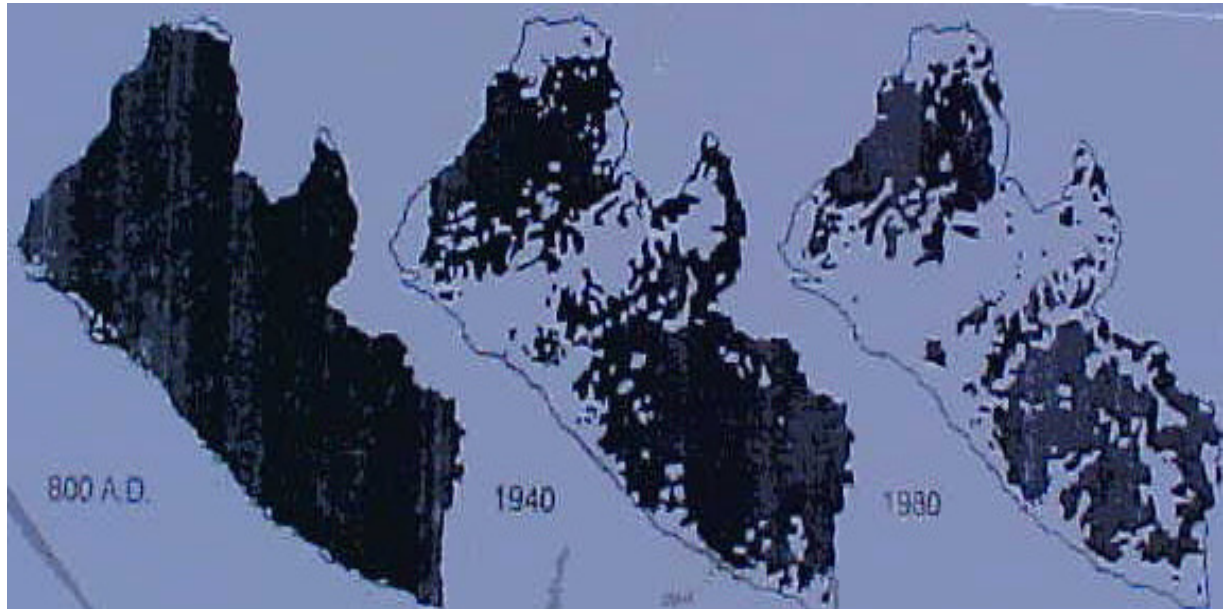
#### **2.4 LAND DEGRADATION TRENDS AND GEOGRAPHICAL TARGETING**

Deducing from the foregoing discussions, it is evident that in general all forms of land degradation are on the increase in Liberia with a significant increase from the 1960s to date. It has also been highlighted that the period of the civil war from 1989 to 2002 saw another marked increase in the rate of land degradation irregardless of the fact that economic activities were supposed to be reduced, but the warlords in the various parts of the country exploited whatever natural resources were found in their areas to support their war efforts. This is to illustrate by the graphic trends, comparative photos of various activities for the period between 1960 and 2010. Of particular interest will be to look at the biodiversity degradation of both fauna and flora.

The figure 17, below shows the receding forest over the whole country. This increase in the cleared areas could be due to increase in shifting cultivation, refuge and IDPs camps clearing and the increase in the rate of woodfuel and charcoal extraction, all of which have caused significant increase in deforestation in recent years.



Figure 17: **Trends of Deforestation: forest cover over 1180 years**



Source: **EPA, 2004**

There is also encroachment into the protected areas like Sapo Nat Park and the East Nimba Nature Reserve. This has also been a result to the increase in population over the years all over the whole country according to FFI and CI documents.

The figure 18 shows the mangrove encroachment and mangrove reclaimed for settlement. This is evidence of the increased pressure that has been exerted on the land and natural resources in and around the cities.

Figure18: Mangroves clearing and solid waste dumping to reclaim land in Paynesville/Congo Town



## 2.5 COSTS OF LAND DEGRADATION

The cost of land degradation is a difficult concept to assess, nevertheless it is necessary to establish it so that it can be presented to the landusers and stakeholders in a simplified manner that would make them appreciate that there is a cost attached to the degradation. The monetary value of the land degradation could be measured indirectly through the **cost of rehabilitation**. Sometimes the cost might look small but it is important to take into account **the amount of time** it takes to restore the land to what it was before any human activity or planned project activity that resulted in the land being degraded. One could look at the cost of reforestation i.e. time, staff costs (professional and non-professional), cost of seedlings, tools, protection costs. Another way of looking at it would be to look at the cost of losing a habitat in terms of animals, plants, tourism, aesthetic value assigned to it. This value can be assumed or adopted from the Ecosystems Services Values which have been agreed globally shown in Table 3.

**Ecosystems Services Value:**

Although this system is been adopted, it has to be brought to the reader's attention that valuing the environment is a complex and potentially contentious process. MEA (2005) presents the Total Economic Value (TEV) of an ecosystem as shown in table 3. Globally there are 17 ecosystems that have been given economic values. It is a system based on Direct and Indirect Use Values which try to include changes in productivity, cost based approaches and contingent valuations.

Table 3: Average Global Value of Annual Ecosystems Service

ECOSYSTEM	Annual Local Value (US\$/ha/year , 1994 values)
Coastal	4 052
Open Ocean	252
Wetlands	14 785
Topical Forest	2 007
Lakes/ Rivers	8 498
Temperate/ Boreal forest	302
Grasslands	232
Cropland	92
Estuaries	22 832
Tidal/ mangrove	9 990
Swamps/floodplains	19 580

This methodology is further translated into Land Cover Classes. These are allocated nominal value weightings that are allocated to each land cover class, as shown in table 4. The value decreases with changes in land cover that could be hydrological or ecological. On the hydrological route, a reduction in water supply for irrigation will reduce the household income, while on the ecosystems functions route, loss of biodiversity would reduce human activity leading to reduced human well being.

Table 4: Land Cover Class Environmental Value Weights

<b>LAND COVER CLASS</b>	<b>VALUE WEIGHT</b>
Urban	<b>1</b>
Predominantly rural Agriculture Domain	<b>8</b>
Agriculture area with small forest presence	<b>10</b>
Mixed Agriculture and forest	<b>33</b>
Agriculture Degraded Forest	<b>50</b>
Open dense Forest	<b>50</b>
Closed dense forest	<b>66</b>
Free Water	<b>281</b>
Savanna or bare soil	<b>8</b>
Coastal Ecosystem complex	<b>134</b>
Wetlands	<b>489</b>
Agro – Industrial Plantation	<b>28</b>

A land cover map of Liberia based on this method can be seen in figure 10.

Another qualitative approach to looking at and understanding the cost of land degradation is as follows:

- Past and current costs associated with land degradation have been documented to be low agricultural production; poor nutrition; increase in prices of food and other commodities; poor accessibility to food; decline in human health especially in rural communities; and population displacement.

- It has been forecast that predicted climate change scenarios will exacerbate the already appalling situation of food insecurity, poor human health, human settlement and displacement. The climate change is also predicted to exacerbate the adverse impacts on the physical environment which is: nutrient loss, soil erosion, sedimentation, siltation, eutrophication, and pollution of water bodies, damage to roads, bridges and other infrastructure and biodiversity loss and soil infertility.

### 3. COMMUNITY PRACTICES, PREVIOUS AND CURRENT PROGRAMMES, AND LESSONS LEARNED

- A) Shifting cultivation dominates the rural agriculture sector of the country. The Liberian farmers are adapted to this traditional farming system that is sometimes referred to as slash-and-burn farming. The system is labour intensive, low in productivity, land extensive and lacks technologies. The system contributes significantly to deforestation and biodiversity loss because it uses very large pieces of land. Until the population of Liberia began to take a sharp upward trend about four decades ago, shifting cultivation was not regarded as a major threat to forest conservation. This was because land fallow periods of 12 - 15 years was long enough to permit natural restoration of forest up to old secondary succession level. In many parts of the country, the land fallow period has drastically reduced to 5 years.

