Liberia environmental profile

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List of abbreviations and acronims

Acronims

GoL	Government of Liberia
iPRS	interim Poverty Reduction Strategy
PRSP	Poverty reduction strategy paper
DDRR	Disarmament, Demobilisation, Reinsertion and Reintegration
NIP	EDF 9 National Indicative Programme
9th EDF	9th European development fund
CSP	Country Strategy Paper
NIP	National Indicative Programme
10th EDF	10th European development fund
EPA	Environmental Protection Agency
EIA	Environmental Impact Assessment
MEAs	Multilateral Environmental Agreements
CEP	Country Environmental Profile
MDG 7	Millenium development goals 7
FLEGT	Eu action plan for Forest Law Enforcement, Governance and Trade

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1. Summary

Liberia institutional crisis reflected the small cohesion of a country where urban growth in the coastal area is achieved by human and natural resources depletion in the interior. Economic depression and decomposition of governance opened the way to an increased and fuzzy exploitation of natural resources and degradation of human settlements environment. With the progress of the peace process, the main goals of institutions and the Liberian society as a whole have become the enhancement of national cohesion through governance and the improvement of livelihood through economic expansion. In short, Liberia economic and social converge on the reduction of poverty.

The social instability created by the war has continued, for several reasons, such as low productivity, unemployment and the uprooting of settled patterns of life, especially in the rural areas. Migrations from rural areas to Monrovia and other urban areas reflect the difficulty of peasants to keep in balance with their environment. In fact, the environment should be accounted as one of the main losers of the Liberian crisis. As illegal exploitation of natural resources was one of the economic resources of the fighting parties in the civil was, such trend is still going on, also if in a smaller scale, due to the weakness of the institutions. The mismanagement of the environment is accomplished both by individuals (ex combatants, poor, migrants) and enterprises (Liberian and transnational companies), looking for short term and easy gains and unwilling or unable to invest in sustainable technology.

With the improvement of its grasp on the territory, the Government of Liberia has launched an ambition plan of development, including the valorization of the natural resources (minerals, timber, fish, crops, etc.) and to improve the utility services provided to the population.

The creation of the conditions for investments in such sectors include

- the reestablishment of security, including demobilization of ex combatants,
- the definition of a legal framework ensuring equal opportunities and open to foreign investments,
- access to improved technology through international cooperation agreements,
- social measures, for the alleviation of acute poverty and the emergencies created by the war.

In such framework, the environment and natural resources sector are not a priority.

Sustainable development

Concerns for fast economic recovery and social stabilizations are the basic assumption for the rebirth of Liberian institutions and society, while environmental sustainability and investments directed to long term goals don’t have the same appeal of the resolution of urgent needs. Although, Liberia economy and society are strongly dependent on the valorization and conservation of the environment and natural resources, due to the key role played by the primary sector as source of income generating activities and households livelihood goods.

Concerns for the definition of sustainable development policies can be seen as expression of individual institutions and organizations, also if they have not been incorporated in the key planning documents of the Government of Liberia, such as the interim Poverty reduction strategy and the cooperation frameworks with the donors’ community.

Provisions have been done in specific domains, for the incorporation of environmental concerns in sectoral development strategies and for the establishment of a common approach to the valorization of natural resources and the conservation of the territory and improvement of human settlements habitats. The legal framework has been renovated in order to encourage private

investors to implement environmental friendly technologies, and development policies deeply relay on the access to non renewable raw materials and renewable biological resources.
Possibly, the advantages of a stronger thrust in such direction is seen as counterbalanced by increased costs for the fast recovery of the economy and social cohesion (for instance, security is presently menaced by non-organized crimes and unlawful exploitation of mines, forests and halieutic resources).
Anyway, international cooperation has to contribute to create the conditions for the adoption a long term approach to sustainable development, as the viability of Liberia reincorporation in the global cultural, political, social and economic dynamics, depends, among other things, (a) on maximization of the value added created on the exploitation of its natural resources, and (b) its long term supply of raw and semi-processed natural materials
This country environmental profile presents the current state of environment of Liberia, its opportunities for the establishment of sustainable development policies and recommendations for the incorporation of environmental issues in cooperation initiatives supported by the Economic commission.

A short view of Liberia natural resources
Liberia varied ecosystems include mineral ores, forests, grasslands, mangroves, wetlands, rivers, lakes and the continental shelf, hosting approximately 600 bird species, 125 mammal species, 74 reptile species and 1,000 insect species.
This biodiversity is being threatened by land degradation, over-exploitation of resources through excessive harvesting or hunting, introduction of exotic species and ineffective institutional arrangements. Land resources can support agriculture, forestry, tourism, human settlement, wildlife and industrial development. Land is therefore the focal point for both human survival and economic development as it provides diverse functions in support of ecosystem processes, livelihoods and food security. Land degradation from activities such as mining or poor agricultural practices, a lack of land-use planning and the current land tenure system have already exacted their price on Liberia environment. The main causes of environmental degradation in Liberia include shifting cultivation, uncontrolled logging, fuel wood harvesting, encroachment by human settlement, illicit fishing and unsustainable mineral and sand mining activities.

Development and natural resources
A dichotomy between large and small economic exploitation/valorization of natural resources exist in most sectors of Liberia economy, from mining to farming, from forestry to trade, from fishery to public utilities. Different approaches should be harnessed in order to cope with the challenge of sustainable development of such activities.
Specifically, the legal framework created in order to promote environmentally friendly practices in mining, forestry, fishery, etc. (an heritage of the pre war years, in some case updated and enhanced through the enactment of *ad hoc* laws between 203 and 2006), is most suited to deal with big business. In fact the resources generated, for instance through the concessions for mining, fishing, plantations or timber production, can be reinvested by the relevant institutions in improving the regulatory practices and in establishing conservation areas. But the technological improvement requested to contain environmental impacts are accessible only to the great investors. A progressive endowment of public service in the adoption of EIA and other environment related methodologies is expected to assist the adoption of sustainable best practices by the private sector. This is also the way for the introduction of modern technology in the local economy, through adaptations at in cascade from larger to smaller enterprises.

On the other side, the added value created by individuals and small enterprises (such as farmers, artisanal farmers and fishers, etc.) in producing raw materials is insufficient to reinvest in the capacity building and technology updating needed to adopt environmental friendly best practices. In such case, economic development should be seen as a component of the community development and valorize all the resources, material and immaterial, existing in the household, village, brotherhood and society at large. Thus, a participatory approach is the basic assumption of environmental policies directed to involve the population at large in the long term valorization of local natural resources. The creation of specialistic knowledge and skills should be grafted on the population needs, through integrated approaches to community development, including the social and sanitary welfare, the valorization of traditional technology (farming, rural industries, hunting and small animals rearing, trade networks, etc.) and the promotion of added value and local markets. Agro-forestry is the activity more representative of such trend, including subsistence and commercial production, food and energy, male and female work, family based trade networks.

Human environment

The challenges created by human environment in rural and urban settlements faces the same situations and opportunities encountered by the exploitation of natural resources. The revitalization of utility services through privatization and promotion of public works / restructuring of public services, will be advantageous and sustainable in the urban areas. The low density of Liberia rural populations is an hurdle to the deployment of such approach to most of the country population (almost 60% of rural dwellers). A community centered approach is the start up of initiatives, whose sustainability should be considered in relation to the local environments. The organization of resources on a micro-basin / district-wide basis will maximize the commonality created by the partaking of watershed, the difficulty of communications and lineages acquaintances. Anyway, the recovery of public governance is expected to deeply relay on the local authorities, whose legitimacy will be established on the management of social services and harnessing of appropriate solutions to basic needs. Improvement of welfare and creation of economic clusters (based on the valorization of common natural resources and technology, but also on the existence of social and family networks) should ensure a sustainable and environment based development of rural Liberia. Containing the pressure for migration toward the coastal town and richer areas (such as mines and virgin forests) and allowing for social acceptance of nature conservation policies. In the meanwhile education, vocational training and awareness campaign will build a wider consensus and knowledge base for the adoption of environmental friendly technology and livelihood.

Conservation of Liberia natural resources (mangroves, wet forests, wildlife, agricultural biodiversity, fish, etc.) and cultural traditions will be boosted by such approach, becoming a perennial source of economic and social development and giving visibility to the advantages of an environmental friendly approach of human development.

Assessment of the state of environment

Liberia lies on the southwest corner of the West Coast of Africa, inside the belt of tropical rains, its land growing from the coastal plains through a region of rolling hills and inundated plateaus till the border mountains, reaching m 1,380 asl. This territory is richly endowed by climate, mineral ores and biodiversity, enclosing some unique heritages as the larger patch of the moist Upper Guinean Forest Zone. Agriculture is split in small holdings, based on slash and burn practices, and commercial plantations. Low density of population and migration toward the coast towns is reshaping the economic and social environment. Pressures on the existing natural

resources and degradation of the human environment are part of the heritage of the war years. Concurrent claims on the use of soil and overexploitation of the most endowed areas are reflected in insecurity and limited perspective of most investors. The rehabilitation of social infrastructure is made more urgent by the fast growth of the urban population. The lag in the recovery of the traditional sectors of the economy has contributed to keep high the uncontrolled exploitation of natural resources and degradation of the human settlements environment, also after the war end. As a whole, Liberia is regaining stability and governance is being rebuilt, in some way at the expenses of sustainable development, i.e., by eroding the natural and urban environment.

Environmental issues (current trends)
Traditionally, natural resources are the basis of Liberian economy and its people livelihood. Most income generating activities are extracting and semi-processing mineral materials and biological organisms. Loss of governance and conflict brought to the uncontrolled use of such goods. In fact insecurity, migrations and poverty have increased the pressure on the hot spots of the development of this country: mining spots, evergreen forests, coastline and its surrounding sea. Permanent forests shrinking is the most relevant effect of such process, with loss of biodiversity and soils degradation. Concurrent exploitation of mineral ore and hard-wood timber are unsustainable and their progress is cutting the perspective of long term policies directed to reducing poverty and enhancing the welfare of the rural population. People response to such lack of future is migration, disputes due to concurrent claims to the control of the territory and urbanization. Such trends are adding to the pressure on natural resources the degradation of urban households environment and hence health and deeper poverty. The development of environmental management tools such as EIA, EMP and the harnessing of best practices valorizing local knowledge are still lacking. Thus, the pressure on environment is still heavy, with unequal distribution of counterbalancing action across the different institutions and sectors of society and the economy.

Assessment of the national environmental policy, legislative and institutional framework
The Government of Liberia has recently enacted (2003-2006) a new legal framework providing for the sustainable use and conservation of natural resources. Such action is based on the assumption that future exploitation of the rich mineral ores and biodiversity will be used for reducing poverty (social stabilization) and promoting good practices that will enable the conservation the biodiversity and land. Implementation of such provisions is demanded to line ministries, with a thin coordination by the Environmental protection agency, whose mandate is mostly directed to the harmonization of public interventions and supervision of environmental policies. The technical and organization endowment of implementing institutions with the tools to implement environmental policies depends on the release of concessions to private investors. A key role in filling the gap between expected environmental knowledge and skills need and the present unsatisfactory endowment is played by the international cooperation agencies, whose strategies and competences could be readily available to direct and provide early advice and seed capital for the deployment of the new environmental regulatory framework. Success stories can be reckoned at the small scale level, with the reduction of encroachments in some biodiversity rich areas, the recovery of WatSan services across the country and capacity building of key officers in key institutions.

Assessment of EC and other donor co-operation with the Country from an environmental perspective

EC cooperation with Liberia has focused on the assistance to the population affected by the conflict, reestablishment of governance, recuperation of public utility services and assistance in elaborating economic and social development strategies. Such being the priority in reestablishing security in the country, reshaping institutions and providing a framework for economic development, environmental concerns have remained on the sidelines of most donors' intervention in Liberia. Anyway the fostering of governance has included advice in shaping environmental policies and start up of public services in charge of their implemention. Positive results include the collection, elaboration and dissemination of inventories on forests and biodiversity, as well as assistance in capacity building of those in charge of their monitoring and supervision. On the side of human environment, the main field of action has been the reestablishment of WatSan services in urban and rural areas and the assistance in shaping policies for the sustainable development of such utilities. In such effort, each donor has implemented its set of environmental standard, in coordination with individual counterpart institutions in the Government of Liberia and civil society. An uneven panorama is the result of such approach: while the participatory approach is usually adopted, only a few agencies operate environmental friendly methodologies such as the undertaking of EIA of forecast initiatives.

Conclusions and recommendations

The output of this exercise is a set of recommendations that sprawl across the different areas of intervention of international and EC cooperation. A first concern is that the environmental issues be addressed since the conception of sectoral interventions. For such purposes it is suggested that the following decision making scheme be adopted:

1. Decision on whether the policies supported have significant impacts on environment and natural resources;
2. If it is so, the program document assesses the national system for reducing negative and enhancing positive effects on environment and natural resources;
3. If gaps exist in the national system, program document should determine how to address such gaps before or during programme implementation.
4. If so determined, envionrmental concerns are grafted at the appropriate level in the decision making system of Liberian counterparts, and/or the field intervention methodology.

Such approach will have wide ranging effects, acting at the several levels of the Liberian institutions and allowing the delivery to the beneficiary population appropriate resources, while building local capacities to regain the control of environmentally sustainable development.

2. Introduction

Understanding the environment, the dynamic and complex whole of outer physical and biological system in which man and other organisms live and their interaction over time, is essential for successful implementation of any strategy for protection and management of the environment. Development, as a multidimensional concept and practice encompasses not only the economic and social aspects of human activity, but also those related to population, the use of natural resources and conscious management of the environment. Perceptions about environmental impacts depend on the environmental set up in a country, comprising all the above, hence the importance of an environmental profile of Liberia.

The *Liberia environmental profile* is prepared to identify and assess environmental issues to be considered during the preparation of the upcoming *Country strategy paper*. The Profile seeks to put in perspective information on key environmental challenges, policies, strategies and programs designed to address these challenges.

Study background

Several documents have been elaborated since the end of the civil war on environment in Liberia, the most comprehensive being:

Unep 2005. *Desk study on the environment in Liberia*. Nairobi

Republic of Liberia 2004. National biodiversity strategy and action plan. Monrovia

Undp (draft). *State of environment report for Liberia 2006*. Monrovia

Study objective

The elaboration of the *Liberia environmental profile* is aimed at identifying and assessing environmental issues to be considered during the preparation of the *Country strategy paper*. Such study presents information on the main environmental challenges, policies, strategies and issues to be considered in the programming of the 10th EDF for Liberia. This information would ensure that the strategies applied by the EC Cooperation integrate environmental concerns into the selection of focal areas and that in the programs are included environmental considerations. The Profile is also intended to provide a base for coordination with other donors on environmental issues involved in development programs.

Study results

This report consists of 5 main parts:

Chapter 3. Assessment of the state of environment;

Chapter 4. Environmental issues (current trends);

Chapter 5. Assessment of the national environmental policy, legislative and institutional framework;

Chapter 6. Assessment of EC and other donor co-operation with the Country from an environmental perspective;

Chapter 7. Conclusions and recommendations.

The study delivers the following as essential minimum for a Country Environmental Profile:

- An assessment of the environmental situation in the country covering the key issues and responses to these, environmental policy and legislation, institutional structure and capacity, the involvement of civil society, and international development assistance.
- Recommendations for priority actions.

3. State of the environment

3.1 Physical environment

Liberia lies on the southwest corner of the West Coast of Africa within the Mano river basin. It borders with the Atlantic Ocean in the south, Sierra Leone in the west, Guinea in the north and Cote d'Ivoire in the east. Its geographical coordinates are: latitudes $4^{o}18'$ and $8^{o}30'$ north and longitudes of $7^{o}30'$ and $11^{o}30'$ west. It covers an area of about km^2 111,370, of which km^2 96,160 are land and 1,505 inland water. It lies within the upper Guinean Forest region and prior to the impact of man was almost entirely covered by tropical moist forest. The capital, Monrovia, is the country's largest city. The largest and most important three cities following Monrovia are Buchanan (port city for rubber and iron exports), Harper, situated on the coast, and the inland trade centre of Yekepa, near the border with Guinea. There are 15 administrative counties in Liberia.

3.1.1 Climate

The equatorial position and the distribution of high and low pressure belts over the African continent and the Atlantic Ocean influence the climate of Liberia. The zone, north of the *Inter-tropical front*, where the continental air masses prevail from mid-December to end of January show arid conditions (humidity may drop to below 50% in the *harmattan* period, November to March). As the maritime air reaches the coast, it is forced to rise, its cooling resulting in rain falls. The shift of the *Inter-tropical convergence zone* from the northern hemisphere over the Sahara desert and the cool air mass over the south Atlantic ocean in the southern hemisphere results in the replacement of dry continental air mass and moist south-equatorial maritime air mass at six-month intervals.

The rainy season is from mid-April to late October, and the dry season from mid-November to mid-April. Average annual rainfall along the coastal belt is over mm 4,000 and declines to mm 1,300 at the forest-savannah boundary in the north. Two-thirds of the rain along the coast falls during the night, most of the other in the afternoon. Rainfall is caused by the South Atlantic sub-tropical monsoon. Under the influence of the low pressure from the Sahara Desert, low humidity prevails usually from the end of December to January, and sometimes till February. Relative humidity along the coastal belt does not drop below 80% in the day but during the dry season, in the interior it may fall to below 20% during the *harmattan* period. In the night it is regularly 90-100% regardless of the season.

Temperature ranges from $27\text{-}32^{0}C$ during the day and from $21\text{-}24^{0}C$ at night and has little monthly variations, cloud cover and rainfall reducing its impact at the soil level. The highest temperature occurs between January and March and the lowest is between August and September. Total wind speed is greatest in the rainy season and lowest in the dry season, being lower in the interior, where high vegetation cover serves as a windbreak. Along the coast, the average annual wind speed was km/h 30.

3.1.2 Ecological zones

Sea. The Liberian surface waters lie between the Canary Current area to the northwest and the Benguela current area to the east and is uniformly warm (26–28°C) and of low salinity, due to heavy rainfall and high river discharge. There is seasonal oscillation of the thermo-cline and nutrients according to the oscillation of the equatorial undercurrent.

The width of the continental shelf is generally limited by the 100 m isobath, being wider off central Liberia. The continental shelf is km 16–56 wide and the extended economic zone is about 18 400 km^2. The territorial water is about km^2 159,200. In the northwest the slope starts at 300 m whereas it starts at 100–120 m in the southeast and beyond this depth the sea floor has canyons and rocky outbreaks which limit trawling. The coastal sector between Timbo and Blo, where the shelf has a gentle slope to a depth of about 800 m, is ideal for trawling.

Rivers and lakes basins. The major river basins drain the territory in a general northeast to southwest direction to the Atlantic ocean. Most rivers meander slowly over the plain and then widen near their estuaries. There are six major rivers, which drain 66% of the country: Rivers Mano, St. Paul, Lofa, St. John, Cestos and Cavalla (the longest). The major lakes are Shepherd in Maryland County and Piso in Grand Cape Mount County, along the Atlantic Ocean.

Land. The rocks of northern Liberia form part of the West Africa cretan, recognized by its stability and absence of tectonic activity, penetrated by younger rocks and coverd by meta-sedimentary and meta-volcanic rocks. Liberia land is mainly characterized by altitude, and can be subdivided in 4 regions: 1. The coastal plains; 2. The rolling hills; 3. The plateaus and mountain ranges; and 4. The northern highlands.

Coast plains. The coast is pounded by powerful surf, which has produced a relatively straight, low, flat and sandy coastline with many bars and lagoons and few bays, km 560 long and km 16-40 wide, with a maximum altitude of m 30 asl.

Rolling hills have elevation till m 90 asl, crossed by valleys and watercourses, is originally forested, presently substituted by agricultural and forestry concessions.

Plateaus and mountain ranges span for over km 120 on the rear of the coastal plain, the plateaus reaching m 300 asl and the mountains m 600 asl. Important ranges within this zone are the Mano river mountains and the Bea, Bong, Gibi, Kpo, Putu and Tienpo ranges. Topography is a hurdle to agricultural and forestry exploitation. The greatest width of this zone is 129 km between the Lofa and St. Paul rivers.

Northern highlands. Main mountains, located in the north are the Bong, Nimba, Mano, Putu, Bomi and Wologizi ranges. Mount Wutivi (m 1,380 asl at Yekapa) is the highest peak and Wologizi the second highest. They are important for mineral deposits. The Nimba massive is the most important, shared by Cote d'Ivoire, Guinea and Liberia.

A common feature with neighboring countries is the Upper Guinean Forest Zone. This zone extends across the borders of eastern Sierra Leone, south eastern guinea, Liberia, Côte d'Ivoire, Ghana and eastern Togo. It is a world priority conservation area for its biodiversity with an area of km^2 420,000, but with a forest loss (in 1999) of almost 80% of the original area. Mammal biodiversity is the basic characteristic of this zone comprising endangered animals like the pigmy hippopotamus, forest elephant, leopard, zebra, Liberian mongoose and giant pangolin.

3.1.3 Land resources

During the pre-war years about 70% of the population lived in rural areas and depended on agriculture. The forest area coverage has been estimated at in concessions Ha 2,341,226, in community 52,193 and in protected areas 1,141,813 (total Ha 3,535.232, 37% of land area).

About Ha 4.9 million (50%) of the total land area is potentially available for agriculture. About Ha 600,000 of arable & permanent crops land is under cultivation, mostly carried out on small holdings cultivated in the traditional ways of bush fallowing or shifting cultivation: Ha 380,000 (3.9%) of Liberia soils are under annual crops cultivation (cereals Ha 130,000) and Ha 215,000 (2.2%) under permanent crops. Irrigated crops account for Ha 3,000, mostly rice swamps. Pastures account for Ha 2,000,000 (20%). Individual and commercial plantations use state-of-the-art technology to produce rubber, coffee, cocoa, palm kernel, and other export crops.

Soils mostly pertain to the following categories:
- Latosoils, covering 75% of the country, de-saturated, reddish-brown in color and quite hard, with low humus content. They are suitable for surface farming techniques (traditional agriculture) and provide valuable materials for road construction.
- Regosols, sandy with 60% of coarse and fine sand, white to gray in color, typical of the coastal plain, with little humus and cations, but with little water retentions, mostly suitable for pastures and palms cropping.
- Hydromorphic soils, covering 4% of the country, of gray color, typical of the swamps, water logged in the floors of the valleys during the rainy season. High humus content makes them fit for the cultivation of swamp rice, when properly drained.

Pressures. Land resources provide a variety of functions and services that can be used in support of ecosystem processes, livelihoods and food security. Some of the activities supported by land resources include agriculture, forestry, tourism, human settlement, wildlife and industrial development. It is thus a principal asset for survival and development.

1. Poor land-use planning is virtually non-existent: land is not being used to its best advantage and this may ultimately affect its sustainability.
2. Soil erosion and land degradation. Unregulated mining, uncontrolled forestry practices and soil erosion are some of the reasons for land degradation (loss of productivity by biological, chemical or physical process). Soil erosion is due to agricultural practices such as shifting cultivation or slash and burn techniques, involving clearing larger tracts of vegetation than those sown. Seeds, tubers or cuttings are then planted using either a crude hoe or simply making holes in the ground with a digging stick. This clearing of vegetation and grass cover can lead to erosion by wind. Torrential rain also results in the removal of fertile top soil through sheet erosion, or the formation of deep gullies in the land.
3. Human settlements and industrial expansion result in the haphazard establishment of settlements with no control over how the land is used. Was displacements accrued such trends. Soils movements due to mining, road building and establishment of economic activities negatively impact on land resources

Mitigation. A comprehensive zoning plan may be the first step towards effective planning and land-use regulations. The Monrovia Zoning Act of 1957 could serve as a model for zoning regulations for other municipalities. Integration of environmental concerns in city planning.

The establishment of a pilot marine or coastal protected area should facilitate the study, testing and adaptation of appropriate management and valorization of mangrove areas, presently under threat for fuelwood extraction. Priority: Borgor Point (Rivercess County, around the town of Rivercess), due to the richness of wildlife.

Community development initiatives. Planning at the micro-basin level of integrated interventions in WatSan resources management, farming and conservation, including participatory participation of communities

3.1.4 Farming systems

Liberia soils have low moisture storage capacity: the amount and frequency of rain during the dry season is a limiting factor for crop cultivation. Less than 10% of Ha 4.6 million of arable land is cultivated.

Traditional/subsistence systems are based on shifting cultivation or slash and burn method. It is characterized by low productivity of land and labor, long fallow periods of 6-10 years and relatively short cultivation periods of 1 or 2 years. Upland rice and cassava are the main crops, sometimes planted in a mixed cropping system with other species.

Pressures: Slash and burn farming in hilly and mountainous regions, facilitate soil erosion, directly reducing its fertility. Thus, larger spots of forests are opened and transformed in arable land, increasing the degradation of the fertile stratum. Furthermore, forest clearing induces loss of valuable animal and tree species.
Mitigation. Soil conservation can be promoted by the expansion of tree crops in the hilly and mountain farming areas (agroforestry), while devoting a larger portion of the lowlands to annual crops, including swamp rice promotion.
Agriculture policy should stress sustainability. Enhancement of productivity based on improvement of local technology (subsistence farming) and introduction of modern technology (commercial farming)
Improvement of agricultural curricula in higher education, by introduction of natural resources management courses
Collection of local germplasm, its study, multiplication and in situ conservation should be encouraged (Ngo projects). Liberia subscription of the International treaty for plant genetic resources for food and agriculture
Commercial plantations converting tracts of land into rubber and oil palm sown areas, owned and operated mainly by foreign multi-national corporations (there are eight large-scale rubber plantations in the country). State-owned enterprises are engaged in coffee and cocoa cultivation. Heavy earth moving equipment is used to regularize the soil surface and natural vegetation of mixed species is cleared in favor of monoculture, felling large trees and setting them ablaze. In plantation areas, such as Firestone and LAC that have left some of such vegetation standing, those areas have become spontaneous natural wildlife sanctuaries.
Pressures: Clearance of primary rainforest and human settlements are associated to the establishment of plantations. Monoculture reduces biological diversity, and can serve as vectors for insect and disease transmission to native trees. The higher investments provided for commercial plantations allow the increased use of pesticides, whose secondary effects include the selection of resistant pests and crops epidemics.
Mitigation: development of integrated pest management schemes, to be defined by field tests (KARI) and disseminated by means extension programs. It should be ensured that the development of commercial plantations is preceded by EIA. Introduction of new varieties should be properly assessed against the existing farming systems, in order to avoid loss of agricultural biodiversity associated to the unsustainability of the modern farming technique needed to crop improved varieties.
Permanent pastures are used to raise large ruminants such as cattle and small ruminants such as goats and sheep. The government of Liberia had established four major pasturelands intended to enhance and maximize livestock production, now colonized by weeds.
Mitigation. Definition of ecological zones and best practices for livestock raising

3.1.5 Land tenure

Land tenure is the legal, contractual and customary arrangement, whereby individuals or organizations gain access to economic and social opportunities through land. In Liberia, the land ownership is based on land held under three systems or rights:
- *Customary land tenure system:* land ownership based on the oral history of family members and a council of elders. This system allowed a small amount of land under cultivation for agricultural purposes and prohibited the direct sale of land as an economic resource and is still widely accepted in the hinterlands. This means that the idea of a title ownership is alien to the indigenous people.

- *Anglo-American land tenure system:* This is a deed system where land is formally surveyed. There is both public and private ownership. All land is considered to be the property of the state, with the President as the chief custodian or trustee. As evidence of ownership right, individuals or groups were issued a title deed. With the expansion of agricultural settlement and development of the rural economy conflicts over ownership and land-use increased.
- *Land registration system*: This is a 1973 introduced system to prevent fraud, through a titling process: all lands deeded as private or public are registered in the national archives. The present land registration and administration system is outdated and this creates tenure insecurities, which ultimately restricts access to land-use for agriculture and investment purposes in the urban areas. Confusion over title and ownership rights remains and the situation has been compounded by the destruction of many legal documents during the civil war. Landowners are now dubiously re-selling land.

Pressure: successive occupations of land during and after the civil war have confused the already disputed rights on land. The settlement of such disputes is a concern for the social stability of Liberia. Such situation is a hurdle to investments in agriculture, reducing soil fertility and yield, and foster the practices of shifting agriculture.

Mitigation. Improved techniques and the availability of new farming land by valorization of swamp areas will mitigate the disputes on land, reducing shifting agriculture and facilitating the settlement of rural feuds.

It would be advisable to conduct a land-use feasibility study in order to inform a substantive land-use planning and constitute a land reform commission. At the local level, community governance should be enhanced, by appropriate capacity building of village leaders on issues related to land planning.

3.2 Mineral resources and geology

3.2.1 Mineral resources

Liberia is a leading country in mineral resources with substantial iron ore reserves. Other abundant minerals include diamonds and gold. Iron ore mining in the northern parts of the country was undertaken in the past by foreign (American and European, but also Asiatic) companies in the areas of Bomi, Bong Mines, Mano River and Nimba. The then uncontrolled activity resulted in widespread clearance of tropical rainforest for mines, open-cast pits, processing plants, housing and roads, railways and free disposal locations. There were no requirements of environmental impact assessments. The Nimba Mine for instance produces some TM 300 million of mining waste. Overburden, rocks and tailings were deposited in the surrounding forest.

Most of the diamonds and gold in Liberia are mined in small scale operations with considerable smuggling such that it is not possible to make accurate estimates of output. Ministry of Land and Mines estimated in 1999 an inverse situation where 5,000 unlicensed and 1,000 licensed mining operations existed in the country. Artisanal mining of gold, which uses mercury-based amalgamation process, and diamonds results in the clearing and excavation of large areas of forest and river beds as well as uncontrolled discharge of suspended solids (metals, metalloids and cyanide) which can clog rivers. Air, water and soil pollution is caused by mercury vapor and mercury, where 2 grams of mercury are released into the environment for each recovered gram of gold. Sulphide gold ores are often purified by roasting and emit sulphure and arsenic oxides.

Before the 1989 diamond average annual exports amounted to US$ 8.4 million. This increased dramatically during the war where no formal statistics existed. Belgium reported, 1995, imports of US$ 500 million worth of diamonds from Liberia alone (probably mostly smuggled from neighboring countries). Known was that such revenues from *fictitious* offices/mines in Liberia were used to put more fire to the war: buying arms, pay militia, etc. To address the situation, the *United nations security council* passed resolution 1343 in May 2001. The resolution imposed comprehensive sanctions on Liberia, including an embargo on its diamond exports, a travel ban on senior Liberian officials and their families and a ban on Liberian importation of weapons. After two annual reviews, the sanctions remained in place. Liberian diamond exports decreased considerably, and on average the country could export only small amounts of diamonds, a large proportion of them of the industrial, low-value type. The sanctions will not be lifted until Liberia has taken measures to join and comply with the *Kimberley process* (an international initiative/certification scheme in Switzerland, *May 200, Kimberly, South Africa*, to break the link between legal and conflict diamonds), including establishing a transparent and internationally verifiable system for issuing certificates of origin for all rough diamonds.

There are oil and gas reserves in Liberia, but exploration results by an Australian company, though exploration permits are presently withheld by the Government, are promising.

Pressure. Most of the diamonds and gold in Liberia are mined in small scale operations (5 000 unlicensed and 1 000 licensed in 1999) with considerable smuggling. No to no accurate estimates are possible (to avoid lost revenue and control methods of mining), but artisanal mining of gold, which uses mercury-based amalgamation (2 grams of mercury are released into the environment for each recovered gram of gold) process, and diamonds results in the clearing and excavation of large areas of forest and river beds as well as uncontrolled discharge of suspended solids (metals, metalloids and cyanide) which can clog rivers. Sulphide gold ores are often purified by roasting and emit sulphure and arsenic oxides. Policies and control mechanisms have to developed and put in place to avoid the environmental harm of such practices.

Annual exports of diamond amounted to US$ 8.4 million (1989). This increased dramatically during the war. To address the situation, the United Nations Security Council passed resolution 1343 in May 2001. The resolution imposed comprehensive sanctions on Liberia, including an embargo on its diamond exports, a travel ban on senior Liberian officials and their families and a ban on Liberian importation of weapons. After two annual reviews, the sanctions remained in place. Liberian diamond exports decreased considerably, and on average the country could export only small amounts of diamonds, a large proportion of them of the industrial, low-value type. The sanctions will not be lifted until Liberia has taken measures to join and comply with the Kimberley Process, including establishing a transparent and internationally verifiable system for issuing certificates of origin for all rough diamonds. This process has to be expedited and measures taken to lift the ban and avoid badly needed revenues to redress the situation in Liberia.

Mining potential chemical risks are unknown. One site of particularly concern is the Nimba Mine and the TM 300 million of iron mining waste that were deposited in the surrounding forest. The resulting acidification of rainwater draining from this stockpile and siltation of watercourses has affected large areas of the downstream watershed.

The uncontrolled exploitation of the iron ore deposits and alluvial diamonds along the Mano River pose potential threats of pollution and habitat destruction to the nature conservation unit and protected area of Cape Mount.

Mitigation. Environmental assessment of the Liberian mining sector

Definition of the mining sectoral guidelines for EIA, and procedure for EIA appraisal

Compacts with mining companies should clearly include the requirements for environmental management plans, including the exit strategy at the end of the exploitation.

Strengthening of the laboratory analysis skills of MoLME, for environmental monitoring
Joining the Kimberly process, an international diamond certification system aimed at stopping the trade in conflict diamonds

3.2.2 Geological risks (seismic, volcanic and related risks)

The rocks of northern Liberia form part of the West African Cretan. It is recognized by stability and absence of tectonic activity during the last 2.5 billion years. The rocks of Liberian Age extend into neighboring Sierra Leone, Guinea, and Ivory Coast and are highly foliated granitic gneisses exhibiting a regional foliation and structural alignment in a northeasterly direction. This old and stable base was subsequently penetrated by younger rocks and then covered by meta-sedimentary and meta-volcanic rocks of at least two younger tectonic events. Granitic gneisses and the meta-sedimentary rocks have been intruded by numerous northwest trending diabase dikes. These are parallel to the coast and represent intrusive activity associated with the onset of continental break up in Jurassic time.
None of the mountains in the region, Sierra Leone, Liberia and Guinea is of an active volcanic type. This raises the environmental value of the forested land in the region and makes it even more preservation worthy.

3.3 Water

3.3.1 Water resources

Rainfall is the principal contributor of water to surface water bodies, feeding surface water bodies through run-off, which in turn is governed by the combined effect of evapo-transpiration and rainfall events. Rain water is collected from roofs or protected ground run-off areas and stored in covered cisterns to prevent contamination.
Prior to the civil war, the Liberian Hydrological Service of the Ministry of Lands, Mines and Energy, used to maintain a network of 28 hydrological and hydro-geological stations covering eleven river basins around the country, where basic hydrological data were collected. Maintenance of these has not been re-established since the end of the crisis.
Surface water. The water bodies, including wetlands constitute about 12% of the surface area of Liberia. The principal rivers that support the watersheds are Mano, Lofa, St. Paul, Cestos, Cavalla and St. John rivers. The country shares seven international catchments with its neighbors: the Mano and Cavalla are shared basins between Sierra Leone and Ivory Coast, respectively, while Lofa, St. Paul and St. John drain parts of Guinea. Many rivers derive their sources from the border mountains. St. John, Cestos and Cavalla Rivers flow from the Nimba Mountain; Lofa River flows from Wologizi; Mano River flows from Mano Mountain and River Nuhn flows from Putu Mountain; so that the banks of Mano, Cestos, St. John and Lofa Rivers contain deposits of diamonds washed from the mountains from which they flow.

Main river basins of Liberia

Basin	*Area (km^2)*	*Annual flow (m^3/sec)*
Mano	6,604	251
St. Paul	12,820	512.3
St. John	14,762	
Cavalla	13,726	380
Cestos	10,000	60.3
Lofa	9,194	

Although supplies of water in Liberia seem to be abundant, it is actually a scarce resource in crowded villages and booming cities such as Monrovia, where water bodies have been used as dumpsites for wastes. Open toilets are built along river banks, polluting it for those living downstream. Supply and distribution of water are critical factors in the socio-economic development of the country. Rapid population growth, agriculture expansion, and industrialization require adequate and safe water supply.

Groundwater is found in aquifers, which are water-bearing formations with hydraulic characteristics that allow water to be extracted in significant amounts through the use of boreholes and dug wells. Results of boreholes drilled and wells dug show the abundance of groundwater throughout the country. Recharge of the groundwater is based on the heavy tropical rainfall as well as the network of watersheds. Groundwater in Liberia though of relatively high quality, has not been fully developed.

Before the war there were three hydro-geological monitoring stations. After the war destruction, studies have been undertaken on an ad-hoc basis.

Pressures. Deforestation and soil erosion and degradation reduce the water capacity of soils, promoting faster release of rain water through the rivers, with further soil erosion.

3.3.2 Water supply

Prior to 1990, there were 11 water supply systems developed for urban centers in Liberia. Four of these were based on groundwater sources. The destruction of most of these facilities means that today over 90% of the population has to rely on groundwater for water supply.

Groundwater is readily available everywhere, but the implementation of a successful groundwater development program would be dependent on detailed investigation. One of two sedimentary basins south of Monrovia in Paynesville, which has been identified as showing promise for groundwater development, has two drilled boreholes and is the major source of drinking water in Monrovia and its environs.

Urban water supply. The Liberia Water and Sewer Corporation (LWSC) is in charge of providing water supply for urban communities and the Ministry of Rural Development to rural communities. Prior to the onset of civil war there were 11 cities with piped water supply. GoL target is to increase access to safe drinking water to 63% of population nation-wide by 2015.

No.	Town	County	Capacity (gallons/day)	Year of completion
1	Greater Monrovia	Montserrado	16,000,000	1885
2	Gbarnga	Bong	160,000	1978
3	Sanniquellie	Nimba	94,000	1979
4	Voinjama	Lofa	125,000	1980
5	Zwedru	Grand Gedeh	100,000	1980
6	Buchanan	Grand Bassa	200,000	1984
7	Kakata	Margibi	580,000	1985
8	Robertsport	Grand Cap Mount	90,000	1971
9	Greenville	Sinoe	85,000	1970
10	Tubmanburg	Bomi	N. A	N.A.
11	Harper	Maryland	N.A	N.A.

The Monrovia urban area had the most sophisticated system with an impounding reservoir, treatment plant and distribution network. In the 1980's this system had a capacity of 16 million

gallons per day, which served a population of about 450,000 inhabitants. Damage to the system as a result of the civil conflict brought the system to a halt in 1992 resulting in water shortages. To combat this supply problem, the LWSC operated two boreholes in 1993 in one of two sedimentary basins south of Monrovia. Water was trucked to other areas of the city and its environs, as the central system could only serve a small proportion of the city. The two boreholes now contribute about 100,000 gallons/day to the water system. This was augmented by a system of nearly 250 shallow wells located in many parts of the city.

Pressure. The Monrovia water supply which was partially restored is currently operating at about 11% capacity producing less than 1.8 million gallons/day for about 1 million people compared to the pre-war capacity of 16 million gallons/day for a population of 450,000 inhabitants

LWSC had 10 outstations, which served the other urban communities in various counties. These outstation water supply systems have not been in operation since 1990. Water supply in these areas has been made partially possible by means of wells (hand dug or drilled) with the interventions of international donor agencies and NGOs.

In addition to the ten outstations, there were other systems owned and operated by concessions. These included: 1) Yekepa in Namba County and Buchanan both owned and operated by LAMCO, 2) Division 45 (Harbel, Firestone) owned and operated by Firestone Plantations Company, and 3) Bong mines owned and operated by Bong Mining Co. Of these only the system at Harbel is still operating.

Rural water supply. Most of the rural settlements are situated at high altitudes with usually a river, stream or pond serving the water needs of the population. Water supply is always reliable except for the brief period during the dry season. The problem therefore is one of quality. Pollution of such sources is directly attributed to human action. Report of outbreaks of water borne diseases such as diarrhoea, cholera, and typhoid, are common.

With the creation of the Ministry of Action for Development and Progress in 1980 and subsequently the Ministry or Rural Development (MRD) in 1981 a National Rural Water Program (NRWP) was launched, involving the construction of low cost shallow hand-dug wells and high tech-boreholes/wells fitted with hand pumps for rural communities.

Distribution of services to the rural communities is uneven. The UN and NGO partnership has proved very effective, given the continuing lack of capacity in the NRWP

Pressure. Access to improved water sources (pipe born and hand pumps) declined due to the civil war, only 4% of rural households having access to safe drinking water, compared to 25% of urban households. Over 82% of all households depend on wells, springs, ponds and rivers for their drinking water, and about 28% of these sources appear to be protected. Slightly more than 10% of households in urban areas depend on water supplied by tankers as their main source of drinking water. Less than 4% of households use rainwater as their major source of drinking water, in spite of the heavy and long rainy season. About 56% of households in both rural and urban areas take up to 10 minutes for a returned trip to their major sources of drinking water. Access to the safest sources of water such as treated piped water, tube-wells and boreholes account for about 25% of the population (household). Even before the war, water-borne diseases were a problem; cholera outbreaks have recently been recorded in-country.

3.3.3 Water for agriculture, industry and energy

Irrigation is not a factor in increasing agricultural productivity, the only forms of irrigation projects being for rice paddies in swamps. Diversion channels from river are used to regulate water depth. The traditional upland shifting cultivation depends on seasonal rainfall. The absence of industry utilizing much water means that water supply for industry is negligible.

The intensive drainage pattern gives Liberia very high potential for hydropower development as a source of energy: potential sites for hydropower developments have been identified, a part the 2 exploited prior to the civil war (KW 64,800 or 24% of the total installed capacity of KW 304,000).

Potential sites for hydropower development

Sites	*Capacity installed (KW)*
Mano river	180,000
St Paul VI	132,000
Mano river	12,000
St John SJ-1	10,000
SJ-2	18,000
SJ-3	39,000
Cestos river C-1	16,000
C-2	25,000
Lofa river L-1	10,000
L-2	19,000

Pre-feasibility and feasibility studies have been done on only two of the eleven sites Mano river and St Paul river).

Pressure. Water resources have been threatened with growing level of uncontrolled artisan mining activities, industrial mining of major mines, deforestation due to shafting cultivation and logging and overdraft of groundwater causing an eminent sea water intrusion in the urban areas. The uncontrolled disposal of domestic sewage and solid wastes directly into rivers, streams and creeks also posses major threats to the nation's water resources. Due to the threats mentioned above, there is always flooding of creeks, streams and rivers when wastes block their channels and reported out break of water borne diseases such as cholera and diarrhoea.

Mitigation. Side effects of agricultural practices should be tested also at the micro-basin level, in order to avoid soil erosion. Agroforesty, by mixing tree and annual crops can contribute to such effort.

Development of programs and projects for water catchment areas aimed at soil erosion, water pollution control and siltation, in order to maintain productive soil and water environments

Promotion of regional cooperation in the development, management and equitable utilization of shared water resources

Training, planning, and water resources assessment, equipment and instrumentations, water supply and sanitation, water quality, monitoring and water utilization for the various sectors of the economy like agriculture, energy, industries, tourism and recreation

Establishment of laboratory of environmental analysis

Rehabilitation of hidro-geological and meteorological knowledge and skills in MLME, including network of (13) hidro- and meteorological stations

To prepare a National Water Policy, appropriate legislation and action plan. Existing fragmented legislations and regulations scattered amongst the various sectoral agencies reviewed and harmonized.

3.3.4 Sewage and waste management

The areas around north west Montserrado, Monrovia and its surroundings have a high concentration of population. In the absence of adequate waste and sanitation measures this poses potential threats to the water quality and mangrove areas around Monrovia. Most development programs are addressing such threats both in the rural as in the urban areas.

Potential risks from hazardous, clinical and industrial wastes are presumed to be minimal given the low level of activity in these sectors. However, some toxic wastes are likely to be produced in workshops and garages. It was reported that automotive batteries are co-disposed with domestic waste and in central Monrovia waste engine oils are collected and filtered for re-use. In addition, it can be assumed that other hazardous wastes such as solvents and building materials containing asbestos will also be generated in Monrovia. Tailings (or waste from mines) also pose potential environmental hazards from heavy metals contained in run-off and leachate, suspended solids that clog rivers. When of a sufficiently large scale, tailings can suffer from slope failure and pose the risk of landslides.

Mitigation. Include all stakeholders in land-use planning: A national land-use planning process involving all government ministries and key stakeholders should be initiated under the auspices of the EPA

Establish sanitary landfills in urban areas and undertake EIAs to determine the appropriate size and location of sanitary landfills that would receive waste from major urban areas. Landfills should be established in locations that pose no risks for the water resources.

Develop guidelines to determine the minimum acceptable standards for solid waste management in villages and rural communities and for disposal of waste from villages and rural communities

Introduce safe disposal of clinical, hazardous and industrial wastes: an integrated waste management strategy should be developed that includes the collection and treatment of clinical, hazardous and industrial wastes.

Environmental and public health impact study of solid waste and sewage on the environment; possibly the waste disposal site in Fiamah should be substituted with a new dumpsite

Public awareness and education on waste management and sanitation

Destroy unexploded ordnance (UXO) in an environmentally safe way: Landmines and UXOs that are collected under the disarmament and clean-up process should be disposed of in an environmentally acceptable manner that minimizes the release of heavy metals.

3.4 Biological conditions, biodiversity, ecology and nature conservation

Biological resources represent one of Liberia's most abundant raw material resources. Biodiversity contains ecological, economic, and socio-cultural values that justify the need for conservation and sustainable use. The economic value of biodiversity is easily recognizable when you consider the goods like food and medicines that it provides. Other values such as those fulfilling a spiritual need are intangible, but no less valuable.

Biodiversity is the range of animal and plant life in an ecosystem. It includes genetic diversity, species diversity, and habitat or ecosystem diversity. The range of biodiversity in Liberia includes forests, wildlife, mangroves, wetlands and swamps. It includes biodiversity in specific ecosystems such as mountains, wetlands, savannah grasslands and coastal and marine areas. Liberia biodiversity is under threat due to many factors such as ignorance, insufficient public education and awareness, shifting agriculture, unregulated logging, unplanned roads in logging areas, unplanned human settlements, fuelwood gathering, charcoal production, population pressure and establishment of rubber plantations.

3.4.1 Halieutic resources

Marine fisheries as well as inland fisheries and aquaculture are the two main components of the Liberia fishery system. There are about 159 fish species.

The distribution of a number of sea fish species is limited by the depth of the thermocline and is influenced by the type of bottom deposits (sand and silts) and also the depths of the continental shelf, the slope of which is variable. Migration of cohort species from the estuaries and creeks to the open shelf areas and vice versa also occurs.

Fish communities exploited by the various fishing units:

1. the coastal supra-thermoclinal sciaenid community (on soft deposits). This community presents a particular "estuarine" facies very close inshore and in the creeks;
2. the coastal supra-thermoclinal sparid community (on sandy and harder substrates);
3. the eurybathic fish species;
4. the deep shelf community and continental slope community.

An acoustic survey of the country marine resources indicated a total biomass (total fish resources) of about TM 800,000, consisting of pelagic and demarsal species.

Marine fishery accounts for most of the fish catch. The continental shelf provides habitat for various fishes such as tuna, shrimp, lobsters and other fish with fins. It covers about km^2 180,000.

Aquaculture, centered on public projects breeding and supplying local indigenous fingerlings such as *Tilapia* and *Clarias* to local fish farmers for stocking their ponds, is one of the loss of the civil war.

Pressures. Artisanal fisheries cover about km^2 20,000 of fishing grounds. The sector accounts for a workforce of 10,000 including full time, part-time, sport fishermen and fishmongers. It generates revenue between US$ 10-15 million, corresponding to 12% of agricultural GDP. In 2002 the volume of fish produced was about TM 10,000 (about 50% industrial and 50% artisanal) and TM 126 of molluscs and crustaceans, annually.

The inshore multispecies fisheries are exploited with a variety of gears (gillnets, cast-nets, beach-seines, trawls, purse-seines, ring nets, traps and hooks), operated from different artisanal and industrial fishing boats.

The artisanal fishery catches are made for about 60% of coastal pelagics. Tuna, billfish and bonito account for about 10% of the artisanal catch. The other major fish species groups exploited by artisanal fishermen are barracuda (5%), soles (5%), croakers (5%), and sharks and rays (4.5%). The artisanal canoe fishermen interact with trawlers and shrimpers in Liberian waters.

The industrial fishery mostly exploits demersal fish and shrimp. The major finfish species groups caught by the industrial fleet are soles, seabreams, croakers, threadfins and African sicklefish

Trawl surveys indicate scarcity of demersal fish in Liberian waters: a maximum potential yield of TM 9,000-15,000. The total annual catch of demersal fish species is about TM 6,400.

The estimated standing stock of the coastal pelagic fish in Liberian waters is put at TM 43,600-94,200. The present annual catch of pelagic species is about TM 3,600.

Maximum sustainable yield of shrimp fishery in Liberia waters is TM 1,200–1,600

Mitigation. Rational fishery management requires considerations of the following fishery restrictions and options: closed areas, closed seasons, use of specified types of gears and mesh size, and effort control. The trawlers and shrimpers should be banned from fishing in the estuaries and shallow inshore waters.

3.4.2 Vegetation ecosystems

1. Savannah woodland and northern savannah. The savannah vegetation has developed as a result of clearing the rain forest for agriculture. The northern savannah is covered with elephant grass intermixed of scattered trees and patches of forest. Savannahs encroach into the rainforest zone as it steadily moves southward. The coastal vegetation consists of mangrove swamps, savannah woodland and patches of forest scattered in fields of grassland.

2. Wetlands and swamps are a buffer between maritime and terrestrial ecosystems. The 8 existing wetlands are classed: inland riverine, inland swamp, coastal and coastal lacustrine. Swamps are a source of herbs and are used to augment rice production.

Fresh-water swamp forests (*Mitragyna ciliata* forests) in swamp valleys that are not flooded during the whole year but where the roots always have access to ground water. In permanently inundated areas the forest cover is poor and low with few or no large trees.

3. Mangroves cover a small area of wetlands along the coast, from Cape Mesurado to Cape Palmas, at the edges of lagoons, riverbanks, and river estuaries and in widespread areas of swamps. Mangroves are estimated to cover 0.5% of the land surface. They provide habitat for fish, invertebrates and epiphytic plants. Mangrove forests, rarely taller than m 6, are characteristic of silty lagoons and along some rivers in the immediate vicinity of the Atlantic coast.

4. Rain forests, once covering entirely the country, are being reduced at the rate of 1.5% per annum. The two remaining dense forest areas are found in the northwest and southeast of the country and are fragmented by the advances of shifting cultivation.

Liberian forests are closer in composition to those of Gabon and south-west Cameroon than those of Ivory Coast, mainly because of the high rainfall.

High forests include two main kinds:

- Evergreen forests are found where rainfall is higher than mm 2,000 with no marked dry season, in a belt parallel to the coast in the eastern and central parts of the country. Characteristic species of mixed evergreen forests are *Lophira alata, Heritiera utilis, Sacoglottis gabonensis, Calpocalyx aubrevillei* and *Dialium* spp.
- The moist semi-deciduous forest occupying the northern half of the country, where the dry season is more marked, is a transition between the evergreen forest and the semi-deciduous forest found in the Ivory Coast. Meliaceae are more abundant than in the evergreen forest and typical trees of the semi-deciduous forest such as *Nesogordonia papaverifera* and *Aningeria robusta* are present.

High forest, can also be subdivided into (1) primary high forest (Ha 129,000) and (2) secondary forest (over Ha 3,300,000) that (a) has not yet reached climax or (b) has reached climax (dominance of light demanding species). The total growing stock in forest and other wooded areas amount to m^3 459 million, of which 41% commercial.

5. Commercial plantations, typically of rubber, involve clearing and excavation of large tracts of natural vegetation. Rubber production was the second single largest economic activity in the modern sector. Foreign concessions accounted for nearly Ha 600,000 of land usable for rubber production, while Liberians owned less than Ha 40,000 of rubber farm.

3.4.3 Inland biodiverity

Coastal biodiversity. About 90% of the coastline consists of a narrow sand beach 20-30 meters wide, reaching 60-80 meters in some parts of eastern Liberia. The coastal zone consists of swamp related vegetation, which includes: mangrove forest and savannah related vegetation, which extends up to km 25 inland. Also common in the coastal zone are palm trees, raffia palm,

mango, other fruit trees and ornamental plants. Mangrove trees are harvested as firewood for local energy requirement and are also known to have tannic acid, used for the manufacture of leather.

Pressure. The most serious threats to the coastline and marine environment are solid waste, beach sand mining and beach erosion.

Solid waste management: disposal of solid waste especially the uncontrolled disposal of garbage is posing serious threat to coastline habitats.

Sand mining: unregulated sand mining is causing slight embayment of the shoreline due to localized recession.

Beach erosion: changes in the configuration of its shoreline depend from the action of ocean waves; erosion is causing shoreline recession in some cities like Buchanan, Greenville, Harper and Robertsport.

Mitigation: Best practices should be defined through some pilot action, centered on the safeguard and valorization of a mangrove site

Wetlands biodiversity. Wetlands may be permanent or temporary, with either static or flowing water. The water may be fresh, brackish or may include areas of marine water, usually not exceeding a depth of six meters at low tide. They are characterized by the presence of hydrophytes and un-drained hydric soils. The soil found under a wetland is quite different from the normal soil because it is formed under low oxygen conditions and is very heavy with clay or has large amounts of plant material (peat). They provide critical habitat for migratory waterfowl, while others check flooding and siltation on waterways. Some act as filters, removing and sequestering pollutants that might otherwise find their way into drinking water. Others provide recreational opportunities such as fishing and boating. Wetlands are highly productive areas rich in flora and fauna.

There are 4 wetland types in Liberia - inland riverine, inland swamp, coastal and coastal lacustrine.

Main wetlands

Wetland	*Type*
Lake Piso	Coastal Lacustrine
Marshall	Inland Riverine
Mesurado	Coastal
Lake Shepherd	Coastal
Bafu Bay	Coastal
Cestos-Senkwehn	Inland Riverine
Gbedin	Inland Swamp
Kpatawee	Inland Riverine

Mangroves 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, covering 0.5% of the land surface. They help to prevent sediments from being washed into the sea. Mangrove trees are found at the edge of lagoons, riverbanks and estuaries along the coast. They are vital coastal ecosystems providing habitat for fish, invertebrates and epiphytic plants; and are considered more efficient photo synthesizer than most plants.

Mature mangroves, reaching heights up to 30m are found along the lower Senkwen and some neighboring rivers. Except for a few places in the central part of the country, primary mangrove forest has been replaced by secondary ones. The biodiversity of mangroves in Liberia is under serious threats from constant harvesting of the mangrove forest for fuel wood.

Swamps are a source of herbs, and are used to augment agricultural production. They are cultivated but not to the same extent as the uplands. Swamps are important in certain societies.

For instance, for the Gio and Mano tribes, swamps serve the primary purpose of augmenting upland rice production. A cultivated swamp is referred to as a woman's farm. As a result many swamps remain uncultivated thereby conserving their fauna and flora.

Biodiversity in grasslands and savannah areas. Grasslands are dominated by grasses rather than large shrubs or trees. In Liberia they are classified into two - coastal and derived savannahs. Soils of the savannah are porous, with rapid drainage of water. It has only a thin layer of humus, which provides vegetation with nutrients. The predominant vegetation consists of small broad-leaved plants that grow with grasses, with deciduous trees and shrubs scattered across the open landscape.

1. Coastal savannah is a result of the combination of climate change and soil erosion in communities along the Atlantic Ocean and is mostly found in southeastern Liberia.
2. The derived (northern) savanna is found in Lofa county, predominantly in Foya district near the border with Guinea, bringing with it the threat of desertification.

Forest and Wildlife Biodiversity. By the end of 2000 Liberia contained 42% of the Upper Guinea Forest of West Africa; the largest portion possessed by a single country in the region. The remaining portions are unevenly scattered in fragments across the region in Côte d'Ivoire (28%), Ghana (16%), Guinea (8%), Sierra Leone (5%) and Togo (1%). The Mount Nimba, Cestos-Senkwen rivershed, Lofa-Mano, and Sapo National Park areas contain many endemic species. These four areas are among 14 other centers of plant endemism within the upper Guinea hotspot of West Africa. Of the total forested area of Ha 3.480,000 (36% of land), 35% are undisturbed, 45% disturbed but productive and 20% disturbed and unproductive.

In 2000-02 forestry represented the country's most important economic activity, responsible for 50-60% of the nation's foreign exchange, and accounted for 26% of GDP in 2002.

Pressures. The Upper Guinea Forest is an hotspot identified globally by Conservation International. The forests of Liberia are home to over 2,000 flowering plant species, with 59 of them endemic to the country and one endemic genus. There are about 240 timber species, of which 30 have been exploited. The forests contain many of the regions endangered animal species, including pygmy hippopotamus, forest elephant, Diana monkey, and Jentink's and zebra duikers. IUCN list includes 4 species of tree endangered and 42 vulnerable in Liberia.

The extractive potential of mature timber was calculated in 1960-67 at m^3 80 million with a recommended a 25-year felling cycle for concession areas (annual allowable timber cut m^3 3.2 million). Forest cover has declined from 4.1 million hectares in 1992 to 3.48 million hectares in 2000/2001. Up to about Ha 60,000 (1.5%) of forestland is lost annually due to logging, shifting cultivation and other activities such as charcoal production.

- NWFP. The edible animal and plant products such as bushmeat, mushrooms, fruits, beverages and snails are supposed to be the most important non-wood forest products in Liberia. Other NWFP are medicines, colorants, bamboo and rattan cane used for furniture construction.
- Bushmeat is the major source of protein and an important income generating activity for the bulk of the Liberian people, especially for rural dwellers. Wildlife resources contribute to 60-90% to the consumption of animal proteins throughout the country. Annual production of bushmeat for subsistence purposes is estimated to reach TM 105,000. Most popular species are small antelopes and monkeys. Liberian population of chimpanzees is estimated at only 1,000-5,000, but includes parts of two areas identified as exceptionally important and one very important for the survival of the subspecies.

There is a noticeable demand and consumption of bushmeat in the country, which have resulted to indiscriminate killings of animal species. Currently, commercial hunting is leading to extinction of many of the endemic species, which has resulted in import of bushmeat from Sierra Leone and Guinea.

- Charcoal. Of the two major sources of charcoal production in Liberia (rubber trees and the rain forest) coal produced from the rubber tree comprises the higher volume of supply to Monrovia and most urban cities. About m^3 175,000 were estimated as household consumption before the war. About 30% of this figure came from the rubber industrial sector, while 70% was supplied from the rainforest. About 35% of former industrial workers and ex-combatants now residing in Liberia have engaged in charcoal production and trade as means of survival in the private sector. As the nation move gradually towards normality, the consumption of firewood by household increased simultaneously.

Mitigation. The carbonisation of retired rubber trees should be highly promoted as an integral part of the rehabilitation of the small holder rubber industry and the poor majority of the population who are unemployed, yet seeking employment. In addition, more efficient metal kilns and charcoal stoves offer some prospect of reducing pressure on the remaining closed native forests which are within reach of the major urban areas and should therefore be encouraged to be specific as it is done in Ghana.

Mountain biodiversity. The mountains of Liberia have great topographical diversity, containing some primary forests, which are located mainly on the foothills and in the valleys. More than 200 species of plants and animals can be found on the mountains of Liberia. Some of the species can also be found in drier, mid-attitude areas of mountains. Also found are some important medicinal plants such as *Parkia bicolor* and *Pygeum africanum*. The chimpanzee is the most noticeable mammal found in the mountains.

Potentials of Liberia mountains

Mountain	*Description/economic status*	*Location*
Nimba	Second highest in Liberia Exploited for iron ore Source of the St. John, Cestos & Cavalla rivers	Nimba county, northern Liberia
Wologisi	Unexploited	Lofa county, northern Liberia
Bong range	Exploited for iron ore	Margibi county, southern Liberia
Gibi	Unexploited	Margibi county, southern Liberia
Putu	Unexploited	Grand Gedeh county, northern Liberia
Bomi	Exploited for iron ore	Bomi county, northwestern Liberia
Wutivi	Highest in Liberia Unexploited	Lofa county, Liberia
Mano	Exploited	Cape Mount county, western Liberia
Bea	Unexploited	Cape Mount county
Kpo range	Unexploited	Gbarpolu, northwestern Liberia
Wenegissi	Unexploited	Lofa county

Mitigation.

Action plan for the establishment of protected areas, in order to attain the 10% land area for protection

3.4.4 Agricultural biodiversity

The plants, animals and micro-organisms at genetic, species and ecosystem levels necessary to sustain key functions in the agro-ecosystem, its structures and processes are characterized by domesticated plant and animal species, soil micro-organisms, pollinators, pests, wild relatives of domesticated crops and animals as well as plant and animal genetic materials including varieties, hybrids and different types of germplasm.

30% of the land area is arable while 2.5% is pastureland. Most of the upland soils are lateritic, acidic, infertile, and low in humus. The swamp soils are comparatively better in nutrients and humus but are waterlogged from May to October.

Pastureland estimated at 182,000 ha is largely unexploited.

The country's main staples are rice and cassava. Two species of rice are grown - an Asian rice species (*Oryza sativa*) and an African species (*O. glaberrima*). *O. glaberrima* has become rare. Other species of rice include 22 aquatic varieties (19 exotic and 3 indigenous) and 32 terrestrial (25 exotic and 7 indigenous) are available. Nearly all the exotic varieties were brought from WARDA. About 90% of the locally produced rice is grown upland. Other crops of economic importance are rubber, cacao, coffee, maize, yam, cassava ground nuts cow peas, cabbange, oil palm, coconut, papaya, banana avocado/butter pearl, sweet orange, and mango/plum.

Less than 10% of the Ha 4.6 million of arable land is cultivated. In order to expand the area under cultivation, it is proposed to promote swamp cultivation. The conversion of swamps into agricultural areas could have environmental consequences including habitat loss.

Mitigation. Review of Draft National Biosafety Framework for Liberia 2004

Germplasm collection and subscription of the International treaty on plant genetic resources for food and agriculture

3.4.5 Alien invasive species

AIS are the second biggest threat to biodiversity after habitat loss, their impact can be placed into three categories:

- *Ecological impacts*: Displacement of native species through competition for food and other resources, through predation, alteration of habitat and food webs.
- *Genetic impacts*: Dilution and potential loss of locally adapted gene pools caused by the introduction of non-locally adapted strains of the same species, or closely related species that are able to hybridize.
- *Pathological impacts*: Infection of native animal and plant species by a variety of parasitical organism, such as bacteria, viruses, and fungi.

The main AIS are:

- *Chromoleana odorata*, a perennial shrub, a typical pioneer species of secondary forest succession with a strong helio-philic character and vigorous vegetative development. *C. odorata* habitat and breeding spaces for harmful insects such as the variegated grasshopper, *Zonocerus variegates*, which then attacks cassava fields causing substantial yield losses. During the dry season, it constitutes a fire hazard.
- The Water Hyacinth (*Eichornia crassipes*) occurs in the coastal areas. The Water hyacinth is an exotic, free-floating aquatic plant that can form floating islands that can cover thousands of hectares of previously open water. When invasive, water hyacinth covers the water surface and excludes submerged organisms from light and air, causing a reduction of aquatic biodiversity and a change of fisheries results from invasion.

3.4.6 Biological resources of economic importance

Forestry represents 50-60% of the nation's foreign exchange and accounts for 26% of GDP in 2002. Foreign exchange earnings due to timber in 2002 were in excess of US$ 85 million. Other important forest products include sawn timber, round logs, round poles and charcoal. In 2000 export of round logs was of US$ 59.5 million. In March 2003, the IMF stated that the near-term growth prospects of the Liberian economy would rely primarily on timber products from the regions unaffected by the conflict and warned that without effective control mechanisms the viability and long-term sustainability of the forests would be endangered. Due to the UN sanctions on timber (2003-2006), there have been no official exports since May 2003. The release of new concessions will restart the legal exploitation of timber in 2007.

Rubber is one of the main exports in Liberia. Rubber production is estimated TM 99,569 in 2002, mostly exported (US$ 57.4 million), only a limited rubber processing being undertaken in Liberia.

The production of fuel wood and charcoal is an important source of employment and sale of these goods is a source of supplemental income for many families. In some cases it supplements as much as 40% of their total income. Fuelwood removed (MT 6 per year) is estimated about 1% of the biomass in forests and other wooded areas. In 1999, charcoal production contributed 2% of GDP compared to 9% in pre-war times. Charcoal is being manufactured for export to neighboring countries that are suffering from a lack of fuel wood due to deforestation.

Bushmeat. Wild animals are killed and may be eaten locally, or sent raw or smoked to urban areas for sale. Hunting is traditionally a male activity, principally done with firearms, snares and pits, while females sell the bush meat on the roadside or in market places. Most hunting is for domestic consumption. However, with intense forest loss in Sierra Leone and Cote d'Ivoire, bush meat trade in border areas with these countries is increasing. By 2002, a large-scale commercial bush meat industry in southeast Liberia began to emerge to meet the growing demand. Traders from Liberian cities, as well as neighboring countries supply cartridges to local hunters or professional hunters who set up camp deep in the forest. Most of the animals killed are exported. Many forest dwellers are abandoning agriculture in favor of hunting.

Surveys in the forests of Rivers Cestos and Senkwehn showed a significant decline in the density of wildlife. No reliable estimates exist on the quantities of animals killed, nor of such meat. As commercial hunting increases, previously held taboos that serve to protect selected species are ignored and resulting in all species being hunted. Commercial hunters are particularly indiscriminate, tending to target large animals.

Hunting is governed by a permit system managed by the Wildlife and National Parks Division of the Forestry Development Authority. But limited logistics and a lack of implementation capacity make the enforcement of the legislation problematic.

3.5 Socio-economic conditions, socio-cultural conditions and human health

3.5.1 Administration, ethnic groups and population

On September 19, 2003 the UN Security Council adopted Resolution 1509, which established a peacekeeping operation (UN Mission in Liberia, UNMIL) under Chapter VII authority. In keeping with the UN Secretary General's recommendations, it called for a force of 17,000 peacekeepers, with 250 military observers and 160 staff officers, a robust police component of up to 1,115, and a significant civilian component and support staff. Those forces essentially have

been close to fully deployed throughout Liberia. By November 1, 2004, UNMIL had disarmed and demobilized over 103,000 individuals characterized as ex-combatants. UNMIL also advised the reformed National Election Commission as it executed the October/November 2005 legislative and presidential elections.

Historically, Liberia has had a bicameral legislature which consists of 64 representatives and 26 senators. The legislature was set up on a proportional representation basis after the 1997 special election. The executive branch influences the legislature and judicial system, the latter being largely dysfunctional for now.

In the judicial system the country has a Supreme Court, criminal courts, and appeals court and magistrate courts in the counties. There also are traditional courts and lay courts in the counties. Trial by ordeal is practiced in various parts of Liberia. The basic unit of local government is the town chief.

Local institutions are ruled by clan chiefs, paramount chiefs, and district commissioners. Mayors are elected in principal cities in Liberia. There are 15 counties in Liberia. The traditional structure meets the formal (that is, government appointed or elected) structure somewhere at the regional level and goes parallel with it upwards in various policy and administrative bodies/structures. Every 2-3 towns (the lowest structure, in a special way stands for village as well as every 15 to 100 households would make a town) make a clan. Every 3-5 clans make a district. Every 2-8 districts make a county. As mentioned above there are 15 counties in the country and a total of 74 districts. A town, clan, or district has a chief elected by the people on traditional basis or due to his education, social status or a combination of these. Other structures at the national level advising government, parliament or giving opinion in various occasions in this parallel system are the traditional, elders or traditional leaders councils drawn from all counties at the national level (e.g., clans are represented in the District Development Committee, DDC) and from all districts at the county level and so forth. Local judges solve local problems and the clan or town would protect their immediate surroundings, e.g. shrines, access roads, forests, and other sanctuaries. They also hold meetings to discuss issues of importance to the area, like building an access road, repairing a school, or discussing family or social values/offences within their area of jurisdiction. District commissioners/superintendents are elected or appointed by the Government in the parallel formal structures. The local structures are targeted wherein awareness, training or similar issues in environmental services (water and sanitation services in cases of epidemic outbreaks, or repair of local implements, e.g. wells) are meant to be delivered at the local level. Epidemics and communicable diseases (malaria, typhoid, cholera, etc) are very common as mentioned elsewhere.

Almost 15 years (1989 to 2003) of civil war have resulted in a considerable disturbance in the population distribution. An estimated 250,000 people have been killed and 800 000 people (the scale is huge compared with a total population of approximately 3m), of which more than half are IDPs, have been displaced as a result of the conflict. The fluctuating presence of refugees living in Liberia, mainly from Sierra Leone and Côte d’Ivoire, must further be added to these numbers.

There are 16 ethnic groups that make up Liberia's indigenous population. The Kpelle in central and western Liberia is the largest ethnic group. Americo-Liberians who are descendants of freed slaves that arrived in Liberia early in 1821 make up an estimated 5% of the population.

There also are considerable numbers of Lebanese, Indians, and other West African nationals who make up a significant part of Liberia's business community. Because of the civil war and its accompanying problem of insecurity, the number of Westerners in Liberia became low and confined largely to Monrovia and its immediate surroundings. The number of Westerners would

tend to increase in the coming years. The Liberian constitution restricts citizenship only to people of Negro descent.

The National Policy on Population for Social and Economic Development (enacted 21 July 1988) emphasizes the need to preserve, protect and promote positive Liberian cultural values and to appreciate the interrelationship between population for the enhancement of economic growth and poverty reduction.

The population is estimated at 3.3 million (2005) a quarter of which live in Monrovia. The growth rate of the population in 2005 is 1.3%/a, compared to 5.2% and 0.6% in 2000 and 2004 respectively. Most eastern and northern counties have a density of between habitants/km^2 10 and 30, while the central region is the most intensely populated, reaching about habitants/km^2 200. As a whole the density of Liberia is quite low, i.e. habitants/km^2 35. The dynamism in the population due to after-war influx or migration makes the figures less reliable though it is relatively stabilizing in comparison to last three or four years. Up to one million Liberians fled to neighboring countries in 1990 and while many returned during the calmer periods in the civil war and renewed conflict forced people to seek refuge again in the cities of Liberia and the neighboring countries. A United Nations report (September 2003), estimates around 500,000 to be internally displaced people (IDPs) in Liberia, about 300,000 refugees in neighboring countries and 50 000 refugees from Côte d'Ivoire and Sierra Leone remain in Liberia. The report also estimates the number of people killed in war-related circumstances since 1989 to be 250 000, half of which were civilians. The percentage of the Liberian population living in urban areas, which prior to the conflict was already high by African standards, rose even further to reach 45% in 2000. Infant and under-five mortality rates in Liberia were estimated in 1999 at 134 per 1,000 live births and in 2000 at 235 per 1,000 live births. Average life expectancy is 42 years (2000 - 2004). Women are expected to bear an average of 6.2 children and 50% of births are attended by unskilled staff.

Of the Liberian population, 95% belong to the 16 indigenous African tribes, whereas Americo-Liberians (descendants of immigrants from the United States who had been slaves) and Congo People (descendants of immigrants from the Caribbean who had been slaves) together comprise 2.5/ of the population. About 40% of Liberians are Christians, 40% have indigenous beliefs and 20% are Muslims. While English is the official language, it is only spoken by 20% of the population. The remaining 80% speak some 20 ethnic group languages.

Liberia has maintained traditionally cordial relations with the West. Liberia currently also maintains diplomatic relations with Libya, Cuba, and China. Liberia is a founding member of the United Nations and its specialized agencies and is a member of the African Union (AU), the Economic Community of West African States (ECOWAS), the African Development Bank (ADB), the Mano River Union (MRU), and the Non-Aligned Movement

3.5.2 Governance

Governance in Liberia has been stained to unprecedented levels of chaos and deprivation. Almost all facets of governance in Liberia have suffered in a major way over the past two decades or more. National and civil institutions have been destroyed; systems of checks and balances dismantled; the rule of law has been virtually ignored; the media has been severely weakened; civil society is merely embryonic and virtually unregulated, corruption in all forms is rife. This has had a deeply stultifying effect on national life and has been a major contributor to increasingly worsening poverty.

3.5.3 The economy

The Liberian economy depends mainly on the mining of iron ore and on the export of natural rubber prior to the civil war. Liberia was a major exporter of iron ore on the world market. In the 1970s and 1980s, iron mining accounted for more than half of Liberia's export earnings. Following the coup d'etat of 1980, the country's economic growth rate slowed down because of a decline in the demand for iron ore on the world market and political upheavals in Liberia. Liberia's foreign debt amounts to about $3.5 billion.

The 1989-1996 civil war had a devastating effect on the country's economy. Most major businesses were destroyed or heavily damaged, and most foreign investors and businessmen left the country. Iron ore production has stopped completely, and Liberia depends heavily on timber and rubber exports and revenues from its maritime registry program.

GDP per capita, in 2005 prices, declined from US$1,269 in 1980 to US$163 in 2005, a decline of 87 percent. Total exports in 1978 of about US$486 million declined to about US$10.3 million in 2004. The decline was across the board: agricultural production dropped precipitously as people fled their farms and the supporting infrastructure collapsed, mining and timber activity nearly ceased, rubber plantations closed, manufacturing dropped sharply, and services ground to a halt. The economy finally stabilized and began to rebound in 2004. Growth reached 5.3 percent in 2005 and is expected to reach 7-8 percent in 2006.

The country’s infrastructure is badly damaged. Many roads are impassable. The same applies to several health, education, water supply and energy facilities. Expanding the peace, revitalizing the economy, and reducing poverty will be next to impossible without a significant improvement in roads. There was no electricity or piped water in the country for 15 years and water and electricity were just partially recovered in Monrovia in July 2006.

Unemployment is at its highest: 85% of the labor force. Ex-combatants and returning refugees and internally displaced persons are struggling to find work. Formal sector employment is currently estimated at about 120,000, predominately the public sector with some 50,000 to 60,000 employees with the ongoing rightsizing exercise. The majority of the population works in agriculture and subsistence farming and the informal economy in trading and petty production. Other coping mechanisms include significant reliance on external remittances from relatives abroad, as well as spin offs from donor-funded investments especially in the infrastructure and in rural communities through the NGOs. Apart from some MNCs operating in the country, the informal sector is the national local hub of the economy.

Public expenditure has not been much of a significant effect. Total government expenditure including grants has not exceeded US$85 million since 2000, translating into spending per capita of only about US$25, one of the lowest levels in the world. The 2006/07 budget is projected at US$130 million, a 60% increase over the previous year, with at least 15 percent devoted to pro-poor targeted activities. Inflation, which jumped to 15 percent in 2003, subsequently subsided to around 6 percent, although there are pressures from rising prices as the economy rebounds. Before the war the Liberian Dollar was being exchanged at par with the US Dollar, now it is fluctuating around L$60 for a shine of 1US$.

Mismanagement by the past regimes left an inherited external debt burden, estimated at about US$ 3.7 billion as of mid-2005, equivalent to an astonishing 800 percent of GDP and 3000 percent of exports. Domestic debt and non-salary arrears are estimated at about US$ 700 million, a significant part of which is owed to the banking system (including the Central Bank of Liberia).

Relatively few foreign investors have returned to the country since the end of the civil war due to the depressed business climate and continuing instability. Timber and rubber are Liberia's main export items since the end of the war. Liberia earns more than $85 million and more than $57

million annually from timber and rubber exports, respectively. Alluvial diamond and gold mining activities also account for some economic activity. The sanctions on Liberia (on production and sale of ore, diamonds, gold and timber) are still hanging. A member of the Liberian Timber Association, representing both local and foreign companies, whispered in my ear in a Forestry management meeting, “we want to start producing now, November 1977 is too far, we are losing revenues”. The problems are huge: former governments issued logging licenses on an area 6.2 times the total area of forest in the country. The Forestry Reform and Monitoring Committee, representing all local and foreign, formal and community representatives is working on a new mode of operation: transparent, environment friendly and subject to efficiency and accountability measures. Efforts are on going to build monitoring and control capacity, create awareness and build safeguards and create management systems leading to the implementation of the National Forestry Reform Law of 2006.

Being the second-largest maritime licenser in the world--with more than 1,800 vessels registered under its flag, including 35% of the world's tanker fleet--Liberia earned more than $15 million from its maritime program in 2004.

Liberia's business sector is largely controlled by foreigners, mainly of western, Lebanese and Indian descent. There also are limited numbers of Chinese engaged in agriculture and fishery. There also are significant numbers of West Africans engaged in cross-border trade.

Liberia is a member of ECOWAS. With Guinea and Sierra Leone, it formed the Mano River Union (MRU) for development and the promotion of regional economic integration. The MRU became all but defunct because of the Liberian civil war, which spilled over into neighboring Sierra Leone and Guinea. There was some revival of MRU political and security cooperation discussions in 2002.

Beyond imposing a travel ban on individuals most closely associated with the Taylor regime, the United Nations imposed sanctions on rough diamond imports from, and arms exports to, Liberia in May 2001 for Liberia’s support to the brutal rebels of the Revolutionary United Front (RUF) in neighboring Sierra Leone. The UN renewed these sanctions in 2002 and in 2003, it sanctioned Liberia’s export of timber. In December 2004, the UN essentially renewed these sanctions for one year.

International trade, the most important component of trade in the country has suffered immensely from the war years. Prior to the civil conflict, exports stood at over US$460 million. By the 1997 elections, export earnings had dropped dramatically to a mere US$25 million but rose substantially in the following year to US$42.7 million. Traditionally exports consist of rubber, timber, iron, diamonds, cocoa, and coffee. Relative shares over the years have shifted substantially from other sectors to rubber and timber. Out of a total of US$108.7 million export earnings in 2003, 94.8% was attributable to rubber (US$54.3 million) and timber (US$39.3 million).

Prior to the civil strife Liberia’s imports amounted to over US$250 million but were reduced by over 100% by 1998. Among the most important imports are Fuel, chemicals, transport equipment and food products. Imports declined gradually from a peak of US$481 million in 1978 to an estimated US$146.4 million in 2000, in 2001 the skyrocketed again reaching US$229 million. After a slight fall, imports reached almost US$400 million in 2004.

The external trade balances continued to be negative since 1997. Imbalances reached an unprecedented low in 1998 and went upward again through 2002.

The trade deficit stood at approximately US$50 million by December 2003. Betwee January and June 2004 the World Bank-projected deficit stood at US$ 50 million. Trade imbalances have taken their toll on the economy largely due to the decline in purchasing power with negative consequences on the economy.

This resulted from two pressures: the primary one is the high demand for foreign currencies to sustain imports with corresponding effect on purchasing power and thus on living conditions. The second one is the shortfall in export earnings which translated into low productivity and rising unemployment. As a consequence people's choices are curtailed and their livelihood suffered.

Internal trade was limited over the period to the informal sector, which is the condition till this day. Trade activities, whether they are domestic or foreign, have varying and considerable impacts and linkages to the environment. Changing trade regimes affect the environment, and stricter environmental regulations and public environmental awareness affect trade. When trade is unregulated, operations tend not only to get out of hand, but also lack of control results in squandering natural resources and high levels of waste generation and pollution.

Some international environmental treaties related to trade that Liberia is signatory to include the *Convention on Trade in Endangered Species of Wild Fauna and Flora* (CITES), the *Montreal Protocol on the Phase Out of ozone Depleting Substances* and the *Convention on the Trans-boundary Movement of Hazardous Wastes* (Basel/Bamako Convention).

The potential for *tourism* in Liberia is very huge. Due to the war there has been no tourism activity in the country. This is due to the lack of peaceful and safe conditions necessary for tourism.

The population – especially during the war – relied more intensively on the forest products. There is no known culture or tradition of work in the country by majority of the inhabitants in the rural areas – townships. The people depended on bushmeat (deers, antelopes, gazelles, monkeys, wild rats, grass cutters, etc.), tubers and wild vegetables and fruits for living (palm cabbage, okra, etc). Poaching was thus a very important economic activity. Although poaching is unorganized, the population density is relatively low (34 persons/m^2) not much damage may occur in the very short run. However, alternative means of living, labour skills and entrepreneurship may turn the inhabitants of the rural (mostly forests) areas away from poaching. The example of *Campfire* of Zimbabwe, where local rural residents are made to give up poaching and act as guardians to the wild animals living around them (their traditional property), were also benefiting from hunting licenses issued to tourists. They thus earned income from their wild animals and had time to develop other skills as education was available to their off-springs.

Of course, tourism in Liberia would need huge infrastructure investments in hotels, resorts, transport, etc. Continued conditions of peace may create the right circumstances for such development, given that the government would prioritize this aspect in future development plans and create the appropriate enabling environment.

Pressure. Economic recovery is fostering transports. Most Liberian roads are unpaved and become impassable during the rainy season, while during the dry season cause air pollution.

The clogging of surface water ditches with waste causes flooding and associated health risks.

The disposal of ships at the end of their life cycle has implications for the environment.

Ships can contain asbestos, oils, heavy metals and polychlorinated biphenyls (PCBs) that represent a risk to human health and the environment.

Mitigation. EIA and EMP should be integrated in economic activities, such as road rehabilitations, creation of public and private infrastructures.

Debt-for-Nature Swaps (DNSs) scheme that allows for the cancellation of external debt in exchange for a debtor's commitment to mobilize domestic resources for an agreed environmental purpose.

3.5.4 Energy and emissions

There are several sources of energy in Liberia. The major ones so far are biomass, hydro-electricity, petroleum and renewable energy resources.

Prior to the civil armed conflicts, the total installed electricity generation capacity was 412 MW. Over half of this was owned by the private sector. The Liberian Electricity Corporation (LEC) had a 64-MW installed hydropower capacity, accounting for 33% of its total pre-war capacity. Overall, 52% of pre-war capacity was heavy fuel (bunker) oil thermal, 31% light oil thermal and 17% hydropower.

In spite of the woes of war, benefits are drawn from the situation: war provided the impetus to switch from the 120/240V, 60Hz North American Power System to the 400/230V, 50Hz IEC/West African Power System. The once power closed economy is now open for imports and stands a good chance for interconnecting to the power facilities of the neighbouring countries, e.g. Cote d'Ivoire.

Biomass Energy. According to the UNDP, about 99.5% of the population relies on biomass (firewood, charcoal and palm oil) for their energy needs. This trend poses a threat to biodiversity and forests, since the production of these traditional fuels is done in an unsustainable manner. It is estimated that MT 960,000 of trees are cut down annually to produce charcoal for the Monrovia area alone.

Unfortunately, fuelwood and charcoal market came to be a lucrative one: generating employment and sometimes as much as 40% of their total income. The Central Bank of Liberia reports that in 1998 a total of about 14,800 kilograms of charcoal were produced, rising to 225,600 kg in 1999. Charcoal production in 1999 accounted for 9% of GDP, up from only 2% before the war. The FAO reports that charcoal is fast becoming an important export commodity. The slow pace of restoring electricity supply will result in the continued use of charcoal.

Use of fuelwood has important health, socio-economic and environmental implications: indoor use causes CO_x pollution, costs of the time and distances travelled to collect firewood, and destruction and degradation of the forest. The rural three-stone and urban cook stoves are inefficient technologies.

Electricity demand and growth. Demand for power grew exponentially in the initial years to the creation of the Monrovia Power Authority (1960), when power was not expensive. In the following 20 years (1970-80) power price shot up because of growing fuel costs and demand growth dampened. On average over this 20-year period, electricity generation grew at 12.6% annually from 45-428 GWH, while peak demand increased at 11.2% annually from 9-68 MW.

According to Konai (2004), under the rural electrification programme, which began in 1978, total installed capacity was 13 MW in 1990. In 1981, peak power demand ranged from 100 kW in Bellefanai with a 3% annual projected growth rate, to 1.4MW in Gbarnga with a 7% projected annual growth rate. By 1988, Bellefanai's peak load had increased to 160 kW. Rivercess had come on stream at 110kW and Gbarnga had grown to 1.98 MW. Future projections were based on an average 5% growth rate with 20.5 MW predicted in 1999. Demand for electricity is forecast to rise at an average of 10.3% per year to 2010, then average 3.4% to 2020. Peak power demand forecast for 2020 is 120 MW, and energy demand 1,100 GWh.

Fossil fuel generation capacity. Before 1989, the Monrovia Power System consisted of both thermal and hydro-generating facilities with a combined installed capacity of 182MW. The Mount Coffee Hydro Power Plant accounted for 64MW and thermal power plants consisting of the gas turbines plant, the slow-speed diesel (Luke Power Plant) and the medium-speed diesel (Bushrod Power Plant) contributed 68MW, 40MW and 10MW respectively. The average annual energy production of these plants stood at 435.0GWh in 1989. Today, the LEC Monrovia Power

System consists of one generating plant with a combined installed capacity of approximately 6.9MW. The Bushrod Power Plant consists of 5x1720kVA medium-speed SKODA diesel generating units.

Structure and capacity of distribution. The transmission and distribution facilities consisted of ten manned and six unmanned substations with a combined installed transformer capacity of 260MVA. The transmission network consisted of double and single circuits 69-kV lines that spanned about 460km strung on wooden poles, lattice steel towers and tabular steel poles and extended 45km northeast to Kakata City, 29km northwest to Tubmanburg and 121km southeast to the City of Buchanan. The distribution network consisted of approximately 800km of 12.5kV overhead and underground circuits. All of these facilities were virtually damaged due to the civil conflict. To date, over 12km of 11-kV distribution lines spanning parts of Bushrod Island and central Monrovia have been rehabilitated using retrieved materials. This rehabilitated portion of the network constitutes about 25% of the first-phase zone that was earmarked for Project LUX.

Until 1989, Liberia was the only country in Africa that operated a power system based on the North American standard of 60Hz, 220/110V customer voltage. Today, drawing on "benefits" of war destruction, Liberia has effectively converted its power system from the North American standard of 60Hz, 220/110V to the IEC or West African standard of 50Hz, 400/230V customer voltage.

Non-technical losses have been very high: 40% of the generation. Energy theft rate on the LEC distribution network continues to be the main factor responsible for the LEC's inability to sustain its operations**.** This has adverse management implications. The high losses hamper efforts to allocate resources efficiently which in the long run could adversely affect the environment. The LEC recently established the Energy Monitoring Department to address the matter.

Tariffs and subsidies. Due to higher fuel input prices operating expenses between 1970 and 80 increased sharply. In 1974 tariffs were increased 40 to 60%. The current tariff is US$0.25 per kilowatt hour (kWh). This is not felt by the general public due to the absence of electricity supply. According to ECOWAS with 100 % electricity production generated from oil products, increases in crude oil prices will have devastating effects on the cost of electricity. When electricity is restored, there will be need to initiate social tariffs especially in light of the poverty situation. Social tariffs are designed to serve social and welfare objectives.

Rural electrification system. Rural electrification started in 1954 when four power stations (13-MW) were constructed in Robertsport, Grand Cape Mount county, Buchanan, Grand Bassa county, Greenville, Sinoe county, and Harper, Maryland county. Eleven outstations were established before the war and an additional three were under construction at the onset of the war. At this time, the Rural Electrification System had 90 miles of 12.5-kV three-phase and 7.2-kV single-phase distribution lines and 26 miles of low-voltage service lines, about 570 distribution transformers and more than 1 700 wooden poles. At the onset of the civil war, the total number of consumer connections had grown to about 9 000, of which the Gbarnga outstation was by far the largest with 2 500 connections. The Rural Electrification System served people in eleven population centers in rural Liberia. Electricity theft is much less rampant in rural power supply than in urban distribution where in high density areas households are intermingled realities.

Hydroelectric power. In 1990 there were two main hydropower stations with a total generating capacity of 64.8MW or 24% of the total installed capacity of 304 MW in the country. These were the Mount Coffee and the Firestone hydro-power plants. A community micro-hydro power station of 30 kW was also operational at Yandahun in Lofa County). The Mount Coffee and Yandahun Plants were destroyed during the war but the Harbel plant is still operational.

The Mount Coffee Hydropower Plant was basically a run-off river type located on the St. Paul River about 21 miles from Monrovia. Owned and operated by the Liberian Electricity Corporation, the first phase of the project was completed in 1966 and consisted of two generating units with installed capacity of 34 MW. In 1973, two additional turbines were added to increase the plants output to 64 MW. The plant's dependable capacity is limited to 10 MW, which corresponds to generate at minimum flow (the normal flow) in the river during the dry season. This power station has not been operational since 1990 due to damages of the war.

The Firestone hydro-power project was the first hydroelectric power station to be built in Liberia. It was constructed in 1942 at Harbel on the Farmington River to meet the demands at Robertsfield and the U.S Military Base. This station, which is still being operated by the Firestone Plantations Company, consists of four generators with a total capacity of 4.8 MW, which amounts to annual energy production of 1.6x10 3 KWH.

Petroleum products. Liberia Petroleum Refining Company (LPRC) was established in 1978, following the Government's purchase of the assets of Liberia Refining Company, owned by two American firms, Sun Oil Company and Dynalectron Corporation, and Liberian shareholders. The refinery was operated by Sun Oil until late 1976, when it was shut down as a result of a major fire. Although the refinery's rated capacity was 15,000 barrels of crude a day, actual throughput never exceeded 12,700 barrels per day (b/d). Production capacity included 200 BDOE of LPG, 2,300 b/d of gasoline, 1,200 b/d of jet fuel/kerosene, 3,300 BDOE of gas oil, and 7,500 b/d of fuel oil.

In 1983, The People's Redemption Council decided that LPRC should import all its products, in effect shutting down the refinery. To date, all petroleum products are imported in the country. In 1982, the country's oil import bill was US$ 94 million, representing 22% of its total import bill.

Petroleum exploration and development. Exploration for petroleum in Liberia's offshore areas began in 1968 when seismic studies and drilling took place in the shallow waters of the continental shelf. Despite several encouraging findings during this early period of exploration, work was stopped in 1972 after four dry wells had been drilled. In 1980, a World Bank loan was obtained to carry out seismic studies in the hope of attracting renewed interest on the part of oil companies. This proved successful in 1983, when Amoco obtained the rights to explore six of Liberia's nine offshore blocks. Drilling commenced in October1984. The first two wells showed interesting conditions, but no significant quantities of oil or gas. Another loan in 1984 was to provide funding for more detailed seismic exploration in the blocks not taken by Amoco.

Onshore exploration for oil and natural gas began in the Roberts and Bassa basins in 1981 when exploration rights were granted to a private group, Katana Resources, Incorporated. Air-borne gas sensing surveys were carried out, and plans were made for drilling. However, in 1982 Katana experienced financial problems and relinquished its rights in the area.

According to the ECOWAS white Paper for Regional Energy Policy, Liberia is among the countries with no crude oil reserves, no natural gas reserves and no coal reserves (ECOWAS/UEMOA 2006).

Development of renewable energy technologies. Renewable energy sources include all sources of energy captured from on-going natural processes, e.g. solar and wind power, water flow in streams (hydro power), biomass, bio-diesel and geothermal heat flows. Renewable energy technologies are environmentally benign.

The LEC has already recognized the need to pursue the development of small to medium scale renewable energy sources such as solar, mini-hydro and biomass and this must be supported and encouraged. These options should be considered as part of a plan to provide electricity services in areas not served by the Monrovia grid. UNDP has undertaken solar energy needs assessment, and has initiated a process that would enable provision of solar panels to some rural communities

in Grand Cape Mount and Bong Counties. The communities will expand depending on realization of the MDG Village concept in Liberia. UNDP sees this as a way of reducing energy shortage and a means of poverty reduction.

For the many people without access to basic energy services and with no prospects of getting such access, renewable energy can often be the cheapest option in the long run. However, scarce financial, human and institutional resources as well as cultural issues constrain the sector. For instance, socio-cultural beliefs surrounding the use of human waste as biogas feedstock, and high investment costs have hampered the development of biogas in Liberia. The available data indicates that only one biogas digester exists in Liberia and it is located in Galai, Suakoko district, Bong County.

Liberia is situated in a low wind region. Information needs to be collected on annual windflows to judge the country's potential on windpower. Liberia's high rainfall climate may mean low annual insolation (sunshine) levels along the coast but significant inland insolation levels. So photovoltaic (PV) and thermal applications offer the greatest potential inland, especially for medical facilities where cooling facilities are required.

Energy emissions and climate change. Climate change is caused by the emissions of greenhouse gases into the earth's atmosphere. The greenhouse gases are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs). Carbon dioxide (CO_2) is responsible for 50-60% of the local emissions into the atmosphere in Liberia. Most of these come from the consumption of petroleum products.

Key sources of greenhouse gases in Liberia include fuel combustion in power plants and transport, the use of charcoal and fuelwood, burning of forests products for agricultural purposes and the solid wastes incineration (open burning). There are other minor sources such as industrial fuel combustion and emissions from vehicle and aircraft exhausts. Thermal power plants are a major source of greenhouse gases as well as suspended particulate matter and oil waste. The breakdown in electricity supply over the years led to the proliferation of generators in the country, an important source of greenhouse gases but also POPs. It is estimated that there are about 45 000 small privately operated generators, concentrated mainly in Monrovia (EPA 2004). Air pollution from vehicle emissions is increasing especially in Monrovia where the main fleet is concentrated and traffic jams are a common feature. The majority of imported vehicles are outdated second hand ones, their efficiency is low and they are prone to high levels of emissions.

The National Capacity Self-Assessment project identified a number of activities in Liberia that contribute to climate change. These include:

- Shifting cultivation with a fallow period of less than 12 years,
- Uncontrolled logging,
- Charcoal production,
- Lack of resources to develop adaptive capacity,
- Lack of public awareness, education and training,
- Lack of data on national GHG emissions, and
- Improper waste disposal.

Suggested measures for adapting to and coping with these issues are: cultivation of climate-tolerant varieties of plants and animals; promotion of irrigation; sustainable forest, fishery, wetland and water resources management; development of partnership and technology transfer; and the implementation of identified mitigation and adaptation strategies. On a global scale, Liberia's contribution to global warming is negligible. Liberia is likely to be disproportionately affected by the impacts of climate change. The forest potential may decrease the country's overall CO^2 generation and may lead to negative loads of CO^2, or emissions trading potential.

Increasing GHG emissions may cause dangerous changes in the climate system. Higher temperatures and more extreme weather events are likely to have major impacts on people and the environment. These impacts will be most severe in the least developed countries where people depend on climate-sensitive sectors for their livelihoods. Liberia will be highly vulnerable to climate change due to limited adaptive capacities and widespread poverty.

Sea level rise and increased flooding are some of the expected impacts. It is predicted that global warming will be accompanied by a rise in sea levels of as much as 60-100cm over this century (EPA, 2005). This could result in the subsidence of low-lying coastal areas or communities such as West Point Township and Buchanan with consequences for Liberia's coastal communities, biodiversity and ecosystems.

Over the past 40 years Liberia has experienced a number of climate-induced disasters, including floods in West Point Township (1965), Kakata (1983), Suakoko District, Bong County (1984), Jagaka town, Grand Cape Mount county (1997), Zoe-geh and Gbelly-geh districts, Nimba County (2001), and Gbarnga (August 2005). The Meteorological Service of UNMIL predicted that a violent hurricane would hit Monrovia on July 25-26, 2005 but fortunately this never occurred.

It is said that global warming could extend the range of disease-causing vectors such as mosquitoes. This could lead to an increase in diseases such as malaria. Forests and wetlands could be affected by higher temperatures and changes in rainfall. The possibility of forest fires becoming more intensive and frequent will be high. Any significant change in the climate in Liberia will also disrupt the growth of some crops in certain seasons. Farming practices will also be expected to change with the change in climate.

Efforts to deal with climate change. Liberia ratified the UNFCCC in November 2002 and began an 18-month *National adaptation programme of action* (NAPA) project in February 2004 in line with Decision 28/CP.7 of the Conference of the Parties of the UNFCCC. This project, funded by the Global Environment Facility (GEF), is implemented by the United Nations Environment Programme (UNEP), and executed by the Environmental Protection Agency (EPA). The project management team is directly supervised by the National Committee on Climate Change (NCCC), consisting of a number of key stakeholders from civil society, the public and private sectors. The NCCC, chaired by the Ministry of Lands, Mines and Energy was established to coordinate all climate change enabling activities such as policy and community education and public awareness initiatives. The NCCC liaises and collaborates with the UNFCCC Secretariat and the IPCC Secretariat through the climate change focal point at the EPA. The NCCC comprises Task Forces on GHG Inventory, Mitigation, Cross-cutting Issues, and Vulnerability and Adaptation.

Mitigation. Pilot energy villages project on different energy options

Integrate in community development projects demonstrative initiative on more energy-efficient technologies such as eco-stoves, improved charcoal manufacturing techniques and improved fish smoking techniques.

Agro-forestry production should be enhanced, promoting growth of fuelwood species in the farm. In such schemes women play a major role in trees cropping and trade of fuelwood

Environmental standards related to the transportation and storage of fuel should be further developed and implemented, from instance from port to gas stations

3.5.5 Poverty

Over 80% of the Liberian population suffers from income poverty, living below the universally established poverty line of US$1/day. According to a Poverty Profile Study, poor households in Liberia live on approximately US$11.32 per month to feed an average of six people. This means

that a typical poor household lives on a daily amount less than US$0.50 /day. The situation is worsened when considering that over two-thirds of that income is spent on providing food for the family, leaving little or nothing for basic education, health care and leisure.
This results in deterioration in the living standards and quality of life of the citizens, with most not having jobs that can support a decent standard of living. Income-generating opportunities are limited as a result of the conflict, a narrow economic base, disruption in local farming and trading systems, loss of personal assets and a breakdown in social capital. These factors have contributed substantially to income poverty.

3.5.6 Gender balance

Gender is not yet much taken into consideration and is much need of promotion. Liberian society is characterized by high male domination. Women are victimized and the rate of rape and sexual violence are common and represent a relatively very high incidence. This is not attributable to war conditions only but the social values among the youth are rather transiently responsible for this trend. Most if not all local leaders are men, entrepreneurs among women are not common or represent an insignificant ratio.
The levels of maternal mortality are high in spite of access to health services directed to this social group.
Women in Liberia are particularly vulnerable as a result of exclusion, marginalization, and gender-based violence. Though not quite current or applicable to post-war conditions, the 2001 Poverty Profile indicates that 78 percent of male-headed households live in poverty (55 percent in severe poverty) compared to 69 percent of female-headed households living in poverty (42 percent in severe poverty). But it is important to note that these income poverty statistics do not highlight non-income aspects of poverty and the special vulnerability of children and women in an environment of lawlessness and war, especially the high likelihood of exploitation and violation of their human rights.

Gender-Related Index in Liberia

Index	1999		2005	
	Male	Female	Male	Female
Population Share (%)	49.9	50.1	49.6	50.4
Life Expectancy Index	0.275	0.305	0.270	0.338
Adult Literacy	0.446	0.188	0.446	0.188
Combined Enrollment	0.652	0.523	0.643	0.550
Education Attainment	0.515	0.300	0.512	0.309

Source (adapted): UNDP, National Human Development Report, Liberia, 2006.

UNDP is conducting education programmes to incorporate gender in project planning and implementation as a means of empowerment of women and encouragement of their participation in the development process. They are also being taught how to use gender as a tool for project formulation.
The table above shows the status of females and males in each of the three dimensions (life expectancy, educational attainment and income). The equally distributed income index could not be calculated because of the lack of data. Had it been possible, female and male indices in each of the three dimensions would have been combined to derive the Gender Development Index (GDI).

3.5.7 Social services

Health care is almost non existent due to lack of funds, qualified personnel and looting. Access to health care is estimated to be 10%. Health expenditure is US$2.00/capita – Côte d'Ivoire is 8

times this figure. Only 25 doctors were employed by the public healt services in 2003 as majority of those who remained decided to join the private sector.
Malaria, acute respiratory infections, measles, and diarrhea are major causes of morbidity and mortality in Liberia. A large portion of the population is living in temporary camps under poor sanitary conditions and only 26% of the population has access to safe drinking water.
Malnutrition is prevelent among 26.5% of the children below the age of 5 in 2000. The situation worsened drastically after the skirmishes during the war time. In 2003, there was an outbreak of a cholera epidemic in Monrovia, totaling 26 651 cases by December. HIV/AIDS prevalence in Liberia is estimated at 11–12%, but in some urban areas the figure can be up to 20%. Malnutrition is pravelent among 26.5% of the children below the age of 5.
During the war 75% of the educational infrastructure was damaged. Illiteracy is high, estimated at 63% countrywide and it is worse among women and the rural population (87.5%).
In early 2003, the enrolment at the primary school level was at 50% of the school going age for boys and 24% for girls (the overall ration in 2000 was 99:2%), and only 35% of boys and 27% of girls reached the fifth school year (enrollment to secondary and tertiary was 32 and 15.5% respectively in the years 2000 and 2004). To compare the change in educational enrollment for girls and boys one has to consider the ratio of girls to boys in primary and secondary schools which was in the region of 73% in the year 2000. The University of Liberia is situated in Monrovia and has eight faculties with about 10 000 registered students. Due to the long-term conflict and the looting that took place, the University infrastructure is largely destroyed.
Pressure. Communicable diseases, especially malaria, acute respiratory infections and measles along with diarrhea are major causes of illness and mortality in Liberia. In 2003, there was an outbreak of a cholera epidemic in Monrovia, totaling 26 651 cases by December. HIV/AIDS prevalence in Liberia is estimated at 11–12%, but in some urban areas the figure can be up to 20%. Poor sanitation and access to safe drinking water have caused the outbreak of disease. The uncontrolled digging of wells has resulted in inadequate water quality for many. To meet energy needs, the local population has resorted to uncontrolled production of charcoal, which has caused significant deforestation in several areas, including mangrove forests.
Environmental education in the school curricula should include practices such as seen nurseries, disposal managements (compost production), etc.
Primary health care schemes, valorising traditional healers and traditional birth attendants, as first resources in the rural areas

3.5.8 Security issues

About 800,000 Liberians have been displaced in the 15 years of the conflict. Before camps were organized for internally displaced persons, the tendency was to settle such people near large cities and allow them to clear land build shelters, and later in camps far from large cities. Between November 2004 and September 2005, a total of 216,098 IDPs received their return assistance representing a total of 41,759 families. By 2006 their camps have been closed and displaced people has returned to their home or contributed to the growth of the urban areas of Monrovia and other coast towns. Such mass displacements have been accrued by the incoming of refugees from Sierra Leone first and Ivory Coast later. The establishment of refugees camps, along international rules, and later the repatriation programs have contained the environmental impacts due to the fast creation of human settlements. Anyway, migrations have resulted in modification of the space distribution of the population across the country and in the breach of the relations among and between communities, especially with reference to the territorial ownership and balanced use of natural resources.

Rural-to-urban migration is on the increase. Many migrants are attracted by potential economic and social opportunities, particularly trade, employment and education. Most urban dwellers are found in cities along the Atlantic coastline. Monrovia is the largest city with a pre-war population of about 250,000 people and presently, due to increasing insecurity in many parts of the country, hosting about 1,000,000 dwellers. There are signs that rural-to-urban migration is having an impact on population growth. In rural areas, children are seen as assets or a form of riches.

Pressures. IDPs and migrations have changed the relations between dwellers and the environment. Forests around the majority of the camps have been cleared to establish the sites and to provide wood for cooking and construction. The majority of the population uses either pit latrines, toilets connected to septic tanks or open defecation. In some cases faeces are put in plastic bags and disposed of in drainage channels or with domestic waste. These practices have the potential to contaminate ground and surface water and thereby pose risks to human health.

Most IDPs camps were large, and there was no environmental impact assessment (EIA), neither was a post-closure strategy developed. Biodiversity was destroyed and sanitation was a problem. In some places pit latrines were erected at elevations higher than drinking wells, contaminating the ground water.

The high growth rate of the capital and other urban centers is partly based on migration. During mass movements, the people clear large areas for agriculture, settlements or to support livelihood and basic needs. Biodiversity loss, degradation of ecosystems and the illegal exploitation of mineral resources are symbolized by the movement of several thousand people into the Sapo National Park during hostilities. Some engaged in alluvial mining for gold, others set up hunter hamlets or undertook slash and burn agriculture. While they were eventually moved from the park, in-roads and establishment of new settlements are frequent in protected areas, due to affluence of intact natural resources (mineral and biological) there, a strong attraction for people, often ex-combatants, lacking economic opportunities elsewhere and wonted to bear weapons.

Mitigation. Continue community development initiatives linking social welfare to income generating activities, through participatory approaches. Reconciliation components included in such projects governance.

3.5.9 Cultural and spiritual values

Traditional approaches for conservation and use of biodiversity include secret societies, traditional healers and hunters, traditional norms and taboos, sacred groves, and rotational farming.

Secret societies. One of the many institutions for conserving the environment in rural Liberia is the powerful Mande society called Poro. This is an all-male institution that imparts knowledge about the culture, traditions and customs of the society. The Poro is both a political and religious organization as well as a no-appeal court system for the tribe. Some of the Poro initiates are taught the sacredness of the environment and the need for conservation. As a political institution the Poro oversees the observance of taboos on sacred groves and water bodies. In addition, they can place a ban on hunting during certain times of the year to allow for reproduction of the species to go uninterrupted.

The Sande is a Mande, all-female, institution giving instruction to young women in the customs and traditions of the community, the role of women in society and their rights, duties and responsibilities. The Sande's contribution to conservation begins during the period of initiation when initiates are imparted knowledge on flora, fauna and aquatic life. Prudent use of environmental resources forms a part of the curriculum in the Sande. At the end of the initiation period, a number of graduates go on to become herbalists and traditional healers.

Norms The dependence on community compacts in traditional society explains the binding force of norms. The sustainability of the community and conservation of the environment depends therefore on the legitimacy, which its members accord the norms of the society.

In Liberia Taboos are basically of three. Those observed by individuals within the tribe as a condition resulting from intermarriage; those sanctioned by the community; and those observed by members of extended families and clans. Some taboos prohibit particular clans from eating certain fauna and flora. A clan taboo is observed by all of its members. Other taboos prohibit hunting in places regarded as abodes of ancestors and or evil spirits. Another kind of taboo prohibits fishing in certain bodies of water in which the fish are considered humans in fish form waiting to be conceived by barren women. Taboos are enforced by institutions such as the Poro and Sande societies, as well as by heads of extended families or clans.

Traditional healers harvest in a sustainable manner only taking the required parts of a tree or shrub. They do not kill the whole plant. Previously when medicines were not for commercial consumption, depletion of these species was not an issue, but now propagation methods might be necessary. Among the Mande speakers, particularly the Poro, traditional healers are organized into guilds. Their advice and recommendations have led to restrictions on the felling of certain trees during the period of cultivation or without sufficient cause.

Traditional hunters know when the life cycle of animals and when to hunt and when not to hunt. On detecting a decrease in faunal populations they take a decision not to hunt and this is enforced by the community under the leadership of Poro and Sande societies.

Rotational farming is one of the few and most effective methods of conserving flora in the rural setting. The farmer abandons the area cultivated and leaves the land to fallow for at least five years.

Additional flora that were felled or cut during the previous period would have grown enough for use as firewood, timber and herbs, as long as the farmer returned to the same plots therefore the system remained sustainable.

Sacred groves are perceived as abodes of ancestral and evil spirits: cutting of trees or hunting is prohibited in sacred groves.

4. Environmental Issues

4.1 Key environmental issues

In order of priority, the key environmental issues, are: (i) Natural resources degradation (forestry, land, water); (ii) Loss of biodiversity in the country's main ecosystems: e.g, forests, mangrove, marine ecosystem, wetlands; (iii) Socio-economic environment: dropping socio-economic / MDG levels in health (high prevalence of major diseases, HIV/AIDS, access), access to water and access to education.

These key issues fall within the framework of poverty reduction, which is the country's first priority at this stage of development and, thus, overshadows and incorporates all environmental considerations and efforts.

The main forces leading to natural resource degradation are:

- The increasing pressure on the limited resources (forests, land, water, energy), which in turn is caused by
- The civil war and its impact on natural resources exploitation,
- Lack of an operational policy and legislative framework and a weak institutional and manpower capacity to implement the newly developed policies, especially the environmental policy and act, the forestry act, and the corresponding land, energy, water and mining policies regulating the use of these resources;
- Overtly high dependency on forestry, mining and fishery and few artisanal skills for a livelihood and lack of alternative employment;
- Lack of infrastructure in the energy, health, education, transport, agriculture, fishery, water supply, and waste management;
- Extreme levels of poverty in both the urban and rural areas accompanied by lack of skills, entrepreneurship,
- Low productivity in agricultural systems and unsustainable methods of production: shifting cultivation, slash and burn;
- Unsustainable use of resources at the micro and macro levels;
- Inadequately designed and managed settlement schemes.

Shrinking of forest areas in the last 15 years by more than 10% is a direct result of mismanagement during the war, which, in turn lead to the vicious fuelling of the war, thus leading to:

- unsustainable use of the forest resources by the local population, slash and burn, shift cultivation, pit sawing, risk of further endangering biodiversity and protected zones.
- Encroachment of forest areas, leading to de-forestation, soil erosion on hilltops and slope areas.
- Increasing dependence on the forest and forest products for livelihood and neglecting development of necessary skills for more sustainable form of employment (vocational and technical training, education, or swamp rice production on the vast marshlands).
- Loss of basic infrastructure, e.g. sustainable energy sources lead to resorting to unsustainable use of the forest for energy (charcoal, firewood from mangrove, etc., destruction of energy facilities),
- Limited monitoring, control and management skills and organization tools, with spread of damaging practices in the exploitation of natural resources for fisheries, forestry, artisanal mining and agriculture production.

The key symptoms of natural environment degradation are the loss of forest cover, (1.5% per year, or Ha/year 60,000 lost out of Ha 3,480,000 of total forest area), the increased coast erosion and loss of mangrove areas, and the loss of bio-diversity.
The main effects of resource degradation are:
- Decreased economic base and risk of sustained inefficient techniques for the livelihoods;
- Increased occurrence and increased intensity of droughts and floods; and
- Increased poverty.
Main areas/sectors for intervention in addressing resource degradation are:
- Creation of a regulatory framework for the use of natural resources, mainly through the creation of a comprehensive policy framework in land, water, mining, agriculture (including animal production), fisheries, trade and industry, and perhaps tourism;
- Increasing the agricultural and livestock productivity, adapted to the different agro-ecological zones (high/low lands); reversing the loss in the forest cover (reforestation), and
- Creation of alternative employment opportunities to release the pressure on natural resources.
Loss of biodiversity is closely related to resource degradation. Depletion of bio-diversity mostly depends illegal logging, over-fishing, poaching, all posing a significant threat to the country's major ecosystems: (i), forests (ii) fisheries, (iii) coastal and marine ecosystems, (iv) forests, and (v) farmlands.
The degradation of the socio-economic environment is visible in (i) the access to health services, education and drinking water supply (ii) poverty (iii) gender issues, and (iv) energy supply. Liberia has been showing dropping socio-economic indicators in health, water supply and education in the past two decades. Issues of HIV/AIDS have been mentioned above.
All the above described key environmental issues are clearly reflected in the outcome of the iPRS consultations. The key sectors identified for poverty reduction are: (i) Forestry, agriculture (including fishery and animal production) and rural development, (ii) Human resources development and (iii) Physical infrastructure (roads, water, energy).

4.2 Environment and poverty

The relationship between poverty and environmental degradation is evident: poverty causes and fuels environmental degradation and, at the same time degradation is caused and fuelled by higher levels of degradation. The poor depending on natural resources would tend to use more of it in situations of scarcity of the resources themselves. These people, who may lack means and skills to harness resources in an efficient way, are forced to use their environment crudely and without being able to think of the long term. The vicious circle of dependency, lack of skills and alternative resources continues until the resource is used up. In conditions of lack of knowledge or awareness/guidance, the poor would shift to adjacent places and the degradation continues on the marginal zones. This is exactly what is happening in Liberia in the case of crude shift cultivation or *slash and burn* farming practices. Eventually, such people may seek alternative employment in urban areas and such migration would further escalate urban poverty, crime and social destitution. Addressing resource degradation therefore largely coincides with addressing poverty reduction.
More specific effects of environmental degradation on the poor livelihoods are:
- Decreasing available agricultural land and decreasing soil fertility. The per capita available agricultural land would tend to decrease. Although arable land in Liberia is still abundant and unused, yet such behavior should not be encouraged, not only because of its wastefulness but only because of its destructive effects on the environment and the biodiversity in the case of

dependence on forest animals and rare wild plants. In some cases this may lead to decreasing water levels in the major water bodies and biodiversity loss leading to decreased fish catches.
- Decreasing availability of wood fuel, leading to higher prices and to longer distances for fuel-wood collection. The loss of mangrove for fuel wood and pit sawing coupled with liiegal logging are widely known examples in Liberia, which need to be handled in these early stages in the after war time.
- Migration from the rural to the urban areas where insufficient employment opportunities are available, leading to further impoverishment. Liberia has experienced this migration during the war times, where large numbers migrated to other cities, to Monrovia or to neighboring countries. On return some of their lands were occupied by other migrants from neighboring countries and disputes of this kind are known between, for example, the Maniko who went to Guinea during the war and, on return found the Mandingo who occupied their land and are not willing to relinquish them. In other cases a migrating group may not return, but would settle in an urban area and cause more misery for themselves and impact the limited services in the urban areas, for which they may not be able to pay either.
Substantial investments are needed in safe water supply. Access to safe drinking water is 25% in urban Liberia while the ratio plummets for rural area dwellers: only 4%. If we note that 90% of the population depends on underground water and that 82% of that is undeveloped (using surface wells) the task is still very huge. Bove all 80% of urban dwellers depend on water delivered by tankers and, according to the Liberian Ministry of Lands, Mining and Energy, responsible for water management, these city residents are ready to pay for piped water as they will be paying for comfort they have long since sought.
- The significant negative impacts of the HIV/AIDS pandemic on the working and productive age group of society. The prevalence of AIDS/HIV in Liberia is estimated to be 11-12%, but in some urban areas the ration reaches 20%.
- Loss of endangered species is another risk which may affect resettled dwellers. The Upper Guinean Forest Zone extends across the borders of eastern Sierra Leone, south eastern guinea, Liberia, Côte d'Ivoire, Ghana and eastern Togo. It is a world priority conservation area for its biodiversity with an area of 420,000 km^2, but with a forest loss (in 1999) of almost 80% of the original area. Mammal biodiversity is the basic characteristic of this zone comprising endangered animals like the pigmy hippopotamus, forest elephant, leopard, zebra, Liberian mongoose and giant pangolin. Residents of this and other parks, e.g. Sapele in Liberia live on artisanal gold mining as these areas are very rich in Gold that is relatively easy to "harvest". Sometimes workers live on local animals (bush meat) as there is no culture or profession of cattle rearing or goat keeping in these societies. This conflict has to be somehow resolved without having to tamper with living conditions of the indigenous people or sacrificing biodiversity.

4.3 Environment and socio-economic impact

4.3.1 Production and poverty

The civil war killed an estimated 270,000 people, created hundreds of thousands of refugees and internally displaced persons (IDPs), and shattered the lives of thousands of others. It destroyed basic institutions of governance as well as significant physical infrastructure. The economy totally collapsed, impoverishing much of the Liberian population. In 2003, a *Comprehensive peace agreement* was signed Accra. The last three years witnessed the first reconstruction and rehabilitation development plan, the second *Interim poverty reduction strategy* is intended to

guide development in the period 2007 to 2011, a third one is planned for the period 2012 to 2016.

GDP growth rates in the 1950s and 1960s averaged 9% annually. Between 1955 and 1965, foreign investment increased from US$ 60 million to US$ 500 million, three-fifths of which were invested in the mining sector. By the first half of 1970, annual growth dropped to 1% and registered a negative 3.7% by 1975. However, by late 1970, Liberia had a per capita income of US$ 460 million.

Since the change of government in 1980, the economy slowed down and fluctuated over the years (Figure 3.1). In absolute terms, GDP dropped from over US$ 1.14 billion in 1987 to a mere US$ 260 million in 1997, representing a drop of approximately 22% over the period. It rose slightly in the following three years, averaging about 2% annually, and experienced a slight fall in 2001. Growth picked up marginally in 2002 only to decline in 2003 due to the conflict, which was at its peak. The prolonged conflict that followed exacerbated an already declining economy. By mid-2004, GDP stood at US$ 207 million.

The structure of the economy suffered as well. The mining sector collapsed – from a relative 12 % share of GDP in 1988 to 0.82% in 2004. Over the same period, the tertiary (service) sector dropped from 50.5% of GDP to 17.4 %. Manufacturing has become virtually non-existent in the last three years, contributing nothing to growth. The real sectors, such as agriculture and industry also performed dismally.

The total collapse in growth had a devastating impact upon the livelihood of the Liberian people. Reoccurrence of the civil conflict, coupled with sanctions imposed by the Security Council in early 2001, worsened the poverty situation. The necessary capacity required to generate and effectively manage domestic and international resources in order to revive the economy to its pre-war levels is still lacking.

All the above contributed immensely to environmental degradation. In conditions of war there is no protection for natural resources, livelihood would depend directly on these resources as there is no economic or industrial activity to produce consumer goods or food stuffs. Liberia has to recover from this in the coming few years.

4.3.2 External trade

Prior to the civil conflict, exports stood at over US$ 460 million. At the time of the 1997 elections, export earnings had dropped dramatically to a mere US$ 25 million but rose substantially in the following year to US$ 42.7 million. The country's traditional exports consist of rubber, timber, iron, diamonds, cocoa, and coffee. Relative shares over the years have shifted substantially from other sectors to rubber and timber. Out of a total of US$ 108.7 million export earnings in 2003, 94.8% was contributed by rubber (US$ 54.3 million) and timber (US$ 39.3 million).

Pre-war imports amounted to over US$ 250 million but were reduced by over 100% by 1998. Fuel, chemicals, transport equipment and food products dominate the import basket. Imports declined gradually from a peak of US$ 481 million in 1978 to an estimated US$ 146.4 million in 2000, picking up dramatically in 2001 reaching US$ 229 million. After a slight fall, imports reached almost US$ 400 million in 2004. External trade balances have continued to be negative since 1997. Imbalances reached an all time low in 1998 and began an upward trend through 2002. The trade deficit stood at approximately US$ 50 million by the end of 2003. Between January and June 2004 the World Bank-projected deficit stood at US$ 50 million a situation that suggested bigger deficit could happen at the end of 2004. Trade imbalances have taken their toll on the performance of the economy largely due to the decline in purchasing power with negative consequence on the environment in Liberia.

Firstly there is the high demand for foreign currencies to sustain import with corresponding effect to purchasing power and thus on living conditions. Secondly the shortfall in export earning translated into low productivity and rising unemployment. As a consequence people's choice are curtailed and their livelihood compromised

4.3.3 Threats to human health

The civil conflict erupted against the backdrop of long time structural deficiencies: poverty, illiteracy, weak governance systems and inadequate human and institutional capacities. 15 years of conflict have inflicted major setbacks on the already fragile state, devastated Liberian society as a whole, and rolled back the meagre human development gains that were made during the pre-conflict years.

Apart from the economic losses, the country suffered greatly due to the diversion of scarce national resources away from productive activities towards the physical destruction of the country. As military spending increases during civil wars and inflicts high opportunity costs to society which in turn increase the suffering of the people and chances to otherwise be caring for the environment. In this respect, the people and people's health suffered not only from lack of health and transportation services, but also from severely degraded food production, employment opportunities, and education.

The breakdown of water and sanitation systems, widespread food insecurity, the destruction of health facilities and the flight of qualified health workers contributed to the extreme vulnerability of the population and their disposition to ill health. The 2004 Joint Needs Assessment Report estimated that less than 10% of Liberians have access to any kind of health care, down from a pre-conflict level of 30%. The World Bank estimated that total expenditure of the health sector averaged about US$ 2 per capita between 1997 and 2000, lower than the pre-conflict levels.

The social costs of the deterioration of the health system on the well-being and living conditions of the Liberian people were high. Access to quality health services and information became non-existent in some regions of the country and remained very poor in others. Trained midwives and medical staff in the country fled for their lives. The situation exerted a corresponding negative impact on human development. For example, the war constrained access to quality maternal and child health care services, which inflated infant death rates and reduced longevity. The 1999 Liberia *Demographic and health survey* estimated that during the tenth year of the conflict, of about 90% of women who sought maternal care when they were pregnant, less than one-third (29.4%) were actually seen by a medical doctor, approximately one in five pregnant women were seen by a physician assistant and about 44% were seen by a nurse. Trained and untrained traditional birth attendants saw, on the balance, 5% of women seeking maternity care.

As a consequence, the maternal mortality rate has been on an upward trend. It is believed to be higher than the pre-war ratio of 578 per 100,000 births, one of the highest in the world. Prevalence rates of other major diseases have consistently increased as a consequence of disrupted health care delivery systems and services and the non-availability of drugs. Diarrhea prevalence rose from 22% to 23% and the prevalence of pneumonia was as high as 29% in 2000. According to the Liberia Demographic and Health Survey, life expectancy declined to the pre-1980 level of 47.7 years. Today's estimate puts it at 49.3.

Total fertility rate in Liberia is very high. Child mortality is 194 per 1,000 with maternal mortality estimated at 578 per 100,000 live births. The contraceptive prevalence rate for modern methods is low at 8%, with adolescent women accounting for about 11% of the total fertility rate, coupled with a very high abortion rate at 7.31% Developing capacities is also complicated by the global problem of HIV/AIDS, which kills people in the prime of their lives and leads to severe financial and institutional debilitation.

4.3.4 Environmental disasters

Deforestation through legal logging threats not only the forest cover over time and thus biodiversity and forest products, but also the long term effect on hydrological balance and the ensuing risks to agriculture, food supply and energy resources, and eventually drought.

Prior to the conflict, domestic and commercial solid waste was collected in the capital, Monrovia, and other municipal areas such as Buchanan, Gbarnga, Greenville, Harper, Kakata and Robertsport. Waste in rural areas was either burned or buried. The war destroyed the already very poor sewage treatment and waste management facilities and systems, with garbage collectors fleeing for their lives and garbage collection vehicles and garbage transfer stations looted or destroyed.

The *Joint needs assessment report* estimated that over the last ten years, the population of Monrovia has increased from 700,000 people to more than 1.2 million people. The population of Monrovia and its environs generates about TM/day 550 of solid waste per day, but only about 30% is collected daily due to limited capacity (manpower and equipment). The city also maintains 70 public toilets in central Monrovia, to complement the city's sewer system, which is currently non-functional. Of those, only 30 are functional, again due to the lack of water in the city; the conditions of these toilets continue to cause serious health hazards for city dwellers.

For the country as a whole public sanitation services (public toilets and garbage collection) are absent in most parts of the country. Only about 11% of households have access to flushing toilets; 25% use latrines, most of which were constructed by aid agencies. The remaining 64% of households dispose of their human excrement in bushes, streams, rivers, ponds, beaches or a hole in the ground. About 26% of households dispose of their solid waste in public rubbish heaps; 34.6% of private rubbish heaps; and about one in every three households dispose their waste by throwing it in bushes and streets; 5% bury, and 4% burn their rubbish. As a result of the conflict, designated public or private sites for dumping rubbish no longer exist. Rubbish is simply thrown on street corners, behind dwellings, in front of offices or on footpaths, lying uncollected for days or weeks and causing a serious health hazard for the population. The sanitary impact of rubbish disposal on the progress of human development is high. Many of the public or private rubbish heaps are in close proximity to dwelling places, which contributes to diarrhea and other water-borne diseases. This situation also encourages disease carrying pests such as flies, cockroaches, rats, and the drinking water sources are also contaminated by run-off from the heaps. All these affect not only the environment, but to direct extent the people's longevity of life and health.

4.3.5 Sustainable use of resources

Inadequate natural resources especially in the rural areas forces the inhabitants into over-exploitation of these resources for their livelihoods, resulting in the vicious circle of resource degradation – overexploitation – increased degradation. This holds for all livelihoods in the high and low potential areas as well as for fisheries.

The principal causes of forest loss in Liberia have been subsistence agriculture (slash and burn upland rice cultivation), followed by logging, mining, settlement and fire. However in recent years the role of forestry in forest disturbance increased dramatically and it has taken on supreme importance in Liberia in determining the fate of its forests.

Liberia contains two of West Africa's three remaining large rainforest blocks. In the northwest and southeast of the country, they harbor healthy populations of many plant and animal species that are endemic or near-endemic, or whose survival is severely threatened outside of Liberia.

According to estimates little more than 40% of Liberia's original forest cover survives. This receded by only 0.2% per annum between the mid-1980s and 2001, a low rate compared to its

neighboring countries. However fragmentation and disturbance have been advancing rapidly since 1997 and the ratio of "undisturbed" to "disturbed" forest types has changed dramatically in favor of the latter.

Forests are a source of subsistence, economic activity and cultural identity for Liberians. In rural areas, they are a source of medicines, construction materials, fuel, food and commodities to sell for cash. In 2000-02 forestry represented the country's most important economic activity, responsible for 50-60% of the nation's foreign exchange, and accounted for 26% of GDP in 2002. By 2000 they were the primary export commodity of three of Liberia's four ports, without which these ports cannot function profitably.

Forest management has traditionally favored Monrovia-based commercial interests, especially forestry, at the expense of rural Liberians' welfare and rights and conservation. For Liberia to meet both its international treaty obligations (CBD, Geneva Convention, UN Charter on Human Rights, others), and for the nation to fulfill its constitutional duty of having forests be used *to advance the general welfare of the Liberian people and the economic development of the country*, Liberia needs to find a balance between commercial (logging), communal and conservation uses of the forest estate. This cannot currently happen due to the overall low capacity of the Liberian Forestry Development Authority (FDA) to manage forests for communal and conservation ends, and for civil society to participate in forest management and in monitoring forest utilization

The mangrove ecosystem in Liberia is particularly endangered by excessive use the mangrove for fuel wood. This has lead to problems of erosion and if this trend is not curbed in the right time, serious consequences may likely occur negatively affecting the ecosystem and the shoreline and the adjacent settlements and facilities.

4.3.6 Trans-boundary environmental issues

While most of the environmental issues described in the foregoing sections are of national or local character, there are two major issues that cross the national boundaries.

Three aspects are of particular importance: the Mano River Commission with Sierra Leone, The Upper Guinea forest Zone, and the Migration of refugees and siplaced people across borders due to civil disturbance. The first two aspects have been discussed above. Migration of displaced people still is unresolved. Involuntary migration from Liberia into neighboring countries and from neighboring countries into Liberia endangered the environment on both sides. Movements of refugees and IDPs within countries have several undesirable environmental impacts. The direct ones are either short term and lasting (like water pollution, loss of vegetation cover) others are long term and may be out of sight in the short term (e.g. depletion of ground water) Arrangements have to be made to resolve this on time and as the situation tends to stabilize across the borders.

5. Environmental policy, legislative, institutional framework

For most of Liberia history there was the conflict with the indigenous people for the control of natural resources, especially land that had always been communally owned.
Policy and institutional and administrative failures have reduced the value of environmental resources to society through wastage, poor management and governance and outright lack of conservation.
The New Constitution of Liberia of 1986 provides for the full participation of all citizens in the protection and management of the environment and natural resources.
After Presidential elections in 1997, environmental pollution and deforestation became national development issues. Concerns were also raised about the scope and complexity of environmental issues and their impact on national socio-economic development, lack of a national institution with authority for overall management of the environment and the lack of a national policy and framework law on environmental protection.
Sectoral policies, laws and regulations relating to the environment were little coordinated before the establishment of the National Environmental Commission of Liberia (NECOLIB) in 1999, charged with executive authority over all programs and activities relating to environmental matters in the country.
The environment policy, law and EPA Act were all subject to wide public consultation in 2001. In 2002 the public was also invited to a national forum to update the Management Plan of Sapo National Park. In 2003, the public was involved in discussions in preparation of the National Biodiversity Strategy and Action Plan. In 2004, workshops were held under the NCSA project.
Till now, Liberia has put in place several policies. Laws, regulations, action plans and signed a number of protocols and multinational environmental agreements aimed at improving environmental management in the country. The challenge will be the effective implementation of these various laws and regulations.

5.1 Environmental policy and legislation

With support from UNDP, NECOLIB prepared the Environmental Protection Agency Act 2002, National Environmental Policy 2002, the Environment Protection and Management Law 2002. The aim of the Policy is to ensure improvement of the physical environment, quality of life of the people, the economic and social living conditions of the citizenry. This includes present and future generations. It also aims to ensure reconciliation and coordination between economic development and growth with the sustainable management of natural resources. The National Environmental Policy of Liberia provides for the encouragement of individual and community participation in improving the environment.
The Law establishes the legal framework for sustainable development, management and protection of the environment in partnership with government, other organizations and the people of Liberia. It provides for the provision of high quality information and advice on the state of the environment and related matters. The law and the policy are legal basis for the operational effectiveness of the Environmental Protection Agency, evolved from NECOLIB).
The law outlines the general principles of environment management, by which it is guided:
the principle of sustainable development,
the precautionary principle,
the polluter-pays principle,

the principle of inter-generational equity,
the principle of public participation,
the principle of international cooperation in the management of environmental resources the shared by two or more states, and
any other principles relating to natural resources and environmental management.

Other policies with environmental components

The National Environment Policy of Liberia and the Environment Protection and Management Law are complimented by many sectoral laws and Acts.

Major environment related laws

Law	*Year*	*Key implementing agency*
Customary Laws of Liberia		Ministry of Internal Affairs
Regulation on Operation of the Fishing Industries	1957	Ministry of Agriculture
Public Health Law		Ministry of Health and Social Welfare
New Mineral and Mining Law	1999	Ministry of Lands, Mines and Energy
Industrial Licensing Act	N/A	Ministry of Commerce and Industry
Wildlife and National Parks Act	1988	Forestry Development Authority
New National Forestry Law	2000	Forestry Development Authority
National Planning Council Act		Ministry of Planning and Economic Affairs
Agriculture Law		Ministry of Agriculture
Zoning Law of Liberia	1957	Ministry of Internal Affairs
Zoning Act of the City of Monrovia	1958	Monrovia City Corporation
Vehicle and Traffic Law	1972	Liberia National Police
Maritime Law of Liberia		Bureau of Maritime Affairs
Transportation and Communications Law	1979	Ministry of Transport and the Ministry of Post and Telecommunications
Public Safety Law	1968	National Fire Service Bureau
Education Law		Ministry of Education
General Construction Law		Ministry of Public Works
Labour Law of Liberia		Ministry of Labour
Local Government Law		Ministry of Internal Affairs
Natural Resources Law	1956	Ministry Agriculture and Ministry of Lands, Mines and Energy
Patent, Copyright and Trade Mark Law	2001	Ministry of Commerce and Industries
Patriotic and Cultural Observance Law		Ministry of Foreign Affairs
Forest law	2006	Forestry Development Authority

In 2006 the amended Forestry law has been enacted, allowing the restart of the regime of forest concessions for the extraction of timber and other forest resources.

The Ministry of Land, mines and energy is currently drafting the amended Mining law, the Water law and the Energy law, whose enactment is expected by the first half of 2007. Such legal tools are aligned to the principles inspiring thee Environmental law, and recognize the contribution of EPA in the elaboration of sectoral guidelines, for the assessment of the environmental impact and the elaboration and implementation mitigation plans.

The process leading to the establishment of an Integrated Water Resources Management (IWRM) has begun with the visit of UNEP/UCC two-man delegation to Liberia in late January 2006. An Ad-Hoc committee was setup during the first IWRM stakeholder meeting on 27 January 2006 in Liberia to collect and assemble available documentations to facilitate the drafting of a national water policy for the country.

5.2 Policy on management of biodiversity resources

5.2.1 Forests protection

The national protected area network is been based on terrestrial ecosystems.
There are 2 fully protected areas:
- Sapo National Park is located in southeastern Liberia, between the Sinoe River to the south and the Putu Range to the north in the heart of the only remaining evergreen block of forest in the Upper Guinea Forest ecosystem. It is a lowland forest covering an area of Ha 180,358.
- Mount Nimba Nature Reserve is located in northern Liberia, sharing a massif with Guinea and Cote d'Ivoire. It covers an area of Ha 11,723. The hills and mountain ranges are favorite migration wintering sites for migratory birds such as the European pied flycatcher, spotted flycatcher and Garden warbler,

There are 11 partially protected national forest reserves. These forests are set-aside as production forests, from where concession areas are carved out. Here timber concession can be leased out, but activities such as hunting, farming, fishing and human settlements are prohibited. Most of the partially protected areas are located in northwest and southeast Liberia. Recently one of these forest reserves – the East Nimba Forest - was upgraded to a fully protected area.
The current existing partially protected areas cover about 5.8% of the area of Liberia. Partially protected areas are under severe threat due to logging pressure. A further five areas are proposed for protection with an aggregate area of 1,319,800 acres (5.5% of the land area).
Conservation activities such as wildlife management are permitted, but no farming, hunting and human settlements (except logging camps and similar activities) are permitted in the national forests. These forests are situated mostly in the northwest and southeast of the country.

5.2.2 Biotechnology and biosafety

One-third of Liberia population is undernourished. Domestic production of the country's staple foods, rice and cassava, still relies on a traditionally low input/low output, shifting cultivation, mixed crop system, which is inadequate to cater for self-sufficiency in food production. In light of food security issues and the requirement for long-term agricultural growth it is likely that the role of modern biotechnology in the economic transformation and sustainable development of Liberia, as elsewhere, will be the subject of intense debate.
Public perception on Genetically modifies organisms (GMOs) is somewhat negative in Liberia, predicated upon the commonly conservative and traditional norms and customs of the society. This perception is expected to change in time with increased understanding of a wide range of social, ethical, environmental, trade and economic issues associated with the development and application of modern biotechnology.
Living Modified Organisms (LMOs) are GMOs that have not been processed, and that could live if introduced into the environment, such as seeds, fresh fruits or vegetables.
Biotechnology is an emerging enterprise in Liberia whose progress was impacted by the civil conflict. Before the war, research institutions that were involved with modern biotechnology research in the country include the Central Agriculture Research Institute (CARI), located in Suakoko, Bong county and Liberia Institute for Biological Research (LIBR) in Marshall, Margibi county. Biotechnology was being applied in the areas of agriculture (GMOs) and medicine (LMOs – vaccines), with the major thrusts being crop and human health improvement, respectively. For example, from the early 1980s, CARI was actively involved in the Liberia Smallholder Rice Seed Development Project (063 LI). The principal objective of the project was to institute a national rice seed improvement program, and, through the provision of improved

seed varieties, to increase the rice production efficiency of smallholder farmers. Self-sufficiency in rice has long been a major policy goal of the government.

Biosafety is made of the policy frameworks and actions for assessment and management of the safe application of modern biotechnology. Despite its potential, modern biotechnology brings with it a wide range of biosafety concerns. These concerns and the opportunities demand the development of policy, technical and legal instruments, to ensure the safe use of this technology in order to avert or minimize any possible harm to human health and the environment. This is of vital importance for the maintenance of biodiversity.

5.2.3 Regional cooperation and international conventions

Liberia is a member of the Economic Community of West Africa (ECOWAS), Mano River Union (MRU), West African Rice Development Association (WARDA), and recently the African Union (AU). Liberia has also signed all Lomé Conventions between the European Union countries and African-Caribbean-Pacific (ACP) countries.

Liberia is an active member of the international community. As part of the global body politic, it participates in a number of cooperative arrangements that have and continue to evolve to ensure a coordinated response to regional environmental problems. Examples include the Economic Community of West African States (ECOWAS) and the Mano River Union. Liberia is also a party to multilateral environmental agreements.

Liberia is a signatory to the Convention on biological diversity (CBD) having ratified it in 2000, while the Cartagena Biosafety Protocol was acceded to in 2002.

The CBD calls on Parties to regulate, manage or control the risks associated with the use and release of LMOs resulting from modern biotechnology, which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biodiversity, taking into account the risks to human health. The Biosafety Protocol seeks to protect the environment from the potential risks of GMOs. It became law on 11 September 2003.

The Biosafety Protocol makes reference to the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development. The final draft of the National Biosafety Framework for Liberia was completed in November 2004, and is awaiting adoption.

The institutions listed below have statutory mandates in relation to specific categories of GMOs and LMOs in accordance with the National Biosafety Framework for Liberia:

Ministry of Agriculture, the Central Agriculture Research Institute (CARI), the University of Liberia and Cuttington University College: They liaise with the Technical Advisory Committee of the National Biosafety Committee to carry out risk assessment or audit on GM plants and animals that are placed under both confined and unconfined conditions.

Ministry of Commerce and Industry (MCI): it ensures proper labeling, packaging and distribution of GM food products indicating their nature as genetically modified food.

Ministry of Health and Social Welfare (MHSW) and Liberia Institute for Biological Research (LIBR): The MHSW and LIBR shall collaborate with the Technical Advisory Committee to perform risk assessment or audit for food safety. They shall also conduct risk assessment or audit on health related products obtained through biotechnology method. Examples of these may include clinical diagnostic products, recombinant therapeutic proteins and gene-therapy agents.

Environmental Protection Agency and Forestry Development Authority: The both shall work in conjunction with Technical Advisory Committee.

Customs Division at the Ministry of Finance: In order to ensure effective import/export procedures for GMO (including AIA procedure), the Customs Division at the Ministry of Finance shall work in close collaboration with the Environmental Protection Agency and the Ministry of Commerce.

Multilateral Environmental Agreements ratified or acceded to by Liberia

Agreement	*Year*	*Key implementing agency*
Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES)	1981	Forestry Development Authority
The African Convention on the Conservation of Nature and Natural Resources		Not yet assigned
The Lusaka Agreement		Not yet assigned
Convention to Combat Desertification	1998	Environmental Protection Agency
Convention on Biological Diversity	2000	Environmental Protection Agency
United Nations Framework Convention on Climate Change	2003	Environmental Protection Agency
Convention of World Cultural and Historic Heritage	2002	Ministry of Education
Ramsar Convention on Wetlands of International Importance	2002	Environmental Protection Agency
Cartagena Protocol on Biosafety	2002	Environmental Protection Agency
Convention on Migratory Species		Environmental Protection Agency
Kyoto Protocol on Climate Change	2002	Environmental Protection Agency
Vienna Convention on the for the Protection of the Ozone Layer	1996	Environmental Protection Agency
The Convention on Persistent Organic Pollutants	2002	Environmental Protection Agency

The Liberia 2004 MDG report

This Millennium Development Goals Report (MDGR) captures an assessment of the current situation in Liberia relative to the global MDGs/targets; translates the global MDGs/targets into national targets; and during that process, builds national capacity in assessing, monitoring and reporting on the global MDGs/targets. It is base on broad-based national participation and ownership, with full involvement of all stakeholders and Government playing a leading role in the entire process. The MDGs will complement on-going national framework initiatives and processes, such as the National Reconstruction and Development Plan (NRDP), modified United Nations Development Assistance Framework (UNDAF) and the Results Focused Transition Framework (RFTF), as well as the frameworks of other development partners. The NRDP activities are central to Government commitment to integrate development priorities and recovery processes, especially community based rehabilitation programs.

Active participation of Liberia in the following environment initiative would enable the country to rebuild their environmental capacity:

- Action Plan of the Environment Initiative of NEPAD has been prepared through a consultative and participatory process. It provides a framework for the establishment of a strong partnership for the protection of the environment between Africa and its partners.
- African Forest Law Enforcement and Governance (AFLEG) process is the continental arm of the global body on Forest Law Enforcement and Governance.

5.3 Environmental institutional framework

5.3.1 The Environmental protection agency (EPA)

The principal agency for the management of the environment in Liberia is the Environmental Protection Agency (EPA). The Act creating the EPA was approved in 2002. Although the EPA has been officially functional since February 2004, it is yet to be fully operationalised. The mandate of the EPA is to coordinate, monitor and supervise all activities in the field of the

environment. The EPA is placed under the office of the President and holds one of the highest positions of all public institutions in the country. This is intended to enable it to voice its concerns on environment at high levels of decision-making and policy formulation and to give it the necessary political clout.

The key functions of the EPA are:

Co-ordinate, integrate, harmonize and monitor the implementation of environmental policy and decisions of the Policy Council by the Line Ministries,

Propose environmental policies and strategies to the Policy Council and ensure the integration of environmental concerns in overall national planning,

Collect, analyze and prepare basic scientific data and other information pertaining to pollution, degradation and on environmental quality, resource use and other environmental protection and conservation matters and undertake research and prepare and disseminate every two years a report on the state of the environment in Liberia,

Ensure the preservation and promotion of important historic, cultural and spiritual values of natural resources heritage and, in consultation with indigenous authority, enhance indigenous methods for effective natural resource management,

Encourage the use of appropriate environmentally sound technologies and renewable sources of energy and natural resources,

Establish environmental criteria, guidelines, specifications and standards for production processes and the sustainable use of natural resources for the health and welfare of future generations,

Review and approve environmental impact statements and environmental impact assessment,

Initiate and co-ordinate actions required in a state of environmental emergency or any other situation which may pose serious threat to the environment and public health,

Function as the national clearinghouse for all activities relating to regional and international environment-related conventions, treaties and agreements, and as national liaison with the secretariat for all such regional and international instruments, and

Advise the state and participate in the process of negotiating, ratifying or acceding to relevant regional and international environmental agreements

The Act creating the EPA establishes a National Environment Policy Council as the ultimate policy-making body on the environment. The Council provides policy guidance and formulates and coordinates policies and regulations on the environment. The EPA also has Board of Directors to oversee the implementation and successful operation of the national environment management policy and functions of the EPA. The government constituted the Policy Council, Board of Directors and the Executive Director.

The EPA structure is intended to allow for quick flow of information, to strengthen the functions of coordination and monitoring for environmental management, and to provide a framework for a bottom-up approach to both environmental and national planning processes.

5.3.2 Other key institutions involved in environment

Key sectors whose is involved in the environmental protection are Land management and food and animal safety.

Land management

The administration and management of land is the statutory responsibility of:

- Ministry of Internal Affairs, overseeing all chiefdoms and clans and supervising all private and public properties, including all disputes arising from sale and ownership of land.
- Ministry of Agriculture, in charge of the planning, executing, administration, management and supervision of agricultural programs.

- Ministry of Lands, Mines and Energy, having the task of developing the use of minerals, water and energy resources. It is the main administrator of lands, including survey of private and public lands and issuance of deeds for all lands. The National Energy Committee administered the energy sector prior to the 1990 civil crisis. The National Hydrological Service is housed in the ministry and deals with water resources development and hydrometeorology.
- Forestry Development Authority, in charge of the sustainable management of the forest and associated resources, including forest lands and wildlife. It provides medium and long term planning within the forest sector, the preparation and promulgation of forest policy, law and administration, the release of forest concession agreements, monitoring activities of timber companies and managing protected area programs and wildlife and national parks.

Water and sanitation and infrastructures

- Ministry of Public Works is in charge of the design, construction and maintenance of roads and public buildings, as well as of the administration of urban and town planning, including the installation of waste management infrastructure.
- Ministry of Lands, Mines and Energy supervises the development and management of water resources that are central to the water and sanitation sector, and conducts investigations required for environmental assessments.
- Ministry of Health and Social Welfare The Division of Environmental and Occupational Health of this ministry handles matters relating to water and sanitation, including assessment of water wells and pit latrines and the promotion of community health education.
- Ministry of Rural Development ensures that safe drinking water and adequate sanitation facilities are provided in rural communities
- Ministry of Planning and Economic Affairs is in charge of regional development planning and co-ordination.
- Monrovia City Corporation manages Monrovia environmental sanitation primarily in the form of beautification, street cleaning, and solid waste collection and disposal.
- Liberia Water and Sewer Corporation provides water supply and sewerage services to urban centers, including Monrovia and the capital cities of the various political subdivisions.
- Ministry of public works has a key role in the development and maintenance of the road networks and infrastructures, being a partner of the main donor in such area, World Bank.

Food safety

The Division of Environmental and Occupational Health of the Ministry of Health and Social Welfare in Liberia has the task to protect and promote health ensuring sanitary safety of products and services especially for food and their corresponding manufacturing units. Specifically it is in charge of the risk analysis process and shares sanitary control with the Ministries of Agriculture and of Commerce. The functions of the Ministry of Health in setting standards for food, food processing and water quality is specified in the Public Health and Safety Laws of Liberia.

The Bureau of Plant and Animal Quarantine and the Bureau of Fisheries of the Ministry of Agriculture have similar functions with the Division of Environmental and Occupational Health.

The Ministry of Commerce and Industry establishes and regulates commodities and trade standards and develops plan for the movement of goods within and out of the Republic of Liberia.

Situation. A delegated model of environmental governance has been adopted, with line Ministries such as MLME, MPW, Ministry of transport, coordinating environmental issues inside their sectors. Such arrangements include: investments of part of revenues from concessions and services in environmental governance and the establishment of environmental

units inside each organization. EPA has the role of harmonizing the elaboration and implementation of environmental policies across the different sectors and institutions, providing technical guidance and advice in developing sectoral guidelines and work tools.
Opportunities. Development of field network of EPA officers and Environmental committees, in order to integrate country wide the common environmental approach.
Inclusion of environment as cross-cutting issue in the *interim Poverty reduction strategy*
Elaboration of National Environmental Action Plan.
Integration of gender concerns into environmental decisions should be promoted, and the participation of CBOs, and Youth Clubs be promoted.
EPA should define the procedure for screening the need of EIA
Encourage participation of local professionals and institutions in development projects environmental exercises, such as EIA, environmental surveys, elaboration of environmental management plans, in order to build local capacities

5.4 Sectoral integration

While each Institution has a legal mandates to address specific environmental issues or to manage specific resources, the EPA has a mandate to work with these line ministries. As an operational strategy, each relevant government ministry and agency is expected to establish an environmental unit to ensure sustainable management of the environment under their mandates.
The EPA Act also provides for the establishment of county and district environment committees, whose task is to ensure integration of environmental concerns in plans and projects of local governments, formulate bylaws, and promote the dissemination of environmental information. These committees are to be assisted by County and District Environment Officers as the case may be.

5.4.1 Linkages with civil society, development partners and the private sector

The Policy Council of the EPA consists of one representative of all environment-related NGOs selected by the NGO membership or from their umbrella organization. The Board of Directors consists of a member of the private sector. Though the NGOs have an umbrella organization, it is not representative of all NGOs. NGOs are accredited by the Ministry of Planning and Economic Affairs without reference from the so-called umbrella organization. Other society organizations include youth clubs that advocate for environmental sustainability. The Liberia Women Initiatives represents the voice of women. The AME University in Monrovia observes the last Friday in each month as Environmental Day, dedicated to promoting environmental advocacy. A local NGO, Promoting Activities for Development and Sustenance (PADS), based in Kakata, Margibi County, is engaged in civil education among the youth, including environmental advocacy. With support from UNDP, schools have begun to organize environmental clubs as a way of using the students as advocates for the environment.

5.4.2 Other instruments of the environmental policies

EPA is allowed to appoint a technical committee to give advice on specialized subjects relating to the environment. The standing committees established by the Act are: lands and mines; pollution control; health and sanitation; environmental impact assessment; biotechnology; forestry, agriculture or wildlife; and coastal and marine ecosystem. None of these standing committees has as yet been formed.

The Environment Protection and Management Law emphasizes the use of economic instruments in promoting compliance. The Forestry Development has promulgated some regulations in this light. The Ministry of Agriculture also makes use of such instruments.
Under the National environment law, a national SoE, a report to be produced every 5 years. Each county has to produce a national *State of environment* report every 5 years.

5.4.3 Capacity building and civil society participation

There is need to build adequate institutional capacity in the country. The National Capacity Self-Assessment project (NCSA) funded by the Global Environment Facility (GEF) has addressed this issue in its synergy report across three convention areas of Climate Change, Biodiversity and Land Degradation.
According to Section 6.5 of the policy, it is imperative to promote integration of gender concerns into environmental decisions, and particularly consider the role women play in environmental protection. The policy calls for the full and effective participation of civil society, in order to sustain the environment and seeks the business communities and international communities cooperation in the formulation stage of environmental policy development and implementation. NGOs and the media engagement with stakeholders from the local to the international level can offer invaluable help in framing policies for better environmental management, creating awareness, lobby and advocacy.
The Environmental Protection Agency and partners have involved all segments of the society in environmental work, particularly in forums such as workshops and stakeholder meetings. Arrangements are being made to encourage NGOs to design a strategy on how best and cost effective they should link to EPA.

6. EC and other international development assistance

The EC cooperation with Liberia includes several actions. This Chapter describes those more relevant in terms of environmental impact.

6.1 The framework of EC cooperation

The **8th EDF** (8 ACP LBR 002, €25m, July 2001 – March 2006) allocated € 25 million to the *Reintegration programme for returnees and displaced people in Liberia*, including. An additional €6.5m from the 9 EDF B-envelope was used to increase the financial envelope of this programme to allow for the rehabilitation of the electricity and water transmission and distribution grids servicing Monrovia.

- *Water and Electricity* (€ 4 million) - the EC helps improve management and capacities at the Liberia. Water and Sewer Corporation. A capacity-building approach is also used for the Liberia Electricity Corporation, where EC funding is tied to improving management. The EC advises on commercialisation of electricity production and distribution. Moreover, the EC will rehabilitate the electricity transmission grid and the main distribution grids in Monrovia. During 2004 this component was reoriented, as GoL made the decision to de-nationalise the water and electricity sectors and the EC financed preparing a liberalisation policy for the companies providing water and electricity to Monrovia.
- *Health* (€ 9.5 million) – EC assistance focuses on provision of technical assistance (TA) to Phebe hospital and to the National Drugs Service to set up a revolving fund for the supply of essential drugs.
- *Local Community Development* (€ 9 million) – the EC funds micro-projects of up to € 20,000 each. Community-based organizations are eligible for submitting project proposals, which are screened for financial sustainability, once EC funding stops. Over two hundred projects received support in the field of agriculture and food security, social services and infrastructure, in nine of the fifteen counties of Liberia.

The **9th EDF** (using re-programmed 8th EDF funds, 2004-2007) comprises two main programmes: the €45m *Post Conflict Rehabilitation and Capacity Building Programme* (PCRCBP), and the *9th EDF National Indicative Programme*.

1. The **PCRCBP** financing agreement (9 ACP LBR 003, € 49.18 million, December 2003 – December 2005) aims at facilitating and supporting the initiatives of peace and national reconciliation contained in the Accra Peace Agreement, in order to ease socio-political tensions and ensure reconciliation at the national and community level. Its 3 components are:

Component 1. *Institutional support* (€ 15.18 million), to support the re-establishment and functioning of key public Ministries and key other Institutions and civil organisations involved in the peace and reconstruction process, through Capacity Building & Good Governance and Support to the Elections and Democracy. This component includes TA for the water sector and TA for the emergency power programme

Component 2. *Disarmament, demobilisation, reinsertion & reintegration* (DDRR), € 16 million. The EC is the principal donor to the UNDP Trust Fund, set up to collect resources and co-ordinate support to Liberia's DDRR Program and has also bilaterally funded NGOs to carry out RR activities.

Component 3. *Community Rehabilitation* (€ 11 million), social and economic rehabilitation of the affected populations (particularly at the community level) and to contribute to the physical

rehabilitation of basic infrastructure and services (public and other), including the availability of health service, medicines, education and water. Focal areas of operation:
- Large scale infrastructure. 7 projects have been identified and prioritized from community level, through district, county and finally central government.
- Community development. 2 types of projects are funded through grants. Projects requiring grants of under €10,000 will be aimed at *Community based organisations* and will be identified through a publicity campaign linked to the use of written applications. Projects where larger NGOs or INGO work with a number of smaller organisations (this can include local government) and which would require grants of between €10,000 and €100,000 will be identified through a formal Call for Proposals (Calls for Proposals will be available on this website).
- Capacity building with local authorities (CBOs, NGOs or local formal / informal authorities)

2. The **Country strategy paper** (CSP) and **National indicative programme** (NIP) for the 9th EDF (2004-2007), signed in January 2006, on the occasion of the inauguration of the new Government, funds further rehabilitation and reconstruction measures for Liberia on the base of an EC decision on allocation of 9th EDF financial A and B envelopes. The 9th EDF CSP aims at alleviating poverty and consolidating peace and democratic process by achieving equitable economic growth and increasing access to social services.

Envelope A (€ 44.4 million) covers the long-term development activities:
- The 1st focal sector is County Development with a €25 million budget, with the objectives to encourage economic growth, improve social welfare in the health, water, and education and road sectors, while supporting local institutions.
- The 2nd focal sector is Education, with a budget of €12 million, aiming at laying the foundation for an education sector wide approach, and at increasing access to education by constructing more schools and training more teachers, based on coherent overall planning for the sector and at to improving the quality of educational outcomes.. It complements the first focal sector, which will also include the construction of primary and secondary education facilities.
- The non focal sector (€7.4 million) will assist government institution in continuing to address issues related to governance and accountability through (1) the establishment of an accountable public finance management system; (2) civil society, particularly women's groups and those promoting transparency; (3) Economic Partnership Agreements negotiation, regional integration matters, regional programmes and promotion of certification schemes for exporting goods, notably the new European *Forest Law Enforcement Governance and Trade* initiative; (4) the regional peace process and/or conflict prevention; and (5) to finance studies, evaluations and audits not related to the focal sectors or of general interest for the EC - Liberia cooperation.

Envelope B (€ 24.0 million) is used for unforeseen needs such as emergency assistance where support cannot be financed from the Community budget, contributions to internationally agreed debt relief initiatives and support to mitigate adverse affects of instability in export earnings
€6.5m from the 9 EDF B-envelope has been earmarked to increase the financial envelope of this programme to allow for the rehabilitation of the electricity transmission grids servicing in Monrovia.

EC also supports **regional integration** matters and certification schemes of exporting goods, notably the new European *Forest Law Enforcement Governance and Trade* initiative for logs and timber. It also comprises financing of studies, evaluation and audits not related to the focal sectors or of general interest for the EC - Liberia co-operation.

Investment Facility is a financing instrument managed by the European Investment, that does not form part of the Indicative Programme.

Other financing instruments. Specific activities may be supported through the various Community budget lines, including, inter alia, NGO co-financing, decentralised cooperation,

European Initiative for Democracy and Human Rights (EIDHR), food security and disaster prevention, and humanitarian and emergency assistance. Financing under these lines will be decided in accordance with the procedures in place for each financing instrument and will be subject to the availability of funds.
Since the 9th EDF expires on 31 December 2007, the Delegation of the European Commission in Liberia, together with the Government of Liberia, are programming exercise for the 10th EDF 2008-2013 including the preparation of a new CSP. In addition to the iPRS, the policy documents of the EC should lie at the core of this programming exercise (e.g. European Consensus, Strategy for Africa, MDG Communication Package, Paris Declaration). As a first direction to the programming, the Government of Liberia and EC have prepared a Joint Orientation Note outlining the indicative priorities for the 10th EDF, and the first draft of the 10th EDF CSP/NIP is under finalisation.

6.2 EC cooperation in the environmental sector

The NGO Fauna & Flora International is the implementing agency of the following programs:
1. The project **Reassessment of forest cover, updating of the protected forest system and present state of environmental information for Liberia** (EC grant B7-6201/2000-08, February 2001 – September 2004, € 0.8 million) has increased knowledge of the forests and protected forest policy reform. The project builds the capacity of the Liberian authorities to transparently manage and use the natural resources of the forests and established the foundations in terms of information, tools and policy for effective and sustainable forest and biodiversity management in Liberia. Specific achievements:
- a layered analytical GIS map of Liberia's tropical forest, training of local staff to use GIS equipment and establishing a GIS laboratory, handed to the Liberian Institute of Statistics and Geo-Information Services in the Ministry of Planning and Economic Affairs.
- analysis and recommend revisions to Liberia's protected forest area laws and regulations.
- assistance to 3 legal acts regarding protection and use of the forest areas.
- field surveys of fauna and botanical species.
- a workshop on forest management for fifty interested stakeholders and produce reports on expanding forest area and legally protected species.
- launching a pilot scheme around Sapo National Park to establish communal forest areas
- assisted UNDP in holding a workshop with those involved in the logging industry.
- provided credible information on the forestry sector in Liberia to national and international media and run a public awareness campaign in Monrovia.
- provided information and advice to UN, diplomatic and national government agencies on the forestry sector in pre- and post-conflict Liberia
- compile a high-quality image base of Liberia's forests
Project output includes the following technical reports:
- Review of existent forest cover maps, vegetation classification systems and plant biodiversity surveys in Liberia
- Guidelines for protected areas creation and expansion in Liberia
- Rapid fauna survey to assess biological integrity of forest areas of Liberia proponed for the establishment of natural parks and nature reserves
- A study to clarify the protected forest types officially / legally reorganizad in Liberia

The project **Strengthening forest management in post-conflict Liberia** (ENV/2004/82-386/402, December 2006 – May 2009, € 1.8 million), funded through the Program on tropical forests and other forests in developing countries (Budget line B7-620) builds Liberian capacity to manage the different uses of the Liberian tropical forest with other national requirements and promote transparency and responsibility by the national authorities in compliance with international obligations. Its activities include:
- Build capacity, in particular of the Forest Development Authority (FDA), to manage a system of forest areas reserved for communal uses and for biological conservation.
- Complete legal and regulatory frameworks for communal and conservation uses of forests and forest resources, including wildlife.
- Suggest recommendations for a protected forest network, balancing commercial, communal and conservation uses of Liberia's forests, balancing forest management concerns with other sectoral concerns.
- Support making reliable information available, transparency, monitoring and restoring credibility of forest management in Liberia.
- Through widespread consultations and awareness campaigns explain and facilitate debate on the laws, regulations and issues surrounding forest management.
- Document and disseminate lessons learned from Liberia.
- Work primarily with the FDA of Liberia but also the Environment Protection Agency (EPA) and data management services to build capacity.
Consultancies for the **Review** (2004) and **audit** (2006) **of Forestry development authority** have been funded under the Component 1 (institutional support) of the *Post conflict rehabilitation and capacity building programme*.

6.3 Other international development assistance in the environmental sector

6.3.1 Donor programs

World Bank funds the **Biodiversity conservation at Sapo national park** project (US$ 975,000), implemented by the NGO F&FI (UK), aimed at improving the access to the economic resources of Sapo National Park in the areas in which was extended the Park and where will be established a management presence. The programs budget is about US$ 3.5 millions, including funding from WB/GEF, Darwin Initiative (UK) and other contributors.
This project is structured into 5 components:
1. Building up Park management operations and co-ordination mechanisms;
2. Strengthening the capacity of Park staff and the Division of Wildlife & National Parks (DWNP) of the Liberian Forestry Development Authority (FDA) to manage Sapo Park and expand the national network of parks and reserves in accordance with national policies, laws and regulations, as well as to international standards;
3. Launching a programme of environmental education and conservation/Park awareness around SNP;
4. Continuing research, monitoring of biological parameters and resource-use at SNP and in surrounding areas, and regional/international conservation planning for south-east Liberia;
5. Supporting integrated sustainable development & community empowerment, establishing and managing communal forests around SNP, and supporting income-generating activities, sustainable agriculture and general rural development in a manner that supports Sapo Park and communal forests.

The **Liberia forest initiative**, funded by Usaid, WB and other donors, is an umbrella providing a framework for several implementing agencies in negotiating with donors and the GoL, with the aim of strengthening the forest sector, commercial forestry and financial management of the forest sector. Major implementing partners are Conservation international (USA based NGO) and F&FI (UK based NGO).

WB undertook a study on *Community cohesion in Liberia*, a post-war rapid social assessment, and funds the *Community empowerment project* (TF054003), whose goals include (a) awareness creation in beneficiary communities; (b) discussion of environmental issues during the sub-project design phase; (c) carrying an environmental impact and agreeing on appropriate mitigation measures; and (d) the M&E of such activities.
Most sub-projects are for the rehabilitation of buildings, roads or other tangible assets for which LACE will not be required to prepare an environmental impact assessment. However, such sub-projects still follow any laws in effect (e.g. location of water wells, latrines, etc). The LACE OM has a chapter describing the environmental directives to be followed and proposed mitigation measures for select sub-projects. The ToR for the ex-post technical and management of audit of completed LACE sub-projects will also look at whether the environmental directives in the OM were properly followed.
World Bank has elaborated and adopted an Environmental Mitigation Plan for the proposed *Implementation of the Emergency Works for the Monrovia - Buchanan Corridor and Gate 15 to Guinea Border Road project*, undertaken through the Ministry of Public Works. This emergency works cover a network of roads that can be divided into two sections - the Monrovia - Buchanan (MB) Corridor, and the Gate 15 - Guinea Border (GG) Corridor. The project includes repair of paved and unpaved roads, drainage works, traffic safety and bridges. Given the relatively limited nature of the emergency works and the location of the corridors in areas heavily disturbed by human activities, the impacts resulting from project works are likely to be small scale, localised and limited to the emergency works phase. An EIA was held. Mitigation measures for the identified impacts constitute the EMP, based on avoidance of environmental impacts, rather than amelioration of their adverse consequences. EMP recommendations are adopted as enforceable provisions to be incorporated into the Project's bid and contract documents. Mitigation measures include the avoidance of hazardous materials, adoption of appropriate construction techniques and periods, undertaking of stabilization works for the protection of soil and utilities, avoidance of biological sensible areas and camp sites, drainage works, appropriate disposal of waste and materials, observation environmental monitoring of direct impacts and agreements with affected people for the diversion of traffic and other human activities
World bank *Infrastructure rehabilitation project* (Monrovia port and Roberst airport) is complemented by an EIA in the areas to be restored.

Undp environment strategy supports and builds the capacity of Liberian environmental actors by developing tools to strengthen the country’s response to environmental challenges. In 2005 the Environment programme allowed Liberia to be represented in a variety of national and international for a.
Undp has participated to the Environmental theme group for Liberia and co-chaired the Environmental task force, part of the *Protected area working group*. Undp represented Liberia at the Donors meeting with biodiversity experts for funding protected areas (2005).

Undp supports the drafting and publication of the State of environment report, expected by 2007, providing baseline information for strategy development and proposes strategies and supplies monitoring tools.
Undp runs a project providing alternative energy to rural communities, via solar panels, as a pilot in 4 counties with the collaboration with Ngos, institutions and academic partners. Capacity building and sensitization workshops are held to increase empowerment by villagers
It is planned to establish an alternative energy project with the Liberia electricity corporation.

Unep has been generated maps of environmental vulnerability for Liberia, provided environmental expertise in the multi-agency team that will be undertaking assessments for the closure and possible rehabilitation of over 30 IDP camps and spontaneous settlements, represented the cross-cutting theme of the environment in the United Nations Development Group (UNDG) Needs Assessment, produced the *Desk Study on the Environment in Liberia*.
Unep is submitting a package of activities building the environmental management capacity of the environmental authorities and key stakeholders in Liberia:
Phase I (January – March 2007):
- Support for Environmental Coordination: Technical and logistical support to the Environmental Protection Agency.
- Institutional Reform Planning: Institutional capacity assessment, and identification of institutional and policies priorities in the short, medium and long term.
- Environment and Refugees Assessment: Development of training materials for government staff on refugee site selection, planning, decommissioning and rehabilitation based on site assessments. To be implemented in partnership with UNHCR and relevant NGOs, based on the recommendations of the publication entitled "*The Environmental Considerations of Human Displacement in Liberia: A guide for practitioners and decision makers"*.
Phase II: (April 2007 – December 2007):
- Policy Development: Provision of training and technical support to EPA staff for policy development in the areas of Multilateral Environmental Agreements, Environmental Impact Assessment, financial instruments for environmental management, and sub-national environmental management.
- Environmental awareness: Development of materials for improving environmental awareness within both government and the public.
- Basic Office Equipment: Provision of information management equipment, office furniture and vehicles to the Environmental Protection Agency.
Phase III (January – December 2008):
- Regional Cooperation: Facilitation of regional talks on trans-boundary environmental management covering protected areas, and trade in natural resources.
- Support for Environmental Law Implementation: Contribute to the implementation of the existing environmental legal framework through training and technical support.
- Environmental Quality Monitoring Equipment: Facilitate state of the environment reporting through training and technical support for environmental monitoring and reporting.

6.3.4 Donor coordination

Governance is the main issue in present Liberia cooperation. Donors coordination is mostly held at such general policies level. In the environmental sector, a minor one of the country development strategy, little coordination exist. Furthermore, a general role of supervision of the government actions in several fields pertaining to Unmil, such body also deals individually with donors and local institutions.

In several areas (for instance, water and energy), the sharp institutional changes undergone by Liberian institutions means that till new arrangements are in place, it will be difficult to have proper counterparts for such exercises.
The Liberia forestry initiative meetings are the major coordination event, covering forestry issues. Usaid, EC, WB, Un agencies, local institutions, donors and implementing agencies convene in the LFI (Liberia Forest Initiative). Among the outputs, it is more notable the common framework for intervention in the Sapo park area.
Coordination is more frequent at the implementing agencies level: NGO environmental coalition is a forum for the sector, Unicef organizes the WatSan working group meetings. The Ministry of public works has organized coordination meetings regarding waste disposal.

7. Recommended priority actions

Recommendations are grouped per sectors.

7.1 Land use and degradation

Policy/ knowledge/information gaps

- There is no well-defined integrated land use policy. This lacuna has largely been responsible for the current phase of land degradation.
- There is no rural fuel wood policy that results in overuse far beyond the carrying capacity and extraction of fuel wood from forests far beyond the sustainable limits, creating enormous negative impacts on the forest and land.
- Information on severity of area affected by various forms of degradation is limited, highly variable, and sketchy.
- A multi-level stakeholder approach for the planning process is essential to ensure improvements in sustainable land use and development. In a multi-stakeholder approach, three principles must converge: good land husbandry, sustainable land use, and an enabling institutional environment. Local knowledge systems, norms and values must be given due importance while developing any such planning.
- The major challenge in the agriculture sector is checking fragmentation of land holdings, which can be achieved by providing security of land rights and land tenure, encouraging efficient use of marginal lands, developing areas of untapped potential thereby correcting uneven utilization of land, and using the irrigation potential efficiently.
- The agricultural extension system of the country needs revamping to make it more efficient.

Policy recommendations

- *Land capability classification* should be developed for Liberian conditions to ensure that land is put under the right kind of use according to its capability.
- A correct assessment of the nature and extent of the existing degraded land needs to be carried out using remote sensing techniques and GIS with scientifically sound criteria and indicators.

7.2 Fresh water management

Policy/information/knowledge gaps

- A proper legal framework for regulating withdrawals of groundwater
- Rehabilitation of a hydro-meteorological system for information collection on water quality
- Information on availability of groundwater, defining extraction rates

Policy recommendations

- A micro-basin approach to integrate all aspect of water management namely water allocation, pollution control, protection of water resources, and mobilisation of financial resources. An apex level body can be created to coordinate the functioning of different agencies.
- Valorization of inundated lowlands for swamp rice production
- Data on water supply and sanitation for both urban and rural areas needs to be collected to formulating strategies and prioritising the action plan

7.3 Mineral Reources and Geology

- the Mining Law under development has to be urgently finalized and put to discussion by the stakeholder. Otherwise the sector will remain dormant and revnues will be lost.

- Mining operations need to have specific areas earmarked for gold, ore and diamond mining such that the effect on the already shrinking forest cover is minimized.
- Artisanal and illegal mining has to be curtailed by setting up monitoring and control systems that would ensure compliance. Awareness campaigns on the part of those mining and those "not"-mining in the surroundings has to be institutionalized.

7.4 Bio diversity

Policy/information/knowledge gaps

- Lack of initiative for protection of wetland, grasslands/marshes, sacred groves and other areas significant from the point of view of biodiversity.
- Poor implementation of *Wildlife protection act* and inadequate implementation of eco-development programs
- Inadequate participation of NGOs in the process of completion of various schemes of the government.
- Information on poaching trade and trade routes is sketchy and current wildlife protection and law enforcement measures are inadequate and inefficient.

Policy recommendations

- A comprehensive legislation on biodiversity conservation and uses should be promulgated
- There is a need for formulation of action plans for protection of wetlands, grasslands, and sacred groves significant from the point of view of biodiversity.
- There is a need to document biodiversity.
- There should be continuous monitoring of biodiversity use for review of results of implementation of policies and programs, in line with international conventions.

7.5 Air pollution with special reference to vehicular pollution

Policy/information/knowledge gaps

- Lack of land use planning and its implementation are leading to unplanned settlements affecting public health.
- No separate transport policy exists and there is lack of coordination between various government agencies in this sector
- There is a need to monitor additional air quality parameters such as benzene, PAH, PM2.5, dry deposition of sulphates and nitrates.
- Strengthening of information on number of vehicles on road, vehicle usage, etc.

Policy recommendations

Various strategies need to be adopted including augmentation of public transport system, traffic planning and management, promotion and use of alternative fuels

- A comprehensive urban air quality management strategy should be formulated that includes information related to urban planning, ambient air quality, emission inventory, and air quality dispersion models.
- Promotion of renewable energy sources such as hydro, wind, and solar through international cooperation

7.6 Waste management

Policy/information/knowledge gaps

<u>Hazardous waste management</u>

- Provision of incentives for waste reduction/minimisation
- Guidelines for clean up of contaminated sites and no limits for disposal of waste on land.
- Inventory of hazardous waste sources

- Develop methodologies and procedures for monitoring the impacts of hazardous waste on human health, and ecosystem
- Capacity building on analytical and monitoring requirements regarding tracking of hazardous waste movement and management.
- EIA guidelines and procedure to carry out environmental and social assessments of hazardous waste management operations to assess the risks and health impacts of inappropriate disposal of hazardous waste on surrounding ecosystem and communities.
- fixing standards not only for disposal of waste on land but also for clean up of contaminated soils and groundwater.

Municipal waste management

- Rules on management of municipal waste and biomedical waste
- Inventories at the city levels to identify and quantify municipal waste and biomedical waste, to be used to elaborate waste management plans
- Most of the municipal or biomedical waste is currently dumped on open low lying areas with no provisions for liners, leachate collection and treatment system or gas collection system. The use of a sanitary landfill is highly desirable.
- Setting targets for waste reduction. Reduction at source can be accomplished in three ways (1) fees and tax incentives to promote market mechanisms to effect source reduction, (2) mandatory standards and regulation, and (3) education and voluntary compliance with policies by business and consumers
- Technological interventions:
    - Collection of waste. One immediate measure to revamp the existing collection service structure is to provide community waste bins conveniently placed for the people to deposit domestic waste. The second measure should entail separation of waste at source into biodegradable and non-biodegradable components.
    - Transportation of waste. Waste should be carried in covered vehicles. Infectious and hazardous waste from health care facilities should be carried strictly in separate covered vehicles. Hospital waste of some categories, e.g. biomedical waste consisting of human parts, body fluids, etc., has to be incinerated but for other categories of waste, methods such as microwaving and autoclaving are possible.
    - Treatment and disposal. Proper segregation would lead to better options and opportunities for scientific disposal of waste. Recyclables could be straightaway transported to recycling units, which, in turn, would pay. The organic matter could be disposed of either by aerobic composting, anaerobic digestion or sanitary landfilling.

7.7 Socio-Economic Environment

Administration, Ethnic Groups and Population. The two parallel systems of administration in the country, the formal and the traditional structures, suffered a huge shake during the war. Disputes on land (ownership, encroachment), on the one hand, and the shake in values, caused by new immigrants and refugees within the country, is posing a challenge on the deterrence power of both systems – especially the traditional one. For example, fishing or hunting in certain days or months of the year, etc were traditional checks on the overgrazing, over-fishing, and over-hunting practices prevalent to-day. This value system could not easily be restored today.
New management systems, awareness and basic needs provision, has to be considered in order to ensure adherence to the values and teachings enabling care for the environment.
The ongoing development of national policies on environment, mining, forestry, etc. would be deficient without a corresponding and concurrent national policy on population. This would ensure new basis for understanding the population composition and structure and ensure

development of pertinent checks and balances to render the new set of policies, relevant, effective and result oriented.

The economy

The economy in general cannot be on its path again unless supporting measures are taken into consideration: parting away from the sheer dependence on natural resources (forestry for food and charcoal, mineral resources, etc), a second stand has to be ensured by investing on the population to generate qualified and skilled entrepreneurs, while investment in the physical infrastructure is also vigorously pursued.

Inherited external debt burden of US$ 3.7 billion as of mid-2005, equivalent to an astonishing (800 percent of GDP and 3000 percent of exports) is huge, coupled by domestic debt and non-salary arrears (about US$ 700 million) with relatively few foreign investors returning to the country give a gloomy picture of the economic situation. Timber and rubber are Liberia's main export items since the end of the war (US$ 85 million and more than US$ 57 million annually from timber and rubber exports respectively with alluvial diamond and gold mining activities also accounting for a much less portion). Measures should be taken to handle this tight situation carefully while avoiding overexploitation of the - especially forest – resources. An overexploitation may not be easily reversible with grave economic and environmental consequences.

Illegal overexploitation of the fishery resources should be seriously taken into consideration, for its biodiversity and resource depletion effects.

Governance in Liberia has been stained to unprecedented levels of chaos and deprivation. Almost all facets of governance in Liberia have suffered in a major way over the past two decades or more. National and civil institutions have been destroyed; systems of checks and balances dismantled; the rule of law has been virtually ignored; the media has been severely weakened; civil society is merely embryonic and virtually unregulated, corruption in all forms is rife. The economic social and environmental costs could prove to be grave if no action is taken at this very stage of the country's development.

Trade. Liberia is signatory to the Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES), the Montreal Protocol on the Phase Out of Ozone Depleting Substances and the Convention on the Trans-boundary Movement of Hazardous Wastes (Basel/Bamako Convention). These and other international conventions need to be closely monitored and the country's record on such treaties observed as conforming to their requirements. Illicit trade on mercury as an input in gold mining should be refrained from and the country's borders to such activity should be placed under close supervision by the responsible authorities. For the sake of environment not only application of such chemicals should be monitored but also border trade movements.

Tourism. The potential for eco-tourism in Liberia is very huge. Due to the war there has been no tourism activity in the country. Investments in national parks and other infrastructure should be taken into consideration.

7.8 Energy

Use of fuelwood has important health, socio-economic and environmental implications: indoor use causes CO_x pollution, costs of the time and distances travelled to collect firewood, and destruction and degradation of the forest. The balance between environmentally friendly energy use and other forms should be taken into consideration.

Electricity from hydropower and fossil fuel should be an area of more attraction for investments. More emphasis should be given to hydropower resources than fossil fuel: the latter has more

grave environmental consequences and dependence on fossil fuel may have negative economic and environmental consequences.
When electricity is restored, there will be need to initiate social tariffs especially in light of the poverty situation. Social tariffs are designed to serve social and welfare objectives. This should be less resorted to, if possible.
The Rural Electrification System served people in eleven population centers in rural Liberia. More of this should be encouraged to save on fuelwood and charcoal and save the forest wood and mangrove which have negative environmental impacts.
Private investment should be encouraged in the country, e.g. the example of Firestone at Harbel on the Farmington River, with more emphasis on hydropower especially for new investors. This will decrease the country's present dependence on fossil fuel with its fluctuating market conditions.
Renewable energy sources should be more vigorously explored and pursued in Liberia. These options should be considered as part of a plan to provide electricity services in areas not served by the Monrovia grid. UNDP has undertaken solar energy needs assessment, and has initiated a process that would enable provision of solar panels to some rural communities in Grand Cape Mount and Bong Counties. The communities will expand depending on realization of the MDG Village concept in Liberia. UNDP sees this as a way of reducing energy shortage and a means of poverty reduction.
On a global scale, Liberia's contribution to global warming is negligible. Liberia is likely to be disproportionately affected by the impacts of climate change. The forest potential may decrease the country's overall CO^2 generation and may lead to negative loads (pecuniary proceeds and revenue) of CO^2, or emissions trading potential.

7.9 Poverty

Over 80 per cent of the Liberian population suffers from income poverty, living below the universally established poverty line of US$1/day. According to a Poverty Profile Study, poor households in Liberia live on approximately US$11.32 per month to feed an average of six people. The poverty environment link would indicate a precarious situation in Liberia, unless poverty is directly handled with much of moral suasion to avoid detrimental effects on the environment.

7.10 Gender

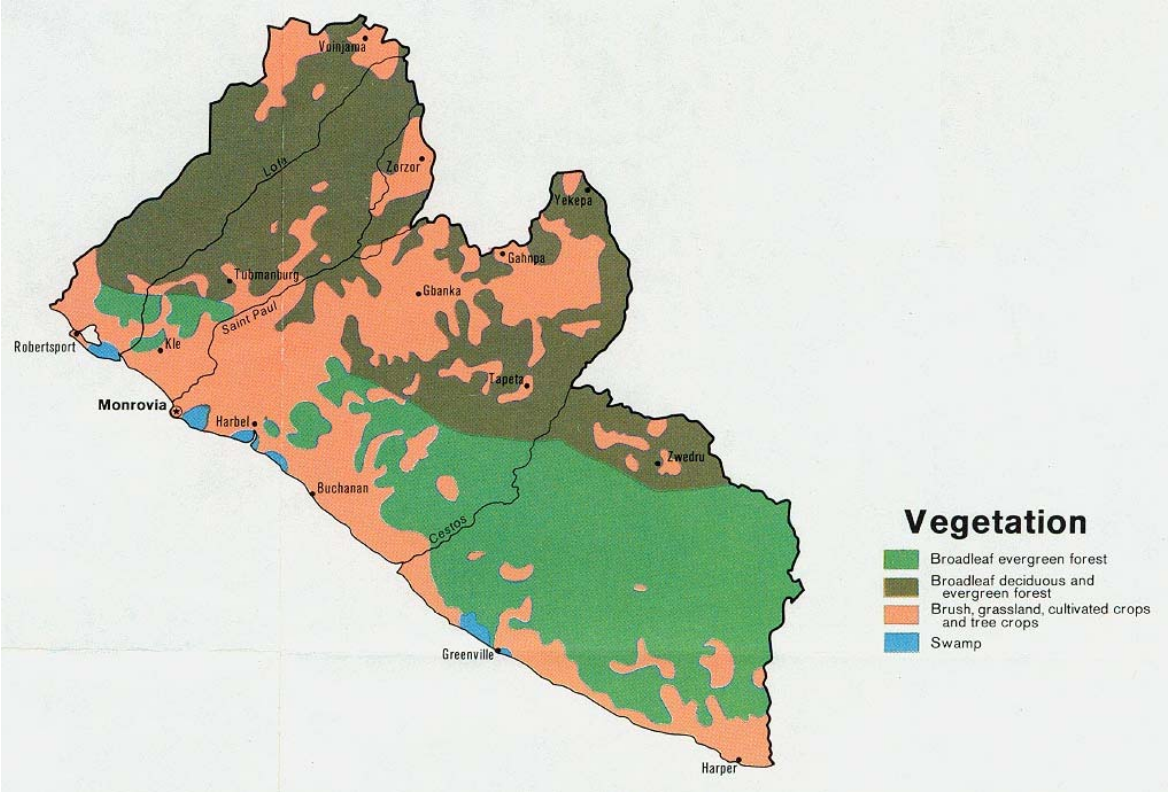
Women are custodians of the environment in terms of their household activity, dependence on water for domestic services or waste disposal. Hence, education and care should be particularly directed to this social class.
The violence and crime against women, has not yet been brought under control. Environmental education begins with women, hence from an environmental perspective should enjoy utmost care and considerable effort in upcoming environmental management programmes – at all levels of responsibility.

8. Technical annexes

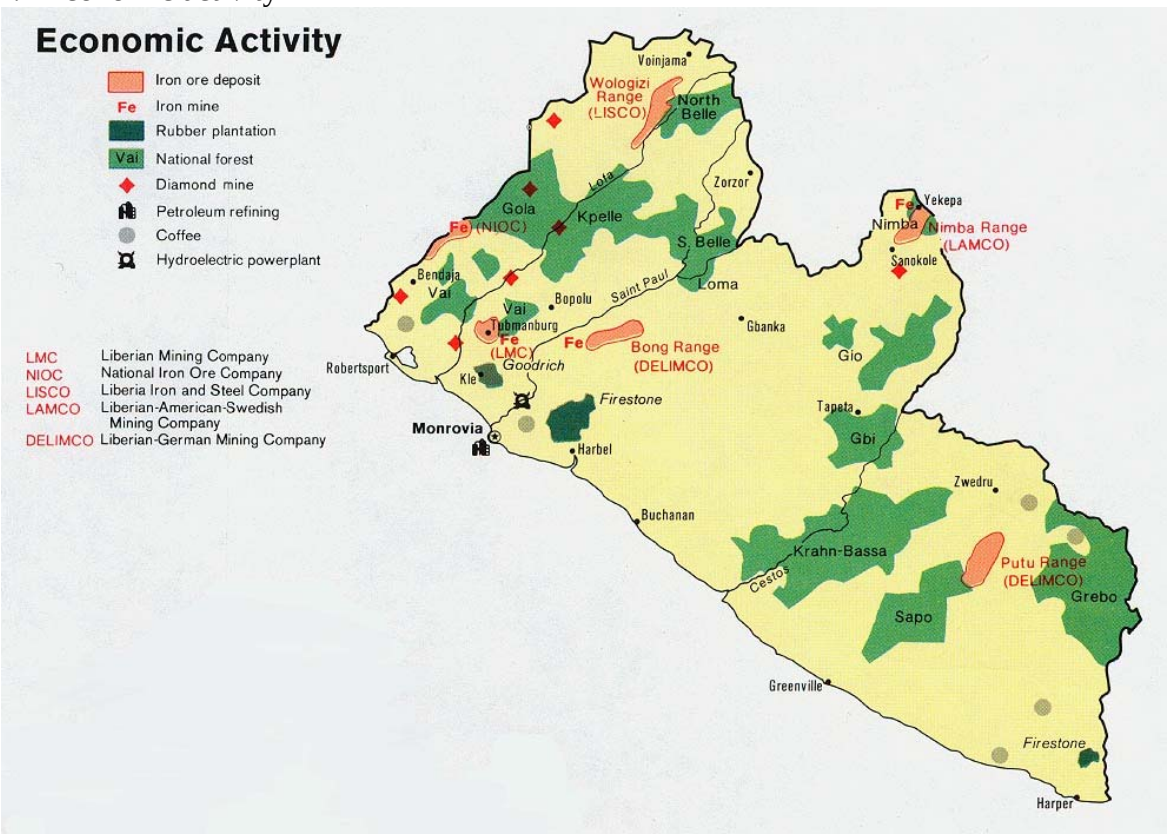
8. Technical annexes
I. Environmental maps
II. Reference list of environmental policy documents, statements and action plans
III. Donors' cooperation on environment
IV. Statistics and indicators

I. Environmental maps

I.1 Vegetation



I.2 Economic activity



Statistical tables

MDGs Established Targets for 2015

Goals	Targets
1. Reducing extreme poverty	1. Between 1990-2015, halve proportion of people with income less than US$1/day. 2. Between 1990-2015, halve the proportion of people who suffer from hunger.
2. Achieve Universal primary education	3. By 2015, ensure that children (boys & girls) everywhere will be able to complete a full course of primary schooling.
3. Promote gender equality and empower women	4. Eliminate gender disparity in primary and secondary education, preferably by 2005 and in all levels of education no later than 2015,
4. Reduce child mortality	5. Reduce by two-thirds, between 1990-2015, the under-five mortality rate.
5. Improve maternal health	6. Reduce by three-quarters, between 1990-2015, the maternal mortality ratio.
6. Combat HIV/AIDS, malaria and other diseases.	7. By 2015, have halted, and begun to reverse, the spread of HIV/AIDS, 8. By 2015, have halted, and begun to reverse, the iincidence of malaria and other major diseases.
7. Ensure environmental sustainability	9. Integrate the principles of sustainable development into the country's policies and programmes and reverse the loss of environmental resources. 10. halve by 2015 the proportion of population without access to safe drinking water. 11. Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers.
8. Develop a global partnership for development	12. In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries. 13. In cooperation with the private sector, make available the benefits of new technologies, especially information and communication.

Liberia's MDG Balance Sheet

Goals	Will Goal be Achieved?	State of Supportive Environment	Monitoring Capacity
1. Extreme Poverty	Unlikely	Weak	Weak
2. Achieve Universal Primary Education	Probably	Weak	Weak
3. Promote Gender Equality and empower Women	Probably	Weak	Weak
4. Reduce Child Mortality	Unlikely	Weak	Weak
5. Improve Maternal Health	Unlikely	Weak	Weak
6. Combat HIV/AIDS, Malaria and other Diseases	Unlikely	Weak	Weak
7. ensure Environmental Sustainability	Probably	Weak	Weak
8. Develop a Global Partnership for Development	Probably	Poor	Fair

Liberia Gender Profile

	Liberia				Sub-Saharan Africa		Low income	
	1980	1990	2000	2004	1980	2004	1980	2004
GNP per capita (US$)	530	*280*	130	120	652	601	321	507
Population								
Total (millions)	1.9	2.1	3.1	3.2	385.0	725.8	1,392.2	2,343.0
Female (% of total)	50.1	50.1	50.1	50.1	50.3	50.1	49.0	49.3
Life expectancy at birth (years)								
Male	43	41	41	42	47	46	52	58
Female	46	44	43	43	50	47	53	60
Adult literacy rate (% of people aged 15+)								
Male	..	55.4	..	..	..	..	..	72.8
Female	..	22.8	..	..	..	..	..	50.4
LABOR FORCE PARTICIPATION								
Total labor force (millions)	1	1	1	1	157	299	567	956
Labor force, female (% of total labor force)	39	39	40	40	43	42	37	35
Unemployment								
Total (% of total labor force)	..	..	..	..	..	..	..	..
Female (% of female labor force)	..	..	..	..	..	..	..	..
EDUCATION ACCESS AND ATTAINMENT								
Net primary school enrollment rate								
Male	..	..	74	..	..	*68*	..	*82*
Female	..	..	58	..	..	*60*	..	*75*
Progression to grade 5 (% of cohort)								
Male	..	..	..	..	..	..	..	..
Female	..	..	..	..	..	..	..	..
Primary completion rates (% of relevant age group)								
Male	..	..	..	..	..	66	..	78
Female	..	..	..	..	..	56	..	70
Youth literacy Rate (% of people aged 15-24)								
Male	..	75.4	..	..	..	..	..	81.3
Female	..	38.6	..	..	..	..	..	66.5
HEALTH								
Total fertility rate (births per woman)	6.9	6.9	6.8	6.8	6.7	5.3	5.6	3.7
Contraceptive prevalence (% of women aged 15-	..	..	10	..	..	22	..	40

49)								
Births attended by skilled health staff (% of total births)	..	..	51	..	..	42	..	40
Maternal mortality ratio (per 100,000 live births)	..	..	760	..	..	..	..	..
Child malnutrition prevalence, weight for age (% of children under 5)	..	..	27	..	..	..	..	43

Note: Data in italics refer to the most recent data available within the two years of the year indicated

Liberia key indicators

Click on the indicator to view a definition	2000	2004	2005
People			
Population, total	3.1 million	3.2 million	3.3 million
Population growth (annual %)	5.2	0.6	1.3
Life expectancy at birth, total (years)	42.2	42.5	..
Fertility rate, total (births per woman)	6.8	6.8	..
Mortality rate, infant (per 1,000 live births)	157.0	157.0	..
Mortality rate, under-5 (per 1,000)	235.0	235.0	..
Births attended by skilled health staff (% of total)	50.9	..	..
Malnutrition prevalence, weight for age (% of children under 5)	26.5	..	..
Immunization, measles (% of children ages 12-23 months)	52.0	42.0	..
School enrollment, primary (% gross)	99.2	..	..
School enrollment, secondary (% gross)	32.2	..	..
School enrollment, tertiary (% gross)	15.5	..	..
Ratio of girls to boys in primary and secondary education (%)	72.7	..	..
Literacy rate, adult total (% of people ages 15 and above)	..	..	..
Environment			
Surface area (sq. km)	111.4 thousand	111.4 thousand	111.4 thousand
Forest area (sq. km)	34,550.0	..	31,540.0
Agricultural land (% of land area)	26.9	..	..
CO2 emissions (metric tons per capita)	0.1	..	..
Improved water source (% of population with access)	..	61.0	..
Improved sanitation facilities, urban (% of urban population with access)	..	49.0	..
Economy			
GNI, Atlas method (current US$)	384.7 million	376.9 million	435.8 million
GNI per capita, Atlas method (current US$)	130.0	120.0	130.0
GDP (current US$)	560.9 million	496.8 million	548.4 million
GDP growth (annual %)	25.7	2.6	5.3
Inflation, GDP deflator (annual %)	-1.3	2.9	9.0
Agriculture, value added (% of GDP)	72.0	64.3	63.6
Industry, value added (% of GDP)	11.6	14.7	15.2
Services, etc., value added (% of GDP)	16.4	21.1	21.1
Exports of goods and services (% of GDP)	..	34.5	36.6
Imports of goods and services (% of GDP)	..	47.4	50.2
Gross capital formation (% of GDP)	..	12.2	15.9
States and markets			
Military expenditure (% of GDP)	..	..	..
Fixed line and mobile phone subscribers (per 1,000 people)	2.7	..	..
Internet users (per 1,000 people)	0.2	..	..
Roads, paved (% of total roads)	..	..	..
Global links			
Merchandise trade (% of GDP)	177.8	248.6	250.7
Foreign direct investment, net inflows (BoP, current US$)	21.0 million	20.0 million	..
Long-term debt (DOD, current US$)	1.0 billion	1.2 billion	..
Present value of debt (% of GNI)	..	760.3	..
Total debt service (% of exports of goods, services and income)	..	..	..
Official development assistance and official aid (current US$)	67.8 million	210.5 million	

Source: *World Development Indicators database,* April 2006

9. Administrative annexes

I. Methodology and work plan

I.1 Methodology

The Country environmental profile (CEP) of Liberia is directed to integrate environmental issues in planning for the 10th EDF programs and coordination of cooperation initiatives with other donors.

This exercise is based on existing data and the outcome of discussions with representatives from EC Office in Liberia, the NAO, local authorities, donors, implementing agencies and the stakeholders of the development process. Field visits of representative sites are also forecast.

Assessment of basic issues is organized around the analysis of:

- the status of environment,
- environmental policies, legislation, concerned institutions and stakeholders,
- environment in past and ongoing programs of Ec and other donors,
- environment integration in development strategy, current and forecast programs.

Syntheses of such assessments are used in the elaboration of the CEP and Final report, according to the following work plan. The CSP environmental annex is also elaborated from the synthesis of the status of the environment.

An output (draft reports) presentation workshop is held before the end of the mission.

I.2 Work plan

Activity	*Description*	*Days*	*Place*
Briefing	Meeting with EC representatives from Environmental and Development DG Meeting with Environmental Help Desk and Liberia country desk	20-21/11	Bruxelles
Trip to Liberia		22/11	Bruxelles - Monrovia
Briefing	Meetings with EC Office in Liberia representatives and the NAO Discussion of ToRs Planning of meetings and field visits	23/11	Monrovia
Desk study	Examination of documentation Introduction to local authorities, donors and implementing agencies representatives Visit of urban sites (Monrovia slums)	24-27/11	Monrovia
Collection of information	Visits and discussions with representatives of local authorities, donors and other stakeholders Discussion of environmental issues of development and programs under planning with representatives of EC Office in Liberia and NAO **Deliverable 1: Inception report**	28/11-1/12	Monrovia
Desk study	Visits and discussions with representatives of local authorities, donors and other stakeholders - Elaboration of the Status of environment - Legislation and institutions assessment - Development plans and cooperation programs assessment - Elaboration of environmental recommendations for development plans and 10th EDF programs Visit of urban site (water sewage system, Monrovia) **Deliverable 2a. Preliminary CEP**	2-10/12	Monrovia
Elaboration of draft CEP and final report	Elaboration of CEP Planning of the final workshop	13-17/12	Monrovia
Draft CEP submission	**Deliverable 2b: CEP**	15/12	Monrovia
Field visit[1]	Visits of: - Mining site - Biodiversity conservation site (forest)	16-19-5/12	Grenville

[1] To be confirmed, according to further arrangements and security clearance

Workshop	Workshop	20/12	Monrovia
Desk study and debriefing	Debriefing with the EC and NAO	21/12	Monrovia
Return trip		22-23/12	Monrovia – Bruxelles – home sites
Draft Final report	Comments from the representatives of the EC Office in Liberia	2-5 weeks	Europe
Final report	Incorporation of comments and completion of the Final report **Deliverable 3: Final report**	1 week	

II. Consultants' itinerary

Activity	*Description*	*Days*	*Place*
Briefing	Briefing at Agreco consortium Meeting with EC representatives from Environmental and Development DG	20/11	Bruxelles
	Meeting with Environmental Help Desk Meeting with Liberia country desk	21/11	
Trip to Liberia		22/11	Bruxelles - Monrovia
Briefing	Meetings at EC Office in Liberia Submission request for visa	23/11	Monrovia
Desk study	Meetings at AT NAO Meetings at EC Office in Liberia Examination of documentation Visit of urban sites (Monrovia slum)	24/11	Monrovia
Desk study	Examination of documentation	25/11	Monrovia
Desk study	Examination of documentation	26/11	Monrovia
Meetings	Ministry of planning and economic affairs Unep post-conflict mission Flora and fauna international NGO Environmental protection agency EC Delegation	27/11	Monrovia
Meetings	LCIP NGO Unmil civil affairs – environment Forest reform committee (FRMC); Meeting of the Committee on illegal wood logging TA NAO	28/11	
Desk study	Visit of urban sites (Monrovia slum) Elaboration and submission of Inception report Comments on the iPRS	29/11	Monrovia

III. List of persons / organizations consulted

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		Environmental legislation adviser, Udnp, Monrovia		

IV. List of documents consulted

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V. Cross references of the sections of the reports

Section	*Inception report*	*CEP*	*Final report*	*Expected results (see the Chapter 5 of the ToRs)*
List of abbreviations & acronyms		+	+	
Table of contents		+	+	
Summary		1	1	
Introduction	1	2	2	
Comments on the Terms of reference	2			
Preliminary issues and findings	3			
State of the Environment		3	3	Assessment of the state of the Environment and key environmental factors and trends influencing Liberia's development and stability
Environmental issues		4		
Environmental policy, legislative and institutional framework		5	4	Assessment of Liberia environmental policy and legislation, institutional structures and capacity, and the involvement of civil society in environmental issues
Environmental policy and legislation		5.1	5.1	
Environmental legislation and institutional framework		5.2	5.2	
Integration of environmental concerns into the main sectors		5.3	5.3	Assessment of the integration of environmental concerns in development policy and sectors with key linkages with environmental issues
EC and other donor co-operation with the Country from an environmental perspective		6	6	Overview of past and ongoing EC and other international co-operation in the environment sector with regard to Liberia
Conclusions and recommendations - Selection of the focal sectors and response strategies, based on environmental considerations - The use of EC horizontal budget lines (such as Environment and Forests) and facilities (EU Water Facility - EUWF and the EU Energy Facility - EUEF) - Opportunities for co-ordination on environmental issues with other donors, seeking to achieve complementarities and synergies in order to more effectively deliver development objectives - Proposals for environmentally-relevant indicators to be used in the NIP (National indicative programme) or to be considered during the formulation of a GBS or SPSP (if relevant)		7	7	Recommendations on how the European Commission assistance under the 10th EDF can help Liberia in transforming the apparent *loss* due to environmental degradation into a *gain* for the national development. Recommendations include guidelines or criteria to be used for environmental mainstreaming in subsequent phases of the cycle of operations and will be included in the *response strategy* of the CSP
Country strategy paper Environmental			8	

annex summary				
Technical annexes	4	8	9	
Environmental maps	I	I	I	
Reference list of environmental policy documents, statements and action plans		II	II	
Donors' cooperation on environment		III	III	
Statistics and indicators		IV	IV	
Country environmental profile			V	Country environmental profile
Administrative annexes	5	**9**	**10**	
Methodology and work plan	I	I	I	
Consultants' itinerary	II	II	II	
List of persons / organizations consulted	III	III	III	
List of documents consulted	IV	IV	IV	
Cross references of the sections of the reports	V	V	V	
Terms of reference	VI	VI	VI	
Curricula vitae of the consultants		VII	VII	

VI. Terms of reference

TERMS OF REFERENCE
Liberia 9th EDF
Preparation of the Country Environmental Profile of Liberia and assistance in the programming exercise for the 10th EDF in the field of Environment and development

Background

Country background

The European Commission (EC) is making a major contribution to the Liberian Peace process, as set out in the Accra Comprehensive Peace Agreement (ACPA) signed in August 2003 and implemented by the National Transitional Government of Liberia (NTGL). A National Transitional Government of Liberia (NTGL) was established on 14 October 2003. Its mandate ended in January 2006, when the democratically elected President (elected on 8 November 2005) took office.
Liberia's reconstruction and recovery over the period 2004 to 2006 was laid out in the Results Focused Transitional Framework (RFTF) - the two year reconstruction programme for Liberia derived from the 2004 Joint Needs Assessment, and presented by the NTGL to the international community at a donor conference held in New York in February 2004. The RFTF is divided into 6 specific clusters, covering the evolution from security, through demobilisation to the restoration of democracy, improved governance and the provision of basic services. RFTF ended its activities on 31st March 2006 with the end of the transition period. Development activities are now overseen by the Liberian Reconstruction and Development Committee chaired by the President. The LRDC has four clusters each representing one of the new Government's priorities: (i) Security, (ii) Rule of Law and Governance, (iii) Economic Revitalisation and (iv) Infrastructure and basic social services. They constitute the pillars of the interim Poverty Reduction Strategy that the Government elaborated (iPRS first draft made available in July 2006) and that is intended to bridge between the RFTF and the full 2008-2011 PRSP.
In 2001, the European Union (EU) opened consultations with Liberia in accordance with the provisions of the Article 96 of the Cotonou Agreement. The Government undertook a number of commitments aimed at restoring democracy and improving respect for human rights, and on 27th June 2006, after a four year suspension, the Council adopted the Decision to lift the appropriate measures under Art.96 to conduct an enhanced, structured political dialogue based on Art. 8. of the Cotonou Agreement.

In this context, programmes funded through the European Development Fund (EDF) are still currently managed by the Commission acting on behalf of the Government of Liberia. The National Authorising Officer (NAO) responsibility is currently delegated to the Chief Authorising Officer of the EDF, who has in turn sub delegated his signatory authority to the Head of Delegation for Ivory Coast and Liberia (in Abidjan). The EC's cooperation with Liberia under EDF 9 (using re-programmed 8th EDF funds) comprises two main programmes: the €45m Post Conflict Rehabilitation and Capacity Building Programme (PCRCBP), and the EDF 9 National Indicative Programme
The "Post-Conflict Rehabilitation and Capacity-Building Programme for Liberia" Financing Agreement was signed on 25 November 2003 and aims at supporting to the National Transitional Government of Liberia (NTGL) for the implementation of the peace process. Its 3 components are: Institutional support (€ 14 million), to support the re-establishment and

functioning of key public Ministries and key other Institutions and civil organisations involved in the peace and reconstruction process; Activities in support of DDRR (€ 16 million), to support the Liberian Disarmament, Demobilisation, Reinsertion and Reintegration Programme; And Community-based Rehabilitation (€ 8 million), rehabilitation of community basic public, economic and social.
A Country Strategy Paper (CSP) and National Indicative Programme (NIP) for the 9th EDF (2004-2007) was signed in January 2006, on the occasion of the inauguration of the new Government, for funding further rehabilitation and reconstruction measures for Liberia on the base of a Commission decision on allocation of 9th EDF financial A and B envelopes. The 9th EDF CSP aims at alleviating poverty and consolidating peace and democratic process by achieving equitable economic growth and increasing access to social services. The first focal sector is County Development with a €20m budget, with the objectives to encourage economic growth, improve social welfare in the health, water, and education and road sectors, while supporting local institutions. The second focal sector is Education, with a budget of €12m, aiming at increasing access to education and improving its quality. The non focal sector (€7.4m) will assist government institution in continuing to address issues related to governance and accountability. An additional €6.5m from the 9 EDF B-envelope has been earmarked to increase the financial envelope of this programme to allow for the rehabilitation of the electricity transmission grids servicing in Monrovia.

Since the 9th EDF expires on 31 December 2007, the Delegation of the European Commission in Liberia, together with the Government of Liberia, are currently involved on a programming exercise for the 10th EDF 2008-2013 including the preparation of a new CSP. In addition to the IPRS, the policy documents of the European Commission should lie at the core of this programming exercise (e.g. European Consensus, Strategy for Africa, MDG Communication Package, Paris Declaration). As a first direction to the programming, the Government of Liberia and EC have prepared a Joint Orientation Note outlining the indicative priorities for the 10th EDF, and the first draft of the 10th EDF CSP/NIP is under finalisation.

Current state of affairs in the relevant sector

The iPRS outlines essential environmental issues faced in Liberia: Environmental laws and regulations exist, but the Environmental Protection Agency (EPA) has not been fully institutionalized and neither specific standards nor guidelines nor effective activities are in place to address the needs in Environmental Impact Assessments (EIA), sustainable use of natural resources, environmental protection and management. Adequate management and sustainable use of natural resources and environment is recognised as a crucial cross-cutting issue in the Government strategy to enhance broad-based growth, create meaningful jobs and ultimately contribute to reduce poverty. In this regard conciliating improved productivity with sustainability in the use of mineral and forest resources and agricultural practices to generate income and contribute to food security is considered of particular importance by the Government, which sees as priorities:
- The revitalization of the EPA
- The formulation of guidelines and standards for EIA and pollution control
- Starting effective to monitoring and enforcement of the Environmental Protection and Management Law of Liberia.
- Putting in place good governance and regulatory mechanisms to stabilize natural resource rich areas, and ensure economic benefits for citizens and environmental sustainability;
- Providing training, coordination, and community participation in maintaining decision making on good governance of resources and environmental sustainability

From the iPRS, a summary of envisaged responses to environmental challenges is quoted in (annex IVa), as well as an excerpt from revitalisation of Mining and Forestry strategy (annex IVb).

Description of the assignment

The Commission has committed itself to take systematic account of the environmental dimension in all areas of interventions, to support the inclusion of the environmental considerations in poverty reduction and in development strategy to pro-poor environment-related initiatives and policies. The EU will assist developing countries in implementing the multilateral Environmental Agreements (MEAs). The document “integrating Environment into Economic and Development Cooperation” (SEC (2001) 609) define the objectives of the EC strategy for integrating Environment. In 2004 the EC took a specific commitment to prepare country Environmental Profiles (CEPs) for the ACP countries. In 2005 a commitment was taken to carry out Strategic Environmental Assessments (SEA) on a systematic basis.

The ‘Environmental Profile’ includes information on the status and characteristics of environment. It should include an overview of the existing legal instruments relevant to environment and the ongoing and planned initiatives aimed at enhancing mitigating environment degradation, improving management capacities (see ToRs for Environmental Profile in annex II and standard report format for a Country Environmental Profile in annex III). The availability of such a comprehensive Environmental Profile would be useful to all Missions. Furthermore, the elaboration of a Country Environmental Profile could provide the basis to identify crosscutting or specific approaches and activities under the 10th EDF NIP in support to priority environmental issues in the Liberian context.

Beneficiaries

The direct beneficiaries of this assignment are the Government of Liberia, the EC and the donor community at large, and national services which in the framework of their mandates and responsibilities deal with or should integrate environmental issues
.

Objectives

The consultant is hired:

To identify and assess environmental issues to be considered during the preparation of the CSP, which will influence EC co-operation activities. To this end, compile and analyse all available information on environment and development in Liberia as well as all the activities of donors in this area, and develop an Environmental Profile for Liberia. The Environmental Profile will constitute an important source of baseline information and contribute to focusing political dialogue and co-operation with Liberia on key areas of concerns
To and assist in the identification and programming exercise in view of the upcoming 10th EDF (Country Strategy Paper 2008-2013) for possible interventions having key linkages between the environment and poverty reduction in Liberia.

3. REQUESTED SERVICES/SCOPE

General approach

The assignment involves the contacting of EU Office in Liberia, several Ministries and Agencies that have a stake in environmental governance, the Environmental Protection Agency, local authorities, international organisations such as UNEP, WB, etc. located in Liberia, other donors and development partners and other relevant bodies to facilitate the gathering of adequate information. The assignment also requires identifying, compiling and analysing information available in reports and databases (OECD environmental data, UNEP desk study on the Environment on Liberia, etc.)

A number of reports are available in the Environment sector at Technical Assistance to the NAO (TANAO) library in Liberia. Among them it can be noticed:
"A Re-assessment of Forestry Cover, Updating of the Protected Forestry System and Improvement of Environmental Information in Liberia, EC Grant, B7-6201/2000-08, Final Technical Report, March 2006;
"Desk Study on the Environment in Liberia, UNEP2005;
"Global Resources Assessment 2005", FAO, 2006;
The National Environmental Policy Of the Republic of Liberia, National Environmental Protection Agency of Liberia, 2003

Once this first phase of in situ information gathering is concluded, the desk phase of the assignment will start to translate the obtained information into the requested end-product (see under point 7 'reporting').

Specific tasks

Gather all relevant information necessary for the establishment of the Environmental Profile (as outlined in annex II) and prepare a report for the Country Environmental Profile (report format under section 7 of this TORs). Include the information derived from the OECD database and Identify ways to provide regular updates on this information;
Identify the main negative trends as well as pressures contributing to global environmental problems, such as economic incentives, demographic pressure, access right to natural resources and land tenure systems (see guiding checklist in annex I);
Analyse the repercussions of the findings of the Environmental Profile on the development of the country and suggest concrete recommendations for 1) practical approach and activities to better integrate and address environmental issues in the framework of the 10th EDF focal and non-focal areas and 2) possible programmes/projects to foresee and to fund under the 10th EDF linked to environment and impacting positively on the national development.
Collect appropriate environmental indicators in order to establish a consistent basis for comparison among countries and for monitoring of changes in the country. Attention should be paid to MDG 7[1] indicators and specific indicators related to the environmental issues in Liberia;
Compile comprehensive information from other donors, Missions, international organisations, national public bodies, NGOs, etc. about already ongoing interventions in the field of environment and development with the aim to establish for the EC Delegation an exhaustive overview about existing activities and contacts and to avoid overlapping in programming with other stakeholders.

4.EXPECTED RESULTS

The Country Environmental Profile as outlined in the report format in annex II;
An assessment of the state of the Environment and key environmental factors and trends influencing the Country's development and stability.
An assessment of national environmental policy and legislation, institutional structures and capacity, and the involvement of civil society in environmental issues.
An assessment of the integration of environmental concerns in development policy and sectors with key linkages with environmental issues.
An overview of past and ongoing international (including EC) co-operation in the environment sector with regard to Liberia.
Recommendations are given as to how the European Commission assistance under the 10th EDF can help Liberia in transforming the apparent 'loss' due to environmental degradation into a clear 'gain' for the national development. These recommendations have to be drafted in a way to be included in the 'response strategy' of the CSP and include guidelines or criteria to be used for environmental mainstreaming in subsequent phases of the cycle of operations (see attached Annex II: TOR for a CEP section 5).

expert profile

The proposed mission shall be conducted by a team of (two) experts who should have the following profile:

Expert level I with at least 15 years professional experience in environmental issues, including institutional aspects; international environmental policies and management; environmental assessment techniques and experience in rapidly assessing information and developing recommendations. He/she would be the team leader.
Expert level II with 10 years experience and with an Environment background complementary to the team leader for the purposes of this assignment.
Previous working experience in the Country or the region is requested for at least one team member;
Experts should have an understanding of the EU Environment and development policies;
For both experts experience in undertaking environmental analyses is essential and in preparation of development programmes would be an asset;
Familiarity with Commission guidance on programming, country strategies, PCM, policy mix and integration of environmental issues into other policy areas is desirable;
Experience of participatory planning processes would be an advantage.
Good reporting skills and strong analytical capacities; and
Computer literacy and good English language skills.

duration and Location

The assignment is expected to start by the end of October 2006 (indicatively 30th of October 2006). The total assignment duration is 39 calendar days, corresponding to 60 working manxdays including travels and excluding Saturday and Sunday that are not considered to be working days.

It is anticipated that the experts will spend 4 manxdays in EC HQ for briefing and gathering of information. The experts should be present together in Liberia for 31 calendar / 44 working manxdays. In addition they can work from headquarters for 3 additional working days each, upon their return. The location of the assignment is Monrovia, with possible limited travels to counties if identified as necessary and agreed upon with the Project Manager.

Indicative time schedule (working days)

	Expert I	**Expert II**
Briefing to the experts in Brussels and gathering of information	*2*	*2*
Field phase including consultations / possible workshop / information analysis	*18*	*18*
Debriefing in Liberia-not later than one week prior to departure	*1*	*1*
Report drafting	*3*	*3*
Final report elaboration	*3*	*3*
Total travel days (1 for mobilisation, 1 for Brussels – Monrovia, 1 at the end of the assignment)	*3*	*3*
Total days	*30*	*30*

REPORTING

The results of the study should be presented in the Country Environmental Profile in the format given in annex II of these ToR. A debriefing meeting with the stakeholders to present the preliminary findings of the Consultant will be organized. The Consultant will then submit the draft profile, to EC Office in Liberia three days before departure at the latest. Within (*5*) weeks, comments on the draft report will be received from the EC. The consultants will take account of these comments in preparing the final report (maximum length 20-40 pages excluding appendices), and will submit the final report no later than one week after reception of the comments. All reports as well as the main other documents required in the specific ToRs will be written in English and will be made available in a minimum of 5 copies (both in their draft and final form), as well as in a standard computerized format (electronic version, CD-ROM etc.) at no extra charge.

The final report shall contain the following components as a minimum:

1. Summary
The summary should succinctly and clearly present the key issues described in the profile following the order of headings 2 to 5 given below. The Summary should not exceed 6 pages.

2. State of the Environment

3. Environmental policy, legislative and institutional framework
3.1. Environmental policy and legislation
3.2. Environmental legislation and institutional framework
3.3. Integration of environmental concerns into the main sectors

4. EU and other donor co-operation with the Country from an environmental perspective

5. Conclusions and recommendations

6. Country Strategy Paper Environmental Annex Summary
Comprising the main issues presented in sections 2 to 4 above (excluding section 5) in not more than 4 pages.

7. Technical appendices

I Country Environmental Profile completed according to the Standard Report Format (see annex III)
II Recommendations for future programmes/projects to foresee and to fund under the 10th EDF in the field of migration and development in the form of one or two terms of reference or PIFs (cf Annex Va et Vb)
II. Environmental maps of the Country
III. Reference list of environmental policy documents, statements and action plans, and other relevant technical information.

8. Administrative appendices
I. Study methodology/work plan (1–2 pages)
II. Consultants' Itinerary (1–2 pages)
III. List of persons/organisations consulted with their affiliation and contact details (1–2 pages)
IV. List of documentation consulted (1–2 pages)
V. *Curricula vitae* of the consultants (1 page per person)
VI. Terms of Reference for the Country Environmental Profile

The following text shall appear on the inside front cover of the report:
This report is financed by the European Commission and is presented by [*name of consultant*] for the Republic of Liberia and the European Commission. It does not necessarily reflect the opinion of the … or the European Commission.

6. ADMINISTRATIVE INFORMATION

6.1 Fees.

As stated in the Global Terms of Reference of the Framework Contract, the Contractor will make available appropriate management and backstopping mechanism, quality control system, secretariat and any other support staff (editors, proof readers etc.) that it considers necessary in order to implement the Framework Contract. The support team will provide all the necessary logistical support both prior and during the assignment to allow the experts to concentrate on their primary responsibilities.

Regarding the specific assignment, all secretariat/office renting costs both in Headquarters and in Liberia, which may include rental, communications (fax, phone, mail, internet, courier etc.), report production and secretarial services both in the Contractor's home office and for the experts in the beneficiary country are considered as an overhead and are to be integrated in the fee rates of the experts. No cost of this nature may be charged in addition.

The experts may have adequate office space (with furniture, network printer, an internet connection, photocopy machine and meeting room facilities) made available in TA to NAO's offices. In any case, any costs associated with this arrangement, particularly office consumables, internet connection, communications costs etc. are the responsibility of the Contractor as no costs of this nature may be charged in addition.

The experts shall be fully equipped with cell phones, portable computers and the necessary software. They should purchase the paper necessary for the printing of reports and other documentation.

6.2. Per diem.

The maximum rate applicable at the time of request is indicated on the Europe Aid website: http://ec.europa.eu/comm/europeaid/perdiem/index_en.htm
Accommodation, subsistence and all intra-city travel regardless of the means of transportation are covered by the *per diem*. No cost of this nature may be charged in addition. However, the TA to the NAO office may be able to make available a vehicle for the experts for official duties during their assignment. In any case, fuel and driver costs (respectively of about $50 and $270 per month) have to be covered by the perdiem.

6. 3 Reimbursable

All expenses for the organisation of the different consultative meetings will be covered under reimbursable costs. Within the first two weeks of the assignment, the experts will provide a detailed budget plan for the consultative meetings foreseen above. The funds will be entirely managed by the experts- with no support provided by the NAO and the EC Delegation- and a detailed financial report with supporting documents will be submitted with the final report at the end of the assignment.
International airline tickets (economy class) and visas are to be considered as reimbursable costs and will be paid for on submission of the original supporting documents (ticket stubs, boarding passes, invoices, evidence of payment etc.). Inter-city travel costs can also be claimed as reimbursable.

An indicative budget table is enclosed in Annex I.

6. 4 Contact details

If clarifications are required on the request for services, questions are to be sent to the Head of Operations who will answer as soon as possible by sending the question and the answer to all three Framework Contractors participating in the selection process of this assignment.

Once the contract is awarded, administrative questions may be addressed to the Team Leader of the TA to NAO.

Monika Hencsey
Head of Operations
European Commission Delegation to Liberia
Tel: +231-6-55-39-88
Fax: +231-77-00-10-62
E-mail: monika.hencsey@cec.eu.int

Giancarlo Pollastro
Team Leader
Technical Assistance to the National Authorising Officer
E-mail: g.pollastro@tanao.org
Tel: +231-(0)6-543-753

These points are covered on the Europe Aid website dealing with framework contracts including instructions for completing the offer for services:
http://ec.europa.eu/comm/europeaid/tender/cadre05/index_en.htm

Annex I: - Issues to be assessed

The following issues should be assessed:
(The sub-headings below are the same as the recommended profile format)

4.1. The state of the Environment

This Chapter should identify the state and trends of key environmental resources or components in the country, including (as relevant), but not limited to:

Themes	**Aspects**
Mineral resources and geology	Mineral resources Geological risks (seismic, volcanic and related risks)
Land	Soil erosion and degradation Desertification Land use, arable land, losses due to urbanisation or infrastructure building
Water	Water regime Ground water Water quality
Air and climate	Air quality Potential climate changes and vulnerability
Forest, vegetation, ecosystems	Forest cover and volume Pastureland State of particular ecosystems (savannahs, mangroves, coral reefs…)
Biodiversity, wildlife	Local status of globally threatened species/habitats Alien invasive species Fish stocks Species with special value
Landscape	Aesthetic and cultural value of landscape
Living conditions in human settlements	Air and water quality Sanitation Slums

	Health Vulnerability to disasters

Pressures explaining the main negative trends should be identified, as well as pressures contributing to global environmental problems, using the following Table as a guiding checklist.

Themes	**Possible aspects to consider**
Mining, extraction of hydrocarbons	Extraction, treatment and transport of minerals and hydrocarbons
Water use and management	Water extraction (surface- and ground-water) Waste water discharges Water use
Land management	Land use planning
Forest exploitation, hunting, fisheries, biodiversity	Forest extraction Forest and fisheries management practices Hunting and fishing activities, poaching Use of NTFP (non-timber forest products) Fires Introduction of alien species
Livestock raising	Overgrazing Rangeland management, use of fire, water management
Agriculture	Extension of agricultural land Shifting cultivation Intensification Irrigation and water use Pest control Agricultural practices
Energy production and use	Sources of energy Energy consumption Energy efficiency
Urbanisation, infrastructure and industry	Urban growth and sprawl, urban planning, dams, roads, major infrastructure, polluting industries, tourism
Waste disposal and management	Waste production Waste management Public behaviour and practices, existing systems, hazardous waste management
Atmospheric emissions	Emissions of greenhouse gases and ozone-depleting substances Air pollutants affecting local or regional air quality (point-source and non-point source emissions)

As far as possible the driving forces influencing these pressures should be identified, such as economic incentives, demographic pressure, access rights to natural resources and land tenure systems.

Environmental trends should be assessed with regard to their social and economic impact, including:
Declines in economic production or productivity (e.g. agriculture, forestry, fisheries);
Threats to human health;
Human exposure to environmental disasters (e.g. floods, drought);
Conflicts and security;
Impact on poverty and on vulnerable groups (including women, children and indigenous peoples);
Sustainability of resource use;
Cultural values.

This Chapter should lead to the identification of problems, described in terms of situations or trends that are undesirable due to their current socioeconomic consequences (e.g. falling productivity, health problems, natural risks, social crises, conflicts), their future consequences (e.g. decline in natural resources, cumulative pollution) or their contribution to global environmental problems.

If appropriate the consultant could refer to appropriate environmental indicators in order to establish a consistent basis both for comparisons among countries and for monitoring changes in the studied country. Attention should be paid to the MDG 7[2] indicators, and specific indicators related to the particular environmental issues of the country.

If appropriate, the information could be organised according to eco-geographical subdivisions with the scale (regional, national, local) of the issues indicated.

4.2. Environmental policy, legislation and institutions

A brief description and review should be provided of the strengths and weaknesses of the following aspects, with their associated evaluation criteria given for guidance:

Aspect	**Evaluation criteria**
Policies	Existence of national policies, strategies and action plans for the Environment; including possible National Strategy for Sustainable Development (NSSD) and National Environmental Action Plans (NEAP). Policy response to global issues, sustainability issues (depletion of natural resources), and specific environmental issues identified above. Consistency between policies. Environmental integration in sectoral and macro-economic policies and existence of SEA of policies or strategies (especially the PRSP if relevant). Important measures taken by the Government to solve environmental concerns. Effectiveness in achieving targets.
Regulatory framework, including EIA and SEA legislation	Ratification status and implementation of MEAs (Multilateral Environment Agreements) such as those concerning climate change, biodiversity and desertification. Adequacy of (current and in preparation) environmental legislation (including land tenure and land reform, access rights to natural resources, management of natural resources, requirements for environmental assessment such as for EIA and SEA, pollution control, development control). Provision and procedures for public participation in environmental issues. Effectiveness of legislation enforcement. Use of other (non legislative) instruments, e.g. “green budgeting” (or Environmental Fiscal Reform) and market-based mechanisms, voluntary schemes (environmental management systems, environmental labelling, industry-government agreements). Potential impact of non-environmental legislation.
Institutions with environmental responsibilities	Identity, number and quality of institutions (involved in policy making, legislation, planning, environmental protection, monitoring and enforcement). Level of co-ordination and decentralisation. Strength and capacity of individual institutions. Influence on other institutions. Good governance practices. Capabilities, means, functioning of environmental services. Major NGOs, institutes or other organisations involved in environmental management or policy.
Public participation	Transparency and access to environmental information. Role of NGOs and civil society in environmental decision-making. Effective participation. Access to justice in environmental matters.
Environmental services and infrastructures	Protected Areas: number, areas, relevance, and effectiveness. Sanitation and waste treatment infrastructure.

	Disaster prevention systems. Emergency response mechanisms.
Environmental monitoring system	Relevance of selected indicators (with reference to MDG7). Measurement of the indicators: periodicity, liability. Integration in the general development indicators.

The analysis should both identify potential institutional/policy/regulatory causes of environmental pressures and the response by the government to solve the environmental problems.

4.3. Integration of environmental concerns into the main policies and sectors

The assessment should examine the integration of environmental concerns in the overall development policy and in sectors/areas that have key linkages with environmental issues and which might be identified for EC support, taking into account the focal areas of the current CSP. This section should examine whether there is a Strategic Environmental Assessment (or similar assessment) for the national development strategy or the Poverty Reduction Strategy and for the sectors. If an SEA exists, it should provide a brief description of it, including its main recommendations. The main legislation and institutional arrangements and measures of the sector which address environmental issues, especially those identified in section 4.1 should be examined.

4.4. EU co-operation with the Country from an environmental perspective

This section should review the past and current experience relating to development co-operation interventions with specific environmental objectives as well as the integration of Environment into other co-operation areas, including the application of environmental integration procedures (preparation of SEA or EIA in EC funded programmes/projects). Where information is available the environmental impacts or potential risks of EU co-operation should be identified for the benefit of future programmes. The results of existing evaluations/reviews should be incorporated and lessons drawn for the future. The implications for the Environment of budgetary support or sector wide approaches should be reviewed if these have been applied. The review should cover both geographical and thematic programmes.

4.5. Co-operation funded by other donors from an environmental perspective

This section should review the past and current involvement of other donors and their experience in the Country, and include a list of recent and planned projects/programmes with an environmental focus or anticipated impact. Co-ordination mechanisms between donors and the EC with respect to the Environment should be assessed.

5. Conclusions and recommendations

The key aspects of the state and trends of the Environment in the Country, including policy/regulatory and institutional constraints and challenges, should be clearly stated. These may be presented in a matrix, crossing environmental concerns and the main sectors or policies.

Based on a comprehensive assessment of the available information and on consultations with stakeholders, recommendations should be made on how the Commission and the Government

can better mainstream the Environment into the next Country Strategy Paper, taking into account current CSP and any pre-identified options for the next one, including the anticipated focal sectors.

Recommendations should address (but not necessarily be limited to) the following:

(1) Recommendations concerning the selection of the focal sectors and response strategies, based on environmental considerations. These recommendations should show how best to address the main environmental challenges identified by the CEP. This might be done by selecting Environment as a focal area and/or, more frequently, through environmental safeguards in other areas. These may include, for example, proposals for institutional strengthening and capacity building (including the enhancement of the regulatory framework and enforcement capacities) or recommendations for initiating an appropriate Strategic Environmental Assessment (SEA) process.

(2) Recommendations on the use of EC horizontal budget lines (such as Environment and Forests) and facilities (EU Water Facility - EUWF and the EU Energy Facility - EUEF).

(3) Opportunities for co-ordination on environmental issues with other donors, seeking to achieve complementarities and synergies in order to more effectively deliver development objectives.

(4) Proposals for environmentally-relevant indicators to be used in the NIP (National Indicative Programme) or to be considered during the formulation of a GBS or SPSP (if relevant).

Individual recommendations should be clearly articulated and linked to the problems to be solved and grouped according to the sector concerned or institutional stakeholder. The relative priority of the recommendations and an indication of the challenges to their implementation should be given.

Any constraints to preparing the profile resulting from limited information should be described.

6. Work plan

The work plan should include but not necessarily be limited to the following activities:

Consultations with EC country desk officers and other relevant officials, EC Delegation, the national environmental authority and a selection of national and local authorities, key international donors, plus key national and international civil society actors operating in the environmental field.
Review of key documents and reports, including (*include here a list of key documents already identified by the EC Delegation)* previous Country Environmental Profiles (EC and others); the current EC Country Strategy Papers; evaluation reports, existing Strategic Environmental Assessments (particularly those concerning potential focal sectors), EIA of EC funded projects; environmental literature, environmental policy and regulatory framework, legislation, regulations and enforcement relating to environmental issues, information on monitoring and environmental performance indicators..
Field visits to sites of key environmental concern and (if possible) the organisation of a national workshop that national authorities, donors, experts and representatives of civil society should be invited to participate with the aim of clarifying and validating key environmental concerns.

On the basis of the outline work plan and time schedule given in these Terms of Reference, a detailed work plan should be proposed.

Annex II – Terms of Reference Country Environmental Profile

This standard format is to be used in preparing a Country Environmental Profile. Using this standard format together with the sector guides will ensure that all issues are formulated clearly and concisely. For more information and understanding of the issues, see how to address environmental issues and sector guides.

A Country Environmental Profile provides information on the environmental conditions of a country or area, and on national environmental policy, regulatory reforms and institutional framework. This information is needed for the identification of EC cooperation activities with specific environment objectives, and establishment of environment safeguards in other activities.

Study background
The European Commission requires a Country Environmental Profile within the framework of the ongoing preparation of country strategies and indicative programmes for Liberia.

As background to the study, information will have to be compiled about any previous environmental country study; specific environmental concerns with reference to any evaluation reports; country legislative reviews; and recent projects undertaken and/or planned in the country or region.

Study objective
The Country Environmental Profile study will provide decision-makers in the European Commission and the partner countries with sufficient information to identify EC cooperation activities with specific environmental objectives and to establish Environment safeguards for other activities.
Study results
The study will deliver the following as essential minimum for a Country Environmental Profile:
An assessment of the environmental situation in the country covering the key issues and responses to these, environmental policy and legislation, institutional structure and capacity, the involvement of civil society, and international development assistance.
Recommendations for priority actions.
Issues to be studied
The consultants will study the following issues:

4.1 The state of the Environment
Including key issues (current status, pressures and trends), responses (objectives set, action taken /planned, regulations) and environmental performance in meeting objectives/plans and targets in the following areas (as applicable):
Physical Environment including climate/micro-climate, air quality and odour, water quality and resources, noise and vibration, topography and soils, geology and hydrogeology and natural disaster risks;
Biological conditions, biodiversity, ecology and nature conservation including rare, endangered and protected ecosystems, habitats and species, species of commercial importance or with potential to become nuisance or dangerous;
Socio-economic conditions, socio-cultural conditions and human health including archaeology and cultural heritage, values and aspirations, recreational, landscape and visual aspects, socio-economic aspects (population, employment, income revenue),and land use,

access/transportation, infrastructure facilities (power/fuel sources, water supply. Sewerage, flood control) agricultural development, mineral industry, tourism and other commerce and economic activity (formal and informal) and health aspects (public health). human health and access/transportation.
Where possible, make reference to internationally recognised indicators and quality standards to establish a consistent basis for comparison of environmental performance.

4.2 Environmental policy and legislation
The assessment should include:
policy and action plans (such as such as National Environmental Action Plans, sustainable development plans, Agenda 21) for natural resource protection and pollution control, and the effectiveness of enforcement;
legislation, current and in preparation, covering development control, requirement for EIA/SEA, environmental auditing, natural resource protection and pollution control, and provisions for public participation and access to environmental information and the effectiveness of enforcement of legislation;
government approach to key international environmental conventions such as climate change, biodiversity and desertification;

4.3 Environmental institutional framework
The assessment should include:
institutional structure and responsibilities of national/federal regional to local authorities and agencies in dealing with environmental issues in policy making, the legislature, planning, environmental protection, monitoring and enforcement;
formal structures and procedures for public participation in development control and environmental planning;
capacity and financial resources of authorities responsible for environmental management.

4.4 Integration of environmental concerns into the main economic sector
The assessment should cover the following sectors:
agriculture, fisheries and forestry;
mineral resources;
utilities including power, energy and water;
industry (from heavy industry to tourism)
transport
any other sector relevant to the specific country.

4.5 EC cooperation with the country from an environmental perspective
This should cover experience relating to interventions with specific environmental objectives, and the integration of Environment into programmes with other primary objectives, including the application of environmental assessment procedures.

4.6 Other funding agencies
This should cover:
involvement of other funding agencies and their experience in the country and include a list of recent and planned projects;
procedures for co-operation between funding agencies.
Work plan
The work plan should include but not necessarily be limited to the following activities:

Consultation with EC country desk officers, EC country delegation, national organisations and agencies and local authorities, key international funding agencies operating in the country, key national and international development, environmental, and civil rights NGOs operating in the country;
Review of evaluation reports with respect to environmental issues on development and economic co-operation produced by government, EC or other agency sources
Review of environmental policy and legislation framework, legislation and regulations and enforcement relating to environmental issues, action plans, and progress in implementation
Review of environmental performance indicators selecting appropriate indicators from those suggested by organisations such as EEA/OECD/Eurostat.

On the basis of the proposed work plan and time schedule outlined in this Terms of Reference, the consultants must detail their work plan for the Country Environmental Profile study in the Administrative Appendix of their final report (see under Point 7 of the Terms of Reference for Preparation of the Country Environmental Profile of Liberia and assistance in the programming exercise for the 10th EDF in the field of Environment and development) The consultants may propose and discuss with the project manager alternative approaches to collecting information and to carrying out the study.
Expertise required
See under Point 5 of the Terms of Reference for Preparation of the Country Environmental Profile of Liberia and assistance in the programming exercise for the 10th EDF in the field of Environment and development.

Reporting
The study conclusions must be presented in the Country Environmental Profile report in the format given in Annex III.

The language in which the reports should be written, the dates of submission, number of copies and recipients are specified under Point 7 of the Terms of Reference for Preparation of the Country Environmental Profile of Liberia and assistance in the programming exercise for the 10th EDF in the field of Environment and development.

Time schedule
See under Point 6 of the Terms of Reference for Preparation of the Country Environmental Profile of Liberia and assistance in the programming exercise for the 10th EDF in the field of Environment and development.
Appendices
Cf. Annex III, Report format for a Country Environmental Profile

ANNEX III: Standard Report Format for a Country Environmental Profile

Maximum length (excluding appendices) 20 – 40 pages.

INSTRUCTIONS FOR REPORTING
The report must be organised using the same headings set out below (chapters, sections and subsections). Under each of these headings, a list of key words and explanatory notes is given to indicate the topics to be handled. You will need to tailor each of these lists to the specific requirements of the Country Environmental Profile.

The following text appears on the inside front cover of the report:

This report is financed by the […….] and is presented by the [name of consultant] for the Government of […….] and the European Commission. It does not necessarily reflect the opinion of the Government or the European Commission.

Summary

This is an executive summary of the key aspects of the Country Environmental Profile referencing to the priority areas for action.

Background

This chapter will provide a brief overview of the country and include:

Physical conditions – geography and climate;

Current economic trends and social conditions;

Environmental awareness, education, population, politics

Overall administrative and legal context for environmental protection – including basic justice, human rights, equal opportunities and democracy aspects

State of the Environment

This chapter will set out an assessment of the state of the Environment including key issues as outlined in Section 4.1 of the TOR.

Environmental policy, legislative and institutional framework

This chapter will provide an assessment of the country's environmental policy, regulatory and institutional framework for pollution control, natural resource use and sustainable development. It will be divided into sections as follows:

4.1 Environmental policy and legislation

This chapter must include an assessment of the key issues outlined in Section 4.2 of the TOR.

4.2 Environmental institutional framework

This section must include an assessment of the key issues as outlined in Section 4.3 of the TOR.

4.3 Sectoral integration

This section must include an assessment of the key issues as outlined in Section 4.4 of the TOR.

4.4 EC and other international development assistance

This section must include EC and other donor assistance within the country from an environmental perspective covering the issues outlined in Sections 4.5, 4.6 and 4.7 of the TOR.

Recommended priority actions

This chapter will set out recommendations for priority actions.

Technical appendices

Map of the project area

Reference list of environmental policy documents, statements and action plans

Administrative appendices

Study methodology/work plan (1–2 pages)

Consultants' Itinerary (1–2 pages)

List of persons/organisations consulted (1–2 pages)

List of documentation consulted (1–2 pages)

Curricula vitae of the consultants (1 page per person)

Terms of Reference for the Country Environmental Profile

ANNEX IV: Priority Cross-cutting Responses to Key Environmental Issues during iPRS period

IVa

Pillar	Responses
Security	• Control use of single-barrel shotguns used for hunting in rural areas must be controlled in order to reduce the number of security incidents or tribal conflicts within the country as well as cross border disputes. • Include security around the natural resource rich areas need to be included in the national security plan and managed by legitimate authority; • Include environmental protection and management considerations (e.g., environmental units) in the establishment of the new Liberian Army, National Police and other security apparatus.
Economic Recovery	• Establish the necessary conditions for sustainable economic growth and social redevelopment, environmental protection and management issues should be closely linked to the socio-economic reforms contemplated by the government • Provide instruction and guidelines for the industries, developers and investors for sustainable use of natural resources and environmental protection
Infrastructure basic services	• Enforce proper Environmental Impact Assessments (EIA) for infrastructure development needs to be enforced in accordance with established laws • Develop adequate capacity in the key areas of monitoring and enforcement and EIA • Implement program to create public awareness of environmental issues
Governance & Rule of Law	• Initiate all governmental activities within the framework of environmental sustainability • Review existing policies and make changes where necessary; • Initiate development of mechanisms to enforce and monitor the environmental rules and regulations

IVb

Excerpt from the draft iPRS

Revitalizing Mining and Forestry - These sectors' contributions through increased Government revenues and job creation will have important implications for rebuilding social services and reducing non-income poverty. Moreover, the multiplier effects of these sectors will provide a major boost for the economy. The Government will seek to accelerate the review of contracts and concessions signed during the NTGL period, so as to remove the uncertainty for private investors. The Government will also strive to make permanent the recent lifting of forestry sanctions and to have diamond sanctions removed by taking the necessary steps to meet international requirements and obligations. The Government is committed to adopting the relevant international protocols and ensuring that the earnings from these sectors are used to develop the economy for the benefit of Liberians.

While working to restore traditional sources of growth (mining, rubber, timber), the Government will promote diversification in order to reduce the extreme vulnerability of the economy to international commodity price movements. It will therefore work with the private sector in identifying potential new sources of growth and on the development of related sector strategies. During the preparation of IPRS period, sector studies will be undertaken to identify opportunities within the global marketplace, examine market requirements, and identify constraints.

Proper management and sustainable use of natural resources and environment is crucial for enhancing broad-based growth, creating meaningful jobs and reducing poverty. Government faces considerable capacity challenges in dealing with environmental protection, land management and administration issues. Although Liberia's environmental laws and regulations are in place, specific standards have not been set to monitor activities. Additionally, there are major policy deficits especially with regard to land use and tenure.

Several Ministries and Agencies have a stake in environmental governance, but the primary institution is the Environmental Protection Agency. The EPA was established in accordance with the Environmental Protection Agency Act of 2003. The Forestry Reform Law has been reviewed and is currently being debated by the National Legislature. A UN/Government of Liberia Rubber Plantation Task Force was instituted to ensure proper administration of Government's owned plantations.

The Emerging Medium-Term Agenda - The Forestry Sector Reform Monitoring Committee was established to tackle some of the environmental challenges, but mainly the commercial aspects. The conservation and agricultural aspects were not adequately addressed to promote the sustainable use of land and other natural resources. Revitalizing and capacitating the Environmental Protection Agency (EPA) is therefore a key component of the medium-term strategy. Capacitating the EPA is necessary to monitor and enforce the Environmental Protection and Management Law. Subsequently, necessary guidelines and standards such as for Environmental Impact Assessment (EIA), and pollution control will be formulated and implemented. Enhancing the capacity of the EPA will ensure enforcement of environmental laws, rules and regulations; it will also allow relevant environmental line Ministries and Agencies to address the key emerging issues that the country is facing in the environmental sector.

Annex IVa:

IDENTIFICATION FICHE
(PROPOSAL FOR FORMULATION)
PROJECT APPROACH
A – Pipeline data
I –Basic Data
1. Title _____
2. Beneficiary country/region _____
3. DAC/OECD code & name _____
4. Task Manager _____
5. Delegation or Aidco-unit _____
II –Link with programming
6. Related Programming Document (CSP/RSP etc.)
_____
7. Does the action address a focal sector (Priority Area) of the programming document? Yes/No
If so, which focal sector (Priority area) _____
8. Action programme or Annual national financing plan
_____*(not applicable for ALA/ACP)*_____

III –Financial and implementation data

9. Total amount envisaged for the action €_____
10. EC contribution foreseen in the NIP/RIP *(if applicable)* €_____
11. EC contribution proposed at this stage *(if applicable)* €_____
12. If the amount in 11 differs from the NIP amount in 10 explain why

_____

13. Beneficiary contribution *(if applicable)* €_____
14. Other donors contributions *(if applicable)* €_____
15. Legal basis _____
16. Funding source *(budget year & line/EDF)* _____
17. Contracting authority[3] *(EC or other)* _____
18. Implementing organisation _____

IV –Indicative timetable (mm/yy)

Identification mission *(if applicable)*		Submission Financing Proposal	
Final report identification *(if applicable)*		ISC	
Submission Identification Fiche		Management Committee	

B – Rationale for the Measure

1. Coherence with the programming document and justification

2. Lessons learnt

Overarching objectives and crosscutting issues

Development/crosscutting objectives	**Directly targeted objective**	**Significant indirect impact**
Poverty reduction		
Good Governance		
Democracy, Human rights		
Integration in world economy		
Environment		
Gender		
Conflict resolution/Peace building		

4. Assessment of the sector policy

5. Added value of the Community intervention

6. Initial stakeholders analysis

7. Initial problems analysis

8. Objectives and strategy analysis

9. Assessment of technical assistance requirements and institutional and capacity issues ***(optional as it can be dealt with in the formulation phase)***

10. Assessment of the financial and economic viability of the measure ***(optional as it can be dealt with in the formulation phase)***

11. Assessment of the performance monitoring (optional as it can be dealt with in the formulation phase)

C – Options for the implementation
and for the organisation of the formulation phase

12. Options considered for the implementation of the project

13. Workplan and calendar for the formulation phase

Annex IVb:

TERMS OF REFERENCE

BACKGROUND

DESCRIPTION OF THE ASSIGNMENT
Global objective
Specific objective(s)
Requested services, including suggested methodology
Required outputs

EXPERTS PROFILE
Number of requested experts per category and number of man-days per expert
Profile required (education, experience, references and category as appropriate)
Working language(s)

LOCATION AND DURATION
Starting period
Foreseen finishing period or duration
Planning
Location(s) of assignment

REPORTING
Content
Language
Submission/comments timing
Number of report(s) copies

1 See http://www.undp.org/mdg/
2 See http://www.undp.org/mdg/
3 The authority signing the contracts on works, services or supplies.