

# **REPUBLIC OF LIBERIA**



**MINISTRY OF HEALTH & SOCIAL WELFARE**

## **FINAL DRAFT REPORT**

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**ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK  
(ESMF)**

**NOVEMBER 2009**

## **LIST OF ABBREVIATIONS AND ACRONYMS**

AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Illness
BOD	Biochemical Oxygen Demand
BP	Best Practice
CEC	County Environment Committee
CH&SWT	County Health and Social Welfare Team
cm	Centimeter
CTBT	Comprehensive Nuclear Test Ban Treaty
EA	Environmental Assessment
EHU	Environmental Health Unit
EIA	Environmental Impact Assessment
EPA	Environmental protection Agency
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
GDP	Gross Domestic Product
HSE	Health, Safety and Environment
HSRP	Health System Reconstruction Project
HIU	HSRP Implementation Unit
HIV	Human Immuno Virus
HSIU	HSRP Sub-project Implementation Unit
IDA	International Development Agency
IDPs	Internally-Displaced Peoples
IMCI	Integrated Management of Childhood Illness
IPRS	Interim Poverty Reduction Strategy
ISDS	Integrated Safeguards Data Sheet
km	Kilometre
LACE	Liberia Agency for Community Empowerment
m	Metre
MCC	Monrovia City Corporation

MDAs	Ministries, Departments and Agencies
MDGs	Millennium Development Goals
mg/l	Milligram per Litre
ml	Millilitre
mm	Millimetres
MoHSW	Ministry of Health and Social Welfare
MPW	Ministry of Public Works
MRD	Ministry of Rural Development
MSDS	Material Safety Data Sheet
MWMP	Medical Waste Management Plan
NBSAP	National Biodiversity Strategy and Action Plan
NECOLIB	National Environmental Commission of Liberia
NGO	Non-Governmental Organization
NNE	North-North-East
<sup>0</sup> C	Degrees Celsius

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## **EXECUTIVE SUMMARY**

### **Background**

The Health System Reconstruction Project (HSRP), financed by IDA, supplements efforts toward health sector reform and development. In essence, the HSRP builds on the work carried out by the MOHSW and international partners in implementation of the national health plan.

### **Project Description**

The overall goal of the Project is to help Liberia recover from the damage done to the health sector during the years of civil war. Under the National Health Policy and Plan, the government has reaffirmed its commitment to working toward achievement of Millennium Development Goals (MDGs), with particular focus on activities that will contribute to overall improvements in maternal and child survival.

In partnership with other donors, the proposed Project will contribute to: (a) Strengthening policy-making and management functions of the Ministry of Health and Social Welfare (MOHSW); and (b) providing critical inputs to sustain the referral system needed to support the essential health services.

### **Project Components**

#### **Component A. Support Systems**

This component will strengthen the policy making, management, and monitoring and evaluation capacity of the MOHSW. The component will support the operational capacity of MOHSW to effectively manage the Project by, inter alia, strengthening its management capacity, and expanding its monitoring and evaluation mechanisms, all through the provision of technical advisory services, training and Incremental Operating Costs

#### **Component B. Human Resources**

This component of the Project will increase the number doctors, nurses, and allied health workers in critical areas of staff shortages through recruitment and training.

#### **Component C. Infrastructure and Equipment**

This component will contribute to the necessary infrastructure and equipment for MOHSW clinics, county referral centers, and JFK hospital, especially in the case of services used by mothers and children. The component will support a rehabilitation of Recipient's essential medical facilities and medical teaching institutions, including the maternal and child wards at the John F. Kennedy Hospital and the A.M. Dogliotti College of Medicine.

### **Objective Of The Esmf**

The objective of the Environmental and Social Management Framework (ESMF) is to provide a screening process that will allow the structures responsible for the implementation of the project to identify, to assess the potential environmental and social impact of the HSRP with emphasis on activities related to disposal of medical waste and rehabilitation of seven county hospitals, JFK hospital and at least 200 clinics nationwide and this at stage of planning and development sub-projects

## Methodology

KEY ACTIVITIES	SPECIFIC TASKS
<b>Development of the Environmental and Social Management Framework</b>	1. Provide general information on the project
	2. Present the ESMF objectives
	3. Describe the project activities and components
	4. Present and analyze the baseline data (biophysical and socioeconomic environment)
	5. Analyze the national, legal and regulatory framework and the World Bank safeguard policies
	6. Analyze the country environmental and social management institutional framework and within the framework of the project
	7. Assess the project impacts
	8. Develop the Environmental and Social Management Plan including: <ol style="list-style-type: none"> <li>a. <i>Screening process</i></li> <li>b. <i>Mitigation measures</i></li> <li>c. <i>Environmental monitoring plan</i></li> <li>d. <i>Responsibility and Institutional arrangements in implementation and monitoring</i></li> <li>e. <i>Capacity Strengthening plan</i></li> <li>f. <i>Consultation plan</i></li> <li>g. <i>Implementation schedule</i></li> <li>h. <i>Cost estimation</i></li> </ol>
Technical appendices / recommendations/ List of individuals/institutions contacted/ references	

### Policy, Legal, Institutional Framework For Environmental Management

Liberia has put in place several policies and signed a number of protocols aimed at improving environmental management in the country. These range from national laws, regulations, policies, strategies and action plans to multilateral environmental agreements. As the government tries to put the country back on the path of sustainable development, the challenge will be the effective implementation of these various laws and regulations. The Environmental Protection Agency (EPA) is the government authority mandated by law to monitor, coordinate and supervise environmental issues in the country. There are also many other stakeholders involved in the sector. However, the required National Environmental Action Plan as stipulated in the EPA Act has however not been prepared by the EPA. Instead the EPA has produced a National Biodiversity Strategy and Action Plan and the State of Environment Report for Liberia. The proposal that the EPA has in place taking cognizance of the existing SOE and the NABSAP is to conduct a gap analysis so as to identify and address any inadequacies with the objective of ensuring the adoption of a sustainable environmental management practices across all sectors of the country.

### National Health Policy

The central vision of the National Health Policy is a nation with improved health and social welfare status as well as equity in health. The Ministry regards health as a basic human right and has devoted itself to ensuring that every Liberian has access to health and social welfare services regardless of economic status, origin, religion, gender or geographic location.

### National Health Plan

The National Health Plan outlines the objectives, strategies, and resources crucial to reforming the health sector so that it can deliver quality health and social welfare services to the people of Liberia.

### **Institutional Framework**

Administratively, the Republic of Liberia is divided into 15 counties namely Bomi, Bong, Gbarbolu, Grand Bassa, Grand Cape Mount, Grand Gedeh, Grand Kru, Lofa, Margibi, Maryland, Montserrado, Nimba, River Cess, River Gee and Sinoe.

Counties are further divided into Districts, Townships and Villages. Townships are made up of a number of villages. In the traditional structure, the county is also divided into clans, which are subdivided into sub-clans. Townships are grouped into clans depending on the language groups and traditional affiliations.

The County administrative head is the Superintendent. A District is headed by a Commissioner, a Clan by a paramount chief, a sub-clan by a clan chief, a township by a town chief and the village by a village chief.

In Liberia, the responsibility for environmental protection and management lies with the Environmental Protection Agency (EPA) and within the EPA each county is assigned a County Environmental Officer and a County Environment Committee. While the EPA now exists, County Environmental Officers and County Environment Committees had not yet been established at the time of preparation of this ESMF.

The County Health and Social Welfare Service Administration is the operational management structure, which includes the County Health and Social Welfare Team (CH&SWT). County health authorities manage county health facilities, including county hospitals.

The following are Ministries whose jurisdictions are relevant to various health facilities:

- Ministry of Gender and Development - created 2002 (the role of gender in development);
- Ministry of Internal Affairs (administration of political subdivisions from counties to towns);
- Ministry of Lands, Mines and Energy (Land Administration Issues);
- Ministry of Planning and Economic Affairs (long-term national planning, coordination of international aid programs, National Health Planning, Financing and Implementation);
- Ministry of Rural Development (integrated rural development including agricultural development); and
- Ministry of Public Works (Infrastructure Planning and Development).
- Ministry of Justice (Policy coordination and regulation for the pharmaceutical sector).

### **Overview of the World Bank's Safeguard Policies**

The HSRP has triggered one of the World Bank Safeguard Policies, namely OP 4.01 Environmental Assessment. There are however minor aspects (restriction of access water and passage) of OP 4.12 Involuntary Resettlement that are already being addressed. The remaining operational policies are not triggered by the HSRP. Annex 6 summarizes these safeguard policies.

### **Potential Environmental and Social Impacts of the HSRP**

The main environmental issues for the project relate to the handling and disposal of supplies such as medical laboratory substances, X-ray films, and other medical products and waste generated during the provision of health care. It also involves

construction waste generated during the rehabilitation of JFK (see figure 9.1 below) and a couple of other health care facilities.

### **Current Healthcare Waste Management Practices In Liberia**

The Health-care wastes are generated from various sources. These sources can be classified as major or minor. The Teaching/Specialist and the Regional hospitals form the major sources. Districts Hospitals, Private Laboratories, Health Centers/Post, other health facilities form the minor sources. The composition of the waste is often a characteristic of the type of source. For example, the operating theatres and surgical wards generate mainly anatomical waste such as tissues, organs, body parts and other infectious waste.

Solid waste generation depends on numerous factors, such as established waste management methods, type of health-care establishments, the proportion of patients treated on a daily basis and the level of complexity and degree of specialisation of the health facility. Hence, the Teaching Hospitals generate larger quantities of waste per unit than other facilities.

Data on waste load generation at the various health institutions are however not available. There are not sufficient facilities and reliable scientific methods in place for health care waste load determination.

Liquid wastes generated include excreta, bath water from wards and waste water from laboratories (specimens, reagents etc), operating theatres and mortuaries.

Few air emissions are generated from healthcare activities. They tend to be generated from the sterilisation processes (e.g. operating theatre). Other areas are the catering and laundry departments emissions are also generated secondly from the incineration of waste either from open burning or from the incineration.

The existing wastes segregation, treatment and disposal practices at many of the health-care facilities need significant improvement.

### **Potential Environmental And Social Impacts Of HSRP**

#### **Positive Environmental Impacts:**

- Aesthetics of Health-care facilities Improvement
- Reduced Health Risks

#### **Negative Environmental Impacts**

The health-care facilities rehabilitation will result in the generation of construction waste, dust generation and noise pollution. Health and safety issues and health-care service delivery interruption will arise in course of the rehabilitation. There would be possible conflicts between constructional activities and ongoing health-care services delivery.

#### **Potential Impacts of Health-care Waste**

Health-care waste includes a large component of general waste and smaller proportion of hazardous waste. Exposure to hazardous health-care waste can result in disease or

injury. The hazardous nature of health-care waste may be due to one of the following characteristics:

- It contains infectious agents;
- It is genotoxic;
- It contains toxic or hazardous chemicals or pharmaceuticals;
- It is radioactive;
- It contains sharps.

### **Positive Social Impacts**

- Employment Creation
- Materials and Equipment Supply Opportunities
- Removal of Geographical Inequalities
- Improving Socio-cultural Access
- Increase in Household Resources

### **Negative social impacts**

Under the HSRP, no new construction activities will be financed and therefore there will be no land acquisition. Hence there are no issues of involuntary resettlement under the project. However, the Catholic Hospital Community has issues such as access to source of safe drinking water and Tubman Boulevard due the fence wall development activity by the A.M. Dogliotti College of Medicine, which is being supported under the HSRP.

### **Environmental and Social Management Plan (ESMP)**

The objective of the ESMP is to outline the institutional arrangements relating to: (i) identification of environmental and social impacts arising from activities under these HSRP sub-projects (ii) the implementation of proposed mitigation measures (iii) monitoring and implementation of mitigation measures, (iv) capacity building, (v) proper management of biomedical wastes and other wastes and (vi) the budgetary allocations for the implementation and the chronology.

### **The environmental and social screening process**

A screening process, selection and evaluation of HSRP subprojects is required to manage environmental and social aspects of these activities. The extent of environmental and social measures required for HSRP activities depend on outcome of this process.

### **The Screening Process**

The purpose of the screening process is to determine whether sub-projects are likely to have potential negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the sub-projects design; to review and approve sub-projects proposals and to monitor environmental parameters during implementation. The extent of environmental and social work that might be required for the sub-projects prior to implementation will depend on the outcome of the screening process. Thus the results of this screening process will determine whether (i) no environmental work will be required; (ii) the implementation of simple mitigation measures will suffice; or (iii) a separate EIA will be required.

### Summarized Environmental Screening Process and Responsibilities

<b>Stages</b>	<b>Management responsibility</b>	<b>Implementation responsibility</b>
<b>1. Screening Environmental and Social Infrastructure Project: Selection including public consultation</b>	HSRP Secretariat	ESMS, HSUI, CH&SWT, NGO
<b>2. Determination of appropriate environmental categories</b>		
<b>2.1 Selection validation</b>		
<b>2.2 Classification of Project Determination of Environmental Work Review of screening</b>	HSRP Secretariat	ESMS EPA
<b>3. Implementation of environmental work</b>		
<b>3-1. If EIA is necessary</b>		
<b>3.1.a Preparation of terms of reference</b>	HSRP Secretariat	ESMS
<b>3.1 b Choices Consultant</b>	HSRP	
<b>3.1 c Realization of the EIA, Public Consultation Integration of environmental and social management plan issues in the tendering and project implementation,</b>	ESMS/HSRP Infrastructure Unit of MOHSW/HSRP	Consultant
<b>4 Review and Approval</b>		
<b>4.1 EIA Approval (B1)</b>	EPA	<u>EPA</u>
<b>4.2 Approval simple measures (B2&amp;c)</b>	ESMS	ESMS/EPA
<b>5. Public Consultation and disclosure</b>	HSRP Secretariat	ESMS/Proponent/Consultant
<b>6. Surveillance and monitoring</b>	HSRP/EPA/	ESMS/ M&E officer / Proponent
<b>7 Development of monitoring indicators</b>	HSRP	ESMS / Consultant

### Environmental management plan

An Environmental Management Plan (EMP) for the HSRP is intended to ensure efficient environmental management of the Project. Thus, the EMP lists (a) the relevant project activities; (b) the potential negative environmental and social impacts; (c) the proposed mitigation measures; (d) those who will be responsible for implementing the mitigation measures; (e) those who will monitor the implementation of the mitigation measures; (f) the frequency of the afore-mentioned measures; (g) capacity building needs; and (h) the cost estimates for these activities. The EMP will be included in HSRP Project Implementation Manual, and the costs for implementing the EMP will be included in HSRP Project Costs. A summary table of the EMP is provided in chapter 10.

### Capacity Strengthening for ESMP Implementation

In order for HSRP Secretariat to effectively carry out the environmental and social management responsibilities for sub-project implementation, institutional strengthening will be required. Capacity building will encompass MOHSW/HSRP Secretariat and sub-project executing institutions such as the Regional, County and

District Hospitals. The HSRP Secretariat should therefore ensure that the following concerns and needs are addressed:

- Institutional structuring within the relevant departments to ensure that required professional and other technical staff are available;
- Establishment of consultancy groups to ensure cross departmental discussions and information exchanges.

### **Institutional arrangements for implementation of ESMP**

Taking into account environmental and social aspects in the ESMP and the effective monitoring of environmental and social performance indicators should be guaranteed to ensure that subprojects implemented under the HSRP's objectives do not result effects that could negate any benefits. To this end, it is appropriate to establish an efficient mechanism for the management of environmental and social aspects of the sub-projects to be executed. This device such as the institutional arrangements foreseen, will cross from central to local level.

The HSRP Secretariat will provide staff to achieve the following objectives:

- propose management rules and specific measures that are compatible with sustainable development while implementing the project
- promote awareness by its personnel and the general public regarding environmental protection,
- propose concrete means of applying the ESMP.

Our key recommendations for HSRP institutional strengthening meet the needs as presented in the summary of institutional responsibilities of the table 10.10 and are presented in the following table:

*Institutional arrangements for ESMP implementation*

<b>INSTITUTIONAL MEASURES</b>		
<b>Proposed actions</b>	<b>Responsibles</b>	<b>Means and schedule</b>
ESMS Recruitment	HSRP coordinator	At the start of activities
HSUIs Constitution	MOHSW	At the start of activities

### **Institutional arrangements for ESMP implementation**

Below are summarized the tasks assigned to different institutions in the screening process, monitoring and evaluation of mitigating measures implementation:

#### **EPA**

- The EPA will review and approve the environmental classification of subprojects of types B1, conducts the review of the B2 and C; EIA approval.
- The EPA will monitor at national level implementation of environmental measures.

#### **The Secretariat of the HSRP**

It will recruit the ESMS. ESMS main task is to analyze screening document, participation in EIA review, monitoring activities of mitigation measures implementation, he is the interlocutor of CH.

**HSRP Monitoring and evaluation activities**

The monitoring program will focus on continuous monitoring, supervision, mid-term and annual evaluation. Support provided in the budget is needed for local monitoring conducted by ESMS / M & E officer and control office but also to monitor a wider scale provided by the ESMS, EPA

Thus, in terms of environmental and social requirements of HSRP, it is essential to strengthen the Secretariat staff centrally by an environmental specialist in charge of supervision / coordination of different activities related to environment and social issues.

**Recommendations**

For a better inclusion of the environmental and social requirements in the preparation and implementation of the HSRP activities, the following recommendations are necessary before the identification of the sites intended to receive the HSRP sub-projects:

- Hiring ESMS within the HSRP Secretariat of the MOHSW;
- Organization of meetings in the areas concerned by the sub-projects in order to provide some information on the project and define with them the collaboration conditions in the framework of the implementation monitoring.
- Requiring national expertise in EIA (specialized firms in EIA) environmental training sessions.
- Formalize with EPA the institutional arrangement proposed in the screening process in order to empower the EFP and the HSRP Secretariat in screening the HSRP sub-projects.

**In addition, the recommendations in the following areas need to be considered:**

- Need for Liberia National Legislation pertaining to the generation and disposal of hospital wastes; and
- Appropriate Environmental and Social Capacity Building within the MOHSW

**COSTS**

The total budget for implementing the ESMF is 1450000 USD as detailed below

Measures	Actions	Responsible	Costs USD
Institutional measures	ESMS recruitment