Shifting cultivation appears to be more dominant in the belt of the dissected table-land and the belt of the rolling hills, which are believed to account for about 90% of the arable land of the country. The draft NBSAP Report (2004) confirms this. The report also indicated that at that time, over 95% of Liberia's farms were located on uplands, which are far less productive than lowlands and contribute to environmental degradation. The FAO (2005) draft report mentions that about 46% of the total land area i.e. 4 500 000ha of the country is arable and most farming is carried out on small holdings. Many of these small holdings are cultivated in the traditional ways of bush fallowing or shifting cultivation. The result is exposure of the soil which induces reduction in soil fertility through surface erosion and leaching of essential soil nutrients. Reduction in forest due to increased shifting cultivation also results in habitat destruction or loss, and destruction of flora species.

***The Lesson learnt about Shifting Cultivation:*** This is a system that allowed natural regeneration of the fertility through nutrient recycling and capture of leached nutrients by deep rooted plants like trees as opposed to annual crops. This understanding of the shifting cultivation system can be mimicked by the agroforestry technology where fast growing tree species can be introduced into fallow pieces of land and within 3 to 4 years it would have regained the same amount of fertility it would have gained in 12 to 15 years of shifting cultivation. The planting of trees reduces the natural succession time from about 14 years to 3 years in total. (bare ground to herbs/shrub to grasses to climax grasses to bushes to trees to climax trees) = 14 years to about 3 years in total.

**B)** The lowland areas account for about 6.1% of the total land area of Liberia. Most of the arable lowlands are scattered over the surface of the country and are often found in areas difficult to access and to cultivate (e.g. narrow valleys). In the absence of appropriate and applicable farming methods and skills, cultivation of these lowlands is difficult. Only few communities in Liberia practice lowland cultivation probably because their lowlands are situated in locations that are accessible or because arable uplands are limited. For example, in Foyah District (Lofa County), where deforestation is severe, swamp-rice farming is very common. This farming practice has also been observed intensively populated peri/sub-urban communities such as Voinjama, Kolahun and Zorzor

***The Lesson learnt from the three communities/tribes who formally use the lowlands:** It is how people manage the swamps to make a living from them. It can also be learnt that the alternative crops can be grown better in the lowlands as a substitute or cash crop and that these cash crops could be produced and sold to enable these lowland farmers to purchase enough food from their proceeds . Alternatively what technologies do the people want that will make them grow swamp-rice. Are agriculturalists/development workers really listening to the people or learning from them and doing the value-addition that is required for them to use the fertile lowlands profitably and stop cutting more forest to open new lands for cropping.)*

## **4. ANALYSIS OF THE ENABLING ENVIRONMENT INFLUENCING SLM**

### **4.1 POLICY FRAMEWORKS INFLUENCING SLM**

The current national development policy agenda is spelt out in the “Lift Liberia Policy” or the Liberia’s Poverty Reduction Strategy (PRS) which presents the Government’s vision and major strategies for moving towards rapid growth and development during the period 2008-11.

#### *Policy Making Process*

*Once an institution or organization perceives that an important issue exists, it is discussed and the possible policy responses considered capable of addressing the issue are formulated. The policy options are screened, assessed or analyzed, and sent to Cabinet which comprises twenty (20) ministries. The Cabinet deliberates and takes a final decision, after which it is passed over to the National Legislature for enacting a law to its effect.*

Liberia's overarching aim is to build a new nation that is peaceful, secure, and prosperous, with democratic and accountable governance based on the rule of law, and with abundant economic opportunities for all Liberians. The Government's central objectives over the next three years are:

- *to firmly establish a stable and secure environment across Liberia*
- *to be on an irreversible path towards sustainable, equitable and inclusive growth and development*
- *to rebuild the capabilities of and provide new opportunities for Liberia's greatest asset – its people*
- *to establish responsible institutions of justice, human rights, and governance.*

Liberia aims to do away with the old divisions, marginalization, and exclusion of the past and replace them with inclusiveness, equitable opportunities, and empowerment for all Liberians.

The country's chosen route of achieving the above PRS is organized around a framework with four basic Pillars:

- Expanding peace and security;
- Revitalizing the economy;
- Strengthening governance and the rule of law; and
- Rehabilitating infrastructure and delivering basic services.

### **Expanding Peace and Security**

The Government has begun to rebuild the full range of its security forces and has made substantial progress in reintegrating refugees and IDPs, with strong support from its international partners. It has demobilized and reintegrated over 90,000 ex-combatants, 11,780 of whom were children. This has been done through formal reintegration programs, and deactivated or retired over 17,000 members of the Armed Forces of Liberia (AFL), the Liberian National Police (LNP), and the Special Security Service (SSS). To date the government has recruited and trained 2,000 AFL and about 3,500 police officers and has upgraded the infrastructure for the police as well as the Armed Forces of Liberia. Alongside its international partners, the Government has provided support and temporary cash assistance to over 108,000 exiled refugees and 325,000

registered IDPs in addition to tens of thousands more who have returned to their communities outside of formal programs. The Government is currently preparing itself to receive large numbers of refugees being repatriated from the West Africa sub-region.

*(The peaceful and secure environment is essential for communities to start planning medium to longterm programmes. This also ensures the establishment and implementation of the rule of law in the country which will go hand in hand with SLM which is a medium to long term programme hence this environment is essential for it to take place)*

### **Revitalizing the Economy**

The Government has taken a range of measures to overhaul its financial management systems and to spur renewed economic activity. It moved quickly to introduce a cash-based balanced budget and new expenditure control mechanisms, and strengthened enforcement and collection of customs duties and other taxes. The Government endorsed and is implementing the Governance and Economic Management Assistance Program (GEMAP), which provides international experts to support several key financial agencies of the Government. It also successfully implemented two IMF Staff-Monitored Programs, under which it made significant improvements in public finances and in monetary and exchange rate policies, paving the way to full restoration of normalized relations with the IMF in March 2008. It also joined the Extractive Industries Transparency Initiative (EITI) to strengthen accountability and transparency in managing funds generated through natural resource-based activities. The Government submitted legislation to formally merge the Bureau of the Budget with the Ministry of Finance, as well as legislation to limit the discretion of the Government to change budget allocations between ministries and agencies without approval of the Legislature to a cumulative total of 30 percent. The latter was recently adopted by the legislature after reducing the threshold to twenty percent.

*(The EITI as described above is a necessary step towards the attainment of SLM since the Liberian economy is highly dependent on the Extractive industry like forestry and mining industries that will allow SLM to flourish and benefit the current and future generations.)*

To begin the revitalization of key economic activities, the new Government in early 2006 immediately cancelled all forestry contracts and reviewed 95 contracts and concessions granted by the National Transitional Government of Liberia. The Government then subsequently passed



a Forest Reform Act to strengthen over-sight and regulation of the forestry sector. These steps paved the way for the United Nations Security Council to lift the sanctions on Liberian timber exports and should lead to a rapid recovery in the timber sector during the PRS period. *(The passing of the New Forestry Reform Act and the reviewing and cancellation of most of the logging concessions led to the lifting of the UN sanctions. This then allowed the economy to benefit from these activities and hence will be bound by international regulations to utilize these resources in a sustainable manner, making way for mainstreaming SLM.)*

The Government completed negotiations with ArcelorMittal and the Firestone Rubber Company to revise major concession agreements to increase the benefits for the Liberian people and concluded new agreements to re-start oil palm production. It distributed over 40,000 tools and 20 metric tons of seed rice to some 33,000 farmers throughout the country in 2006. Larger amounts were distributed in 2007. It worked to increase employment throughout the country through community development projects, food for work programs, road building programs, urban cleanup projects, and the revitalization of agriculture. The Government has also made definite initial progress in dealing with its debt situation. It formulated and began implementation of a comprehensive domestic debt resolution strategy, cleared its long-standing arrears to the World Bank, the African Development Bank, and the IMF. A new three-year agreement was signed with the IMF, and also reached the Decision Point under the Heavily Indebted Poor Countries' (HIPC) Initiative.

*(The revised rubber concessions have embedded in them the art of production with protection, the aspect of ownership and benefits to the Liberian people which is a prerequisite to SLM. Further the distribution of seed and fertilizer by GOL and NGOs was a measure which directly encouraged farmers to use their old lands since the fertility could be improved, directly reducing the opening of new farmlands. The introduced urban clean ups directly reduced the amounts of solid waste going into the streams, swamps and the lagoons directly improving the water systems and the breeding places for fish, crustaceans etc )*

### **Strengthening Governance and the Rule of Law**

The Government moved quickly to introduce a requirement that the President, all Cabinet Ministers, and all commissioned officers publicly declare their assets, and submitted to the

Legislature a new Code of Conduct for all public officials. It developed and began to implement a comprehensive anti-corruption strategy, which included the submission of legislation to establish an Anti-Corruption Commission with prosecutorial powers. It also began the process of civil service reform, and the settling of civil servants' arrears for periods ranging between six to eighteen months. On recognition that many of the governance problems of the past have their roots in the excessive concentration of power in the Executive and in Monrovia and to that end, it is strengthening the Legislature by giving it more power over budgetary issues. It has established a Women's Legislative Caucus with membership from both Upper and Lower Houses and has begun the process of decentralization, by establishing County Support Teams to support County Superintendents and Assistant Superintendents. Also, a Children's Assemblies and a National Children's Parliament were also established to ensure children's participation in governance issues. *(The decentralization of power to the counties, districts and chiefdoms allows the communities to have a say in what is happening in their areas. It comes with the decentralization of the planning process and the budget which gives the local communities a sense of ownership and a sense of belonging to the process and its products, which is a prerequisite for SLM. Also the introduction of the Women's Legislative Caucus and the Children's Assembly gives these two normally marginalized groups in society but who actually till the land a say in what has to be done and an understanding of why things have got to be done that way)*

### **Rehabilitating Infrastructure and Delivering Basic Services**

The Government initiated the rehabilitation of four major highways, many secondary roads, as well as bridges, culverts, and drainage facilities in several areas around the country. Electricity connections and pipe-borne water were restored to some parts of Monrovia for the first time in 15 years. The Government has rebuilt, equipped and reopened many schools throughout the country, and it abolished tuition fees for public primary schools, and significantly reduced tuition fees for public secondary schools, leading to a 44 percent increase in school enrolments. It restored services to over 350 health facilities around the country, and rehabilitated more than 20 clinics and several hospitals and health centers. It immunized over 95 percent of children under five against measles over a two year period, and trained over 3,500 health workers in malaria case management. The Government also provided HIV and AIDS prevention services to the

general population, particularly to high risk groups, as well as treatment and care services to people living with HIV and AIDS.*(The re-establishment of electricity directly cuts down on the woodfuel and charcoal requirement nationally especially in the urban areas. The repairs to schools and the reduction in the tuition fees that saw a 44% increase in enrolment, this ensures that the country will have an educated youth who will easily understand the need for SLM since they are the future of this country.*

*In brief, all these government measures highlighted above might look small but they play a big role as a foundation for SLM in the country, therefore a foundation has already been laid for SLM to be mainstreamed into all the sectors of the economy and society.)*

The policy formulating bodies include the Cabinet, the Committee of Ministers of the Economic Sector, the Cash Management Team and the Inter-ministerial Investment Team.

### **The Cabinet**

This body comprises all twenty (20) ministries, chaired by the President; and is the highest policy and decision making body at the level of the Executive Branch of government.

### **Committee of Ministers of the Economic Sector**

This body comprises the ministries of: Finance, State for Presidential Affairs, Agriculture, Post and Telecommunications, Planning and Economic Affairs, Transport, and Commerce and Industry.

It is hereby recommended that The Min of Lands, Mines and Energy, Forestry Development Authority and EPA be incorporated into this committee. The Committee is chaired by the Minister of Planning and Economic Affairs and provides leadership and guidance to the government on economic management.

### **Cash Management Committee**

This is an advisory body comprising representatives from various government ministries and agencies, with a Secretariat at the Ministry of Finance. It provides guidance to the government on fiscal management and control. It monitors revenue inflows and outflows and advises on financial resource utilization considering, the budget, cash plan and national priorities.

### **The Inter-Ministerial Concession Committee**

This Committee has five (5) permanent members including the ministries of Justice, Finance, Min. of State for Presidential Affairs, Internal Affairs, Labor and the National Investment Commission. It is chaired by the National Investment Commission. Its main mandate is to negotiate on appropriate terms on behalf of the Government and people of Liberia concession agreements across the various economic and development sectors that have the potential to accrue the greatest possible benefits to the country taking into account all relevant safeguards.

### **Entry Points for Integrating SLM Priorities**

There are three (3) possible entry points for integrating Sustainable Land Management priorities into national agenda: (1) Through the programs and plans of the environment units in each government ministry and/or agency. All government ministries and agencies are obliged under the Environment Protection and Management Law to establish and maintain an environment unit. This has enhanced intersectoral coordination on environmental matters over time. (2) The national budgeting process – the Environmental Protection Agency (EPA) has provided training for three personnel of the Department of the Budget, Ministry of Finance in mainstreaming SLM in the national budgeting processes and resource mobilization and financial flows for SLM implementation. (3) The other possibility would be to mainstream the SLM into the Second Poverty Reduction Process. Since the PRSP is a government priority encompassing program, it will ensure that once it is taken on board in the PRSP, it will automatically get a budget allocation from government during the next 3 year period of the PRSP.

## **4.2 REGULATORY FRAMEWORKS INFLUENCING SLM**

Besides the National Legislature which promulgates statutory laws over time, ministries and agencies do develop sector regulations for the efficient and effective implementation of their various mandates. In the case of Sustainable Land Management, the institutions having responsibilities for formulating sector specific regulations include:

- Environmental Protection Agency (EPA)
- Forestry Development Authority (FDA)
- Ministry of Agriculture (MOA)
- Ministry of Lands, Mines and Energy (MLME)

Enforcement under the Liberian laws is strictly the prerogative of the established national security agencies which work in close collaboration with the respective institutions. Under the PRS, the EPA is in the process of providing training for security officers for effective monitoring and enforcement of environmental standards and regulations. The training effort includes the training of customs officers at international border crossings to combat illegal trade in commodities of environmental concern. The commodities include endangered species, hazardous wastes and chemicals, invasive alien species and living modified organisms. The monitoring includes prevention of illegal mining, logging and wildlife poaching in protected areas.

There are a number of specific legislations related to environment and natural resources management including:

#### **The National Environmental Policy of Liberia (2003)**

The necessity for formulating a national environmental policy was in recognition of the severe impact of man's activities on all components of the natural environment, especially the influences of population. These include high density urban areas, resource exploitation and the further realization regarding the critical importance of restoring and maintaining environmental quality for the welfare and development of the people. The overall goal of the national environmental policy is to ensure long-term economic prosperity of Liberia through sustainable social and economic development. This enhances environmental quality and resource productivity on a long-term basis that meets the requirements of the present generation without endangering the potential for the environment to meet the needs of future generations. The ultimate aim of the national environmental policy is to ensure the improvement and maintenance of the physical environment for the entire citizenry. It seeks to ensure reconciliation and coordination between economic development and growth with the sustainable management of the natural resources that supports it. Specifically the policy seeks to:

- Maintain ecosystems and ecological processes essential for the functioning of the biosphere
- Ensure sound management of the natural resources and the environment
- Adequately protect human, flora, fauna, and their habitats against harmful impacts, and preserve biological diversity

- Integrate environmental considerations in sectoral and socio-economic planning at all levels throughout the nation
- Find common solutions to common environmental problems at regional and international levels.

The national environmental policy also spells out priority areas of social and economic development as follows:

- occupational health and safety
- development of human settlements
- recreational space
- national monuments and cultural heritage
- poverty alleviation
- population management
- environmental impact assessment
- environmental information
- conservation of biological diversity
- conservation and management of water resources
- conservation and management of wetlands
- environmental economics.

It also covers sustainable management of sectoral systems including land use, forest and wildlife, protected areas, energy production and use, control of toxic and hazardous substances, agricultural, forestry, chemicals, waste management and sanitation, marine and coastal management, mining and mineral resources, noise and air pollution. The development of people's participation is portrayed as an essential step in the management of the environment.

### **The Environmental Protection Agency (EPA) Act (2003)**

This Act created the Environmental Protection Agency (EPA) of Liberia, as the principal authority over all environmental programs and activities in the country. It also provides the organizational structure of the EPA, headed by an executive director, and assisted by a deputy executive director, legal assistant and administrative/finance assistant. The agency recognizes the role of sectoral environmental units such as water, agriculture, maritime, energy and forestry.

These units are to work in conjunction with the respective line ministries and autonomous agencies that are involved with the environment. The agency also has an environmental conservation section that will oversee international environmental conventions such as the Convention on Biological Diversity, United Nations Framework Convention on Climate Change, Montreal Protocol, and the Cartagena Protocol on Biosafety etc.

### **The Environment Protection and Management Law (2003)**

The law forms the legal framework for the sustainable development, management and protection of the environment by the Environmental Protection Agency in partnership with relevant ministries, autonomous agencies and organizations as well as in a close and responsive relationship with the people of Liberia. It also provides high quality information and advice on the state of the environment and matters connected there with. The Law stresses inter-sectoral coordination and allows for sector specific statutes. It also addresses a wide range of environmental issues like environmental impact assessment, audit and monitoring, environmental quality standards, pollution control and licensing, guidelines and standards for the management of the environment and natural resources. The other issues addressed include protection of biodiversity, national heritage and the ozone layer inspection, analysis and records, international obligations, information access, education, public awareness and offences.

### **The Act Establishing the Land Commission (2009)**

An Act of the National Legislature created a Land Commission in 2009, with an overall mandate and purpose “to propose, advocate and coordinate reforms of land policy, laws and programs in Liberia” Section 3 of this Act states that the objectives of policy and law reform shall be to promote:

- Equitable and productive access to the nation’s land, both public and private
- Security of tenure in land and the rule of law with respect to landholding and dealings in land
- Effective land administration and management
- Investment development of the nation’s land resources.

This Act further states that the Commission's mandate "shall extend to all land and land based natural resources, including both urban and rural land, private and public land, and land devoted to residential, agricultural, industrial, commercial, forestry, conservation and any other purpose" However, the Commission does not have an adjudicatory or implementation role. The ministry of Lands, Mines and Energy that is in charge of survey and validation of land claims, is planning to implement a mining and lands cadastre to account for land throughout the country.

### **The Act Adopting the New Forestry Reform Law of 2006**

This Act repealed and replaced the Forestry Law of Liberia of 2000. The FDA which is the implementing authority of this Law is the government entity charged with managing and conserving community and commercial forests. The FDA manages the forest resources on the basis of integrating the 3Cs (Commercial, Conservation and Community) as provided for by the National Forest policy of 2006. The management and conservation of Biodiversity is left with the Conservation Department which comprises two divisions i.e. the Wildlife and the National Parks. The Conservation Department and the Research Unit are the logical stakeholders involved in the initiative to establish an Access Benefits Sharing policy and legal framework.

*Section 9.1* of the Law mandates the FDA to establish a Protected Forest Area Network in addition to Conservation Corridors and incorporating existing National Forests, ***"to cover at least 30% of the existing forested area of Liberia, representing about 1.5 million hectares"***. FDA is also given the mandate to promote and undertake research on socio-economic conditions and on the distribution, the habitat and population of Wildlife. This law requires the participation of scientists, other professionals and members of non-governmental organizations in the management of the Network and in the promulgation of appropriate regulations for In-situ conservation.

*Section 10.1* of the Law states: "To manage natural resources based on principles of Conservation, Community and Commercial Forestry, and to ensure that local communities are fully engaged in the sustainable management of the forest. The Forestry Development Authority shall by Regulation grant to local communities user and management rights, transfer control of forest use to them and build their capacity for sustainable forest management.



### **The Draft Wildlife Conservation and Protected Area Management Law of 2009**

This is in pursuance of Section 9.11(c) of the 2006 New Forestry Reform Law that mandated the FDA to propose for legislative enactment as a comprehensive framework for wildlife conservation and protection. This draft law is currently being vetted to invite public inputs before submitting for up the legislative enactment. It strictly relates to biological resources management. Section 4.3 sets up the institutional framework for the implementation of CITES and the FDA serves as the focal point for CITES and is given the authority to issue CITES export, re-export and import permits or certificates in the case of marine resources, it must be collaborated with the Bureau of National Fisheries of the Ministry of Agriculture.

Chapter 5 of the 2006 New Forestry Reform Law sets forth a permitting scheme for commercial utilization of forest products which does not include trade in “genetic resources” but it allows for user rights for scientific research and education that are relevant to Access and Benefit Sharing (ABS). The expansion of this constitutes on-Timber Forest products (NTFP) trade in genetic resources, as is now being discussed in the case of Carbon Credit and the power for the FDA to regulate forest resources which may be valuable to the (ABS) regulatory process.

### **The Act adopting a New Minerals and Mining Law of 2002**

The Act adopting a New Minerals and Mining Law was approved on April 3, 2002. Among other provisions, it calls for “*reasonable preventative, corrective and restorative measures to limit pollution or contamination of, or damage to streams, dry land surfaces and the atmosphere.*”

### **The Liberia Extractives Industries Transparency Initiative Act (LEITI) (2009)**

The Extractives Industries Transparency Initiative organization has set up a global standard for transparency in oil, gas and mining. Its effort is centered on making natural resources beneficial to all; a coalition of government, companies and civil societies and also provides for companies to publish what they pay and for the government to disclose what is receive. Liberia is a fully fledged member of the EITI and the first and possibly the only country that has included the forest sector in the implementation of this initiative and has further adopted an Act to this effect.

It can be safely said that the overall objective of this Organization is to render assistance in ensuring that all benefits due to government and people of Liberia on the account of the exploitation and/or extraction of the minerals and other resources are: (A) verifiably paid for or provided (B) duly accounted for and (C) prudently utilized for the benefits of all Liberians on the basis of equity and sustainability.

#### **4.3 INSTITUTIONAL CONTEXT INFLUENCING SLM**

The following is a run down of the National ministries and agencies involved in the development of Liberia and are relevant for advancing the agenda of Sustainable Land Management (SLM).

The ***Land Commission*** is required to propose, advocate and coordinate reforms of land policy, laws and programs in Liberia with ultimate aim of ensuring equitable and productive access to the nation's land, both public and private, security of tenure in land and the rule of law with respect to landholding and dealings in land, and effective land administration and management. The Commission's mandate covers all land and land based natural resources, including both urban and rural land, private and public land, and land devoted to residential, agricultural, industrial, commercial, forestry, conservation and any other purpose. The commission came from the Environment Protection and Management Law of 2006 and is intended to run for a fixed period of 5 years.

The ***Ministry of Agriculture*** (MOA) is the central policy-making body of government for the agricultural sector, and is responsible for promoting agricultural development and regulating the sector. It proposes to achieve its development objectives by focusing on applied research and extension services. MOA is organized into four major departments i.e. Planning and Development, Research and Extension, Technical Services and the Department of Administration. At the field level, it discharges its responsibilities through five Regional Agricultural Offices, each headed by a Coordinator, assisted by County Agricultural Coordinators and County and Districts Agricultural Officers and Extension technicians. The national budget allocation to MOA of the previous government (1997 to 2002) has never exceeded 1 percent. *(This was not commensurate with the mandate and importance of this*

*sector*). The allocation of this current government to this sector has risen from 5% in 2006 to 18% in 2010.

The ***Central Agricultural Research Institute (CARI)*** is the only research organization in the country that has been carrying out applied and adaptive research covering food and tree crops, livestock, aquaculture and related areas. One of its shortcomings has been its inability to transfer new and improved technologies to farmers. Support from the central government to strengthen its capacity is limited, making it heavily dependent on external sources. During the crisis period, most of its facilities were destroyed, thereby diminishing its ability to function as a research entity. In order to sustain applied and adaptive agricultural research in Liberia, there will be a need for CARI to establish strong linkages with international research institutions such as WARDA, IRRI, IITA, etc. Such an arrangement could facilitate expansion of its research activities. There is need for CARI to embark on needs-based-research by linking with the communities and counties etc.

The ***Ministry of Public Works*** is the government agency with responsibilities to provide basic social and physical services such as feeder roads, improved sanitation and piped water as a means to improve livelihood of rural peoples. Before the war, this agency was actively involved in providing services to the rural areas with the support of donors.

The ***Liberia Produce Marketing Corporation (LPMC)*** is an agency of government that was created by an act of legislation in 1961, to become responsible for marketing Liberian produce (cocoa, coffee, palm kernel and palm products) and piassava. The Corporation is a parastatal organization, and has a monopoly over the purchase and export of coffee and cocoa. *(It is estimated that LPMC has not paid farmers some US\$3.5m for the produce it purchased in the past years. The corporation also owes a much larger amount of money to foreign buyers for not delivering the produce for which advances were received).* At present LPMC has no capacity to procure locally, thus it has resorted to private traders by transferring its statutory mandate of local procurement of these commodities to the latter. The monopoly status of LPMC and the issue related to its insolvency should be addressed as a matter of urgency as it has a major bearing on the future development of the export crops.

The ***Ministry of Internal Affairs (MIA)*** has the responsibility for handling the entire coordination of Local Government administration in the country. It also promotes and encourages communal farming, particularly seed production, as a means of ensuring food security.

The ***Ministry of Commerce and Industry (MOCI)*** has the mandate to formulate, implement and review policies and legislations for small and medium enterprises, including agricultural-based processing enterprises. The ministry also has the function of coordinating investment promotion and product development as well as monitoring the overall performance of small and medium enterprises.

The ***Liberia Reconstruction and Development Committee (LRDC)*** provides the Presidency with a means of enhancing 1) partner coordination and 2) internal government management; i.e. a) to enhance coordination with external partners, thus assuring key senior officials and partners are consistently on the same development agenda; and b) to use the structure to monitor the implementation of the national reconstruction and development agenda through the cabinet and heads of autonomous agencies. In other words, together with the cabinet, the President should be able to set the goal, identify working resources, and together with the respective partner agencies, expect them to deliver and hold them accountable for results.

The LRDC structure is composed of, 4Working-Committees (WC) formed around the four pillars of Liberia's reconstruction and development strategy.

The four committees are:

- The Security Committee
- Economic Revitalization
- Governance and Rule of Law
- Infrastructure and Basic Services.

The WCs are co-chaired by identified sector partners and are composed of line ministries/agencies, commissions, as well as UN Agencies, donors and key NGOs active within

the area. The WCs are responsible for coordination, monitoring, evaluation of projects and programs and regular reporting on progress. It has a Steering Committee (SC) which serves as the over-arching body of LRDC. It is chaired by the President with membership comprising of key Ministers (especially the Chairs of the WC) and heads of major partner organizations (including regional partners). The SC provides overall direction, sets very specific goals for each group, and ensures that activities are consistent with the reconstruction and development strategy.

The Secretariat of the SC provides coordination, monitoring and evaluation, as the operational arm of the SC. It provides a link between the SC and its technical level organs, the WCs as well as with other government institutions and development partners on LRDC matters which are coordinated by the Secretariat. In this regard, the Secretariat is headed by the National Coordinator, who reports directly to the President and the LRDC SC. The Office of the Secretariat is composed of an Energy Specialist, Senior Economic Advisor, a Program Assistant, and a Technical Assistant.

A wide range of institutions are involved in land management including government ministries and agencies, national non-governmental organizations, international non-government organizations.

**Academic institutions involved with land management include:**

There are three main academic institutions that will have influence on Sustainable Land Management (SLM). The courses they offer have an influence on SLM and they are namely:

**The University of Liberia** which offers Bachelor of Science degrees in Agriculture, Agronomy, Forestry, biological Sciences, Chemistry. It is also recognized for its role in research in the areas of land resources management.

**The Cuttington University** which offers Bachelor of Science degrees in biological Sciences, Chemistry, Agriculture General and integrated Rural Development. In addition to training the institution is also into research.

**The Stella Maris Polytechnic** which offers Diplomas and Bachelor of Science degrees in Health Sciences and Engineering.

**Other Institutions that have a bearing on SLM:**

**The Environmental Protection Agency (EPA)** is mainly concerned with administering and regulating land development programs

**The Forestry Development Authority (FDA)** is focused on land productivity and distribution

**The Ministry of Agriculture** leads national efforts in land productivity and food security

**The Ministry of Lands, Mines and Energy** works on land use and tenure

**The Municipal City Corporations** deal with issues of land pollutants

**The SCNL** focuses on education and conservation

**CEEP** is involved with land partnership with communities

**ERADRO** is pre-occupied with managing land disasters

**LIFE** works with Indigenous Knowledge in land management

**SOLF** creates the platform for wider stakeholders participation, research, information sharing on land matters

**SAMFU** is into research and advocacy

**SDI** also works on research and advocacy

**Green Advocates** are concerned with rights and control over land

**CI** deals with conservation of land resources

**FFI** works on land suitability

#### **4.4 NATIONAL PLANNING PROCESSES**

To a greater extent, national planning is centralized with the ministry of planning and economic affairs taking the lead. The ministry responsibilities include:

- Undertaking research on national development issues.
- Providing technical and research support to the Cabinet.
- Advising the Government on major issues relating to economic and social policy.
- Interpreting decisions on economic and social policy and integrating them into the national development program.

- Preparing economic models for the guidance of policymakers, investors and other planners.
- Assessing existing and projected social, economic and human resources and formulating plans for the most effective use of such resources.
- Determining the economic, financial and technical feasibility of new development projects, and coordinating the implementation of ongoing projects.
- Contributing to conceptualizing investment projects for national development.
- To collect, compile, analyze and monitor social status and economic performance data.

The ministry's three core functions are: (1) National Economic Development Policy and Planning (2) National Development Coordination and Management and (3) External Support Monitoring and Coordination. The core functions of the ministry are undertaken in close collaboration with all line ministries, agencies, state-owned enterprises, the private sector and other development partners. It also takes into consideration relevant development realities and other exigencies that define current operating circumstances.

Quite recently, the Government of Liberia initiated the County Development Agenda, a major shift in development planning in the country. *The CDA presents an excellent decentralized platform where citizens representing the various clans, towns, districts and county government, along with development partners, interact to identify the pressing needs and priority action areas to achieve sustained development and especially addressing the issues as well as **achieving the sustained and inclusive national development described in the Poverty Reduction Strategy 2008-2011.***

The Ministry of Planning and Economic Affairs is expanding on the model, and has deployed planning officers in all fifteen counties to facilitate national planning and prioritization.

#### **4.5 COORDINATION MECHANISMS INFLUENCING SLM**

Currently, there are a few coordination mechanisms that could influence Sustainable Land Management in the country.

- (a) One is under the auspices of the Environment Coordination Unit spearheaded by the Environmental Protection Agency where the environment units of each

government ministry and agency collaborate. The Terms of Reference were drawn up, and all government ministries and agencies are in regular (quarterly) contacts sharing information and setting priorities. This coordination mechanism is provided for under the Environment Protection and Management law. This has enhanced intersectoral coordination on environmental matters significantly. Hence the coordination of SLM could be brought under this mechanism but a stronger budgeting mechanism would have to be introduced.

- (b) Another possible coordination modality that could be used is the Agricultural Coordination Committee (ACC) which comprises government ministries and agencies, community-based organizations, Local and International Non-governmental organizations, agricultural cooperatives, research and training institutions, and donor partners. The ACC is chaired by the Ministry of Agriculture and meets whenever there is need.
- (c) Another possibility is the existing National Coordinating Committee to Combat Desertification and the National Steering Committee for Sustainable Land Management. Each has its specific Terms of Reference and comprises of representatives from government ministries and agencies, Local Non-governmental organizations, as well as research and training institutions.

Donor coordination rests almost entirely with the Ministry of Planning and Economic Affairs. As part of its **External Support Monitoring and Coordination** and as its core function, the ministry reviews, coordinates the process and records all external aid and assistance programs (in consultation with the Ministry of Finance). It then reports on progress of these (external aid) on the (national development) programs, manages external cooperation agreements and programs, collaborates with external funding agencies in the identification and implementation of development projects. The SLM coordination which will encompass the donor coordination as well and could follow/use any of the three mechanisms described above.



#### 4.6 INCENTIVE FRAMEWORKS INFLUENCING SLM

The incentives that currently exist which geared towards the proper or sustainable management of the environment are the ones built into the act establishing the EPA. Currently all the provisions in the act are perverse incentives but nevertheless they contribute to funds that can be used for improving the management of the land/environment and they prevent users from doing the wrong activities on the land. Most of these provisions have not been implemented as yet and some of the funds are paid into central government / bureaux of budget so they are not directly available to EPA and for the purpose they were intended for. The National Environment Fund and the Environment Trust Fund have not been formed and the fines that are paid go straight to bureau of budget.

An EIA fund has been set and runs an account. Of the funds received into this account from issuing of permits, 40% is for environmental activities, 30% is for EPA debts and 30% is for daily operations.

An Environment Fund is only at the idea stage, but should receive extra taxes from private sector operations which are constant polluters like the cement factory and any other funds that need to be paid to EPA.

**It is here recommended that:** the annual fees or taxes paid can be on a sliding scale to allow the companies to improve on reduction of their pollution. All the payments made on the basis of the polluter pays principle could be paid into a special fund which could be used to do some remedial as well as mitigation measures to environmental damage. One such measure could be the implementation of the payment for plastic bags from the supermarkets and that money would go into this fund. The minimal charge imposed on the plastic carrier bag would deter shoppers from collecting bags every time hence reduce the plastic bags released on to the land and reusable biodegradable bags could be imported/manufactured and sold to shoppers, stopping the use of plastics altogether.

An extra tax can be levied on motorists who use vehicles that smoke excessively and the addition on the normal road tax to go to the EPA special fund.

- Punitive action/penalties – for making a false statement on EIA, this will attract a fine of USD 25 000 or 10years imprisonment.
- Same charges apply for restoration non compliance
- Environment Protection Fund will come from any charges, funding & donations,

consultancy by agency, permit fees etc.

## 5. PAST AND CURRENT FINANCIAL FLOWS FOR NATURAL RESOURCE MANAGEMENT

**Table 5: Funds Allocated to Relevant Sectors that Address Land Related Issues (US \$)**

Ministries/Agencies	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Total YTD
Ministry of Lands, Mines & Energy	\$894,400	\$2,190,800	\$3,306,038	\$3,751,515	\$3,950,000	\$5,649,851	\$19,742,604
Forestry Development Authority	\$542,000	\$2,640,000	\$2,770,656	\$3,239,600	\$3,500,000	\$3,664,110	\$16,356,366
Ministry of Agriculture	\$501,491	\$3,061,100	\$3,739,587	\$7,022,000	\$7,250,000	\$4,460,577	\$26,034,755
Environmental Protection Agency	\$253,258	\$198,170	\$465,686	\$599,800	\$651,480	\$805,910	\$2,774,304
Land Commission	-	-	-	-	-	\$600,000	\$600,000
Total Expenditure	\$2,191,149	\$8,090,070	\$10,281,967	\$14,612,915	\$15,351,480	\$14,980,448	\$65,508,029

**Source:** Field Survey, 2010

The table above shows how funds were allocated to five (5) government ministries and agencies that address land related issues for 6 years, covering the fiscal periods 2005/2006 to 2010/2011. During the first fiscal period, all 5 ministries and agencies combined got US\$2,191,149.00 rising to US\$14,980,440 in the 6<sup>th</sup> year.

## 6. SOURCES OF FINANCING FOR SLM

### 6.1 INTERNAL

This sector will review the available financing from the GOL that is currently channeled to the environment sector, its management and its protection ie the funds channeled to the EPA. It will also review the financing that is allocated to the associated ministries and agencies that are viewed as having a stake in the degradation of the land and hence will have a stake in the sustainable management of the land. There are primarily the ministries of Lands, mines and Energy, Agriculture and Internal Affairs, Land Commission and the Forestry Development Authority. These ministries and agencies receive their allocation annually from the budgeting process

described below, which allows them to make their own prioritization. The budgetary allocation to this cluster of ministries has gradually increased from a mere **5 % in 2005/6 budget to 18% in the current 2010/11** budget, signifying the importance this government is putting on this sector.

In addition to this cluster, all other ministries have established environment units which meet regularly to discuss environment management challenges they face in their ministries. These EUs are mandated by the EPA to mainstream environmental units into the workplans and budgets of their ministries. They might not currently have any special allocations for environmental issues but they have the potential to do so.

### **Budgeting Process**

During the Government of Liberia national budgetary process, line ministries and agencies having specific tasks and responsibilities for environmental management and protection are required to make proposals for how they intend to implement their various programs. These activities are prioritized and costed, and presented to the Department of the Budget, Ministry of Finance. Each line ministry and agency is given the opportunity to defend its proposal. At the end of the process, a bulk figure or amount is approved and sent back to the ministries and agencies for re-prioritization and adjustment taking into consideration the adjusted figure. In most cases, the amount approved is lower than the proposed due to competing advances for national financial resources.

As described above, the budgeting process clearly encourages the ministries or agencies to make their own priorities. The existing entry points for the SLM would be these environment units and since they are all part of the Poverty Reduction Strategy (PRS) each agency and ministry should also flag the activities to mainstream SLM.

### **Sector financing**

There are currently no direct sector financing that could be channeled towards the SLM, but the potential and ideas are there. The following is a list of sectoral ministries and agencies that already have workplans supported by budgets that have an allocation devoted to the management of the environment operated through their Environmental Units.

1. Ministry of Lands, Mines and Energy
2. Forestry Development Authority

3. Ministry of Agriculture
4. Environmental Protection Agency
5. Land Commission
6. Ministry of Internal Affairs

They also have the potential to raise their own funds from the public and private sector for the services that they perform and regulate and they can create special funds for SLM management.

### **Decentralised budgetary opportunities**

As described earlier in the section on budgetary process the GOL has recently introduced a decentralized planning system which will later be followed by decentralized budgeting. This approach will allow the counties and later districts to bring on board their own priorities and could request for the remediation or mitigation on a specific piece of land. This also allows them to monitor closely that the funds are used for that aspect in the district as requested.

### **National Funds for Local Development**

The following is a list of ideas and suggestions that could be used to increase or intensify development at the local levels, hence the SLM should tap into these ideas or initiatives.

- UNDP promotes local area development through its UN Capital Development Fund (UNCDF) which is already funding the reconstruction monitored by the Liberia Reconstruction and Development Committee
- USAID is financing rehabilitation of local areas
- County Development is being funded from two sources, (1) the extractive industries fund like Mittal Steel, LAMCO directly (2) the government is allocating 25% of all government revenue to county development.

### **National NGOs funding:**

The following is a list of possible and willing funders for local NGOs in Liberia. SLM could be funded through a number of these sources raising a substantial percentage of the SLM budget

over the 8 year implementation period. These have been selected because they have close links with SLM.

- Cities Alliance** – focuses on poverty reduction and the development of sustainable cities
- Flagship Fund** –can fund the protection of endangered species and their habitats
- Textile Recycling for Aid and International Development(TRAID)**-poverty reduction through recycling ventures.
- UN Habitat Urban Youth Fund**-can fund up to USD 25000.00 by Norway Gov. for sustainable cities development.
- GEF** – USD 1 billion for environment sustainability
- UN Trafficking Funding for NGOs** through the GEF Small Grants Facility for poverty reduction and through sustainable projects
- Renewable Energy Fund by REEEP** – for renewable energy and energy efficiency
- Toyota Environment Grant Program** – for any environment program.
- European Development Fund (EDF)**-for poverty reduction with sustainability
- Club300 Bird Protection Fund**-from Swedish birdwatchers – for the protection of birds and their habitats.
- US-ADF** –for community initiatives or development
- Tourism Care Worldwide Grant**- for habitat protection
- African Enterprise Challenge Fund (AECF)**- for agriculture, renewable energy and climate change program.
- UK-DFID**- for poverty reduction
- ILO Social Finance Program** – funds between USD 100 000 and 500 000.00 for social aspects in environment development.

### **Other–in–country financing**

There is a potential that the few economically viable Private players could finance some activities in SLM, especially the issues that they are interest. An interest and a deep understanding would have to be cultivated among the local business players.

Training and research institutions in the country do access finance for research and to build capacity through training, hence this could be considered as funds that could advance the cause for SLM and funds could also focus on the research on SLM in specific location

## **Recommendations**

-It is here recognized that the best way of mobilizing the internal finances would be to incorporate SLM into the Poverty Reduction Strategy (PRS), a government initiative that brings together all government ministries come together and focus on one goal and rationalize the expenditure. This is the most comprehensive government program that focuses on a core problem that has a bearing on SLM. This PRS also enforces complementarity among government ministries and agencies. Therefore through this program a consolidated approach can be made to allocate funds for the SLM program and by incorporating SLM into the PRS helps to make the SLM the centre-stage for all actions and programs as well like the PRS itself.

## **6.2 EXTERNAL**

### **Donors**

The following is a list of donors that are known to be sympathetic to the environment and natural resources management worldwide. Some of these donors are already involved with the current government on a number of projects or program as indicated in the current budget

1. World Bank: In the current budget it has contributed USD103.399 millions
2. EU: has contributed USD 115.299millions
3. Forest Carbon Partnership Facility (FCPF): Has currently made available to Liberia a sum of USD 3.6 million
4. AfDB : Has contributed USD30.8 millions
5. GEF : Has current provided funds to the tune of USD 43.00 millions
- 6 UNDP: has spearheaded a number of projects with USD8.2 millions

## **Main Donors for Liberia**

Since the end of the civil war Liberia has since an influx of donors especially with the current government, during the first 5 years after the end of the civil war China dominated the seen. Currently the USA is the main donor with its pledges of USD 230 million in the last two. All the other donors from the country's Round Table Conference in 2008 can be since with their pledges on table 6. It is also observed that 6 of the donors were sympathetic to the environment and related development including agriculture, so these are the donors that SLM project will follow up. As can be observed in table 6 most of them is already funding some activities in Liberia showing the confidence they have in the current administration. The peace and stability currently enjoyed by the country is a further encouragement for donors to work with the current administration.

Projected Disbursements By Partner, Pillar and Sector: FY2010/11														
	Peace & Security Pillar I	Economic Revitalization: Pillar II				Gov. & Rule of Law: Pillar III	Infrastructure & Basics Social Services: Pillar IV							Total per Partner
Total by Pillar: →	2,453,838	51,086,040				59,878,515	350,750,324							
Partner	Peace & Security	Financial sector	Food & Agriculture	Forestry	Labor & Employ.	Gov. & Rule of Law	Education	Energy	Health	Multi Sector	Transport	Road & Bridges	WATSAN	
AfDB			2,436,600			16,334,413						11,160,000	999,750	30,930,763
EU	912,800		5,798,706	239,110		1,169,860	5,216,000	8,831,576	8,248,000	45,743,742		39,120,000		115,279,794
Denmark										6,597,846				6,597,846
DFID/UK									6,440,000			9,257,500		15,697,500
Foundations										2,676,616				2,676,616
Germany			1,410,000							6,486,000	2,820,000	35,250,000		45,966,000
Ireland									3,260,000					3,260,000
Norway	1,541,038					586,265	1,474,037	9,899,498	1,675,042					15,175,880
SIDA/Sweden			2,800,000			2,800,000								5,600,000
United States		1,700,000	25,850,000	4,132,000		16,785,000	24,242,000	14,000,000	14,890,000				2,000,000	103,399,000
World Bank					6,000,000	13,000,000		5,000,000	2,000,000	5,000,000		20,000,000		51,000,000
UN System:			719,624			9,202,977	13,525,476		19,438,000	24,468,444	1,230,797			68,585,318
UNICEF						6,939,000	8,510,000		13,669,000	2,652,000				31,770,000
UNPFA						2,263,977			3,200,000					5,463,977
WHO									2,569,000					2,569,000
WFP			719,624				5,015,476			21,816,444	1,230,797			28,782,341
Total by Sector	2,453,838	1,700,000	39,014,930	4,371,110	6,000,000	59,878,515	44,457,513	37,731,074	55,751,042	90,972,648	4,050,797	114,787,500	2,999,750	464,168,717
Table 3	0.5%	0.4%	8.4%	0.9%	1.3%	12.9%	9.6%	8.1%	12.0%	19.6%	0.9%	24.7%	0.6%	100%

**Table 6. Donor contribution to the Liberian budget.**



### **Other funders – NGOs**

The following is a list of other funders and possible funders. Some of these have already worked with some government ministries, agencies or directly with the communities. It is envisaged that since these organizations have already shown interest in Liberia they will continue to source funds for the protection of the Liberian environment.

1. Darwin Initiative, UK: This body is concerned with environmental conservation and Sapo National Park and the establishment of more protected Areas in Liberia. Also involved in the Strengthening of Biodiversity in West Africa project and the establishment of environmental governance platform in Nimba mountain with Birdlife International.
2. Birdlife International: Got involved in Liberia with the establishment of the Society for the Conservation of Nature in Liberia since 1986. It focuses on the conservation education and awareness building. Currently involved in Liberia with the conservation and monitoring of the Liberian Greenbul and the White-neck-picathartes in the Wenegisi mountain where they nest.
3. International Union the Conservation of Nature and Natural Resources(IUCN) –current funding a number of projects and a number of studies .
4. Conservation International (CI)- worked in Liberia in the early years of post-conflict Liberia
5. Flora and Fauna International (FFI) – currently working in Sapo National Park

### **Recommendations**

These international NGOs can be easily mobilized by the office of the Ex. Director of the Environmental Protection Agency, since they already have a rapport and experience in working with these NGOs -how to best mobilize them.

## **6.3 INNOVATIVE FINANCING**

### **Innovative Sources**

This aspect of the financing for the environmental issues hence the SLM have not been looked into a large extent. Although there is a lot of potential in this area but lot has still to be done on this line and then the response will depend on the other parties. Having emerged from a long civil war the country has been grappling with basic issues like putting together the policies and legal frameworks within which to operate. The following sections are a description of a few attempts that have been initiated.

Innovative financing is financing that is non-traditional i.e. going beyond ODA and Government budgets. This is finance that could be coming from internal, external, private and public sources. It is necessary for a program of the magnitude of SLM to canvass for innovative financing ways for the following reasons: it increases the finances, it allows diversification in the finance base, and it complements other finances and maximizes the impact of the project or program.

The main actors and institutions are the Private sector i.e. companies, finance institutions, farmers, Civil Society Organizations, foundations, emerging donors and local governments. The thematic entry points for this type of finance include: poverty reduction and rural development, biodiversity conservation areas, security and agriculture or climate change mechanisms. It could have an investment based mechanism would include issues like micro finances (credit and insurance, environmental funds, Green Venture Capital funds as well as environment performance bonds. It could also have the following forms i.e. co-financing or subsidies, open trading e.g. emission trading, GHG mitigation and self-organized private deals marketing deals like payment of land-users for environment services and eco-labeling of products.

If well-structured, the private sector is potential investors and funders and these would be the small farmers, pastoralists who could invest in land and market based deals. They would be motivated to invest if they can get tax rebates, subsidies or if the polluter-pays-principle is applied e.g. soil erosion causers, green branding of products whereby the costs is included in the product price e.g. organic products. Companies like the Breweries, coca Cola etc would focus at the reduction in Carbon dioxide. Other possibilities are NGOs like WWF, ICRAF as well as Public-private-partnerships whereby the Private Sector will finance a public institution due to incentives that were offered, this would facilitate a scaling-up of successful initiatives or funding collaborative research etc.

Other incentive and market based measures like the “permanent conservation easement”, control farmland set-asides, payment for proven investments in land conservation, application of environment or green taxes and subsidies. There is open-trading under regulation initiatives like conservation banks, trading of emission rights e.g. Kyoto CDM. There are also the self-organized private deals e.g. environment youth corps who would work on environment rehabilitation like soil conservation, re-afforestation etc funded up to 80% by government. Other examples are the Community Based Natural Resources Management (CBNRM) initiatives which have been seen to be effective in countries like Zimbabwe.

Essentially all these possibilities can be introduced to supplement and complement the regular government and donor funds, but it is essential that for this to happen the environment should be conducive. Since SLM is a long term investment, security of tenure will be required and proper land policies should be put in place for this financing to take off. Therefore, in any country it is essential to identify what needs to be corrected (environment), identify the incentives, and mobilize the stakeholders for action to start. It is therefore very crucial that this of kind of innovative funding is initiated for a program like the SLM to become self-propelling.

It is recognized here that there is a lot of potential for Liberia in the areas of debt-for-nature swaps, payment for ecosystem services, as well as the carbon financing mechanisms like Voluntary carbon markets, Clean Development Mechanism and REDD initiative. In the meantime the country is sorting out its policies and legal frameworks to tape into these mechanisms.

Environment Fund (fees, fines, taxes, bonds and other royalties for conservation)

An attempt has already been made in this regard by enshrining the creation of an Environmental Fund into the EPA Act 2003. Although this has not been set up as yet collection of fines for environmental defaulters, permit fees are now being collected and the money is still deposited with the central government.

### **Suitable Innovative Sources**

Of the whole range of financial mechanisms and instruments that have been described above the following are thought to be the most suitable that Liberia should be pursuing. Notwithstanding the importance of all the other financing mechanisms the following should be prioritized are:

- debt-for-nature swaps should be high on the list of priorities
- voluntary carbon markets to capitalize on the existing forests in Liberia
- Self organized private deals where land users are paid for environmental services.
- The punitive measures that are already in place should be maintained since the certainly seem to be making an impact on reducing the negative impacts on the environment by organizations and companies etc.

### **Needed Accompanying Measures**

The following are the required accompanying measures that are needed for the above priorities financing mechanisms to be implemented effectively and efficiently.

- the existence of a strong environmental policy and environmental law saves as the most important measure for the implementation of the mechanisms.
- this has to be followed by clearly spelt out regulations
- monitoring and evaluation structures have to put in place to ensure compliance.

### **CONCLUSION**

**It can be conclude from the national analysis that there is a high potential for the Liberian environment to be degraded from a climatic perspective as well as a biophysical perspective. In addition to the natural causes there are also anthropogenic causes which have the human being at the centre hence the remedial measures will have to have the that same human being at the centre again. The extent and trends of land degradation have been found to be closely associated with the human activities as well as the density of the human population.**

**It is highlighted in the sections above how the policy and legal frameworks before and after the civil conflict has influenced the degradation patterns in the country. Although the relevant institutions have been involved in the regulation of the environment they have been allowed to be the judges on themselves. It is with the advent of the EPA that the coordination of the SLM related issues has gained momentum and direction.**

**It is clear from the analysis above that the area of natural resources management is gradually gaining importance over the years especially with the current administration. It is agreed that the financing of the SLM activities will have to be three pronged ie internal financing which will reflect the commitment of the government to the SLM program. Then the external financing will be essential to meet the global obligations of the MEAs and will further boost the activities that are financed internally. The two processes of financing for SLM will be further complemented by the innovative financing mechanism that will see the whole national come on board. What are seen to be the most appropriate mechanisms for Liberia are highlighted. EPA is challenged to take it upon itself to coordinate the SLM activities including those that will be implemented by other ministries and government agencies.**

## **References**

- UNEP.(2004). Desk Study on the Environment in Liberia**
- UNDP.(2006). National Human Development Report for Liberia**
- EPA, (2003). The National Environment Management Policy. EPA, Monrovia.**
- EPA, (2003). The Environment Protection and Management Act of Liberia. EPA. Monrovia**
- EPA.(2003). An Act Establishing the Environment Protection Agency. Monrovia**
- EPA, (2004). National Biodiversity Strategy and Action Plan for Liberia.**
- EPA, (2005). Vulnerability and Adaptation in Liberia. Monrovia. Liberia**
- EPA. (2006). First State of the Environment Report for Liberia. Monrovia**
- FDA. (2000). An Act Adopting A New National Forestry Law of Liberia. Monrovia.**
- FDA. (2006). An Act Adopting the New Forestry Reform Law. Monrovia**
- MLME, (1999). The New Minerals and Mining Law of Liberia, MLME. Monrovia.**
- UNFCCC (1998. Kyoto Protocol. Climate change Secretariat. Bonn.**
- GOL (2009). An Act To establish the Land Commission**
- GOL.(2009). An Act To Establish The Liberian Extractive Industries Transparency Initiative**
- GOL. (2009). The Draft Wildlife Conservation and Protected Areas Management Law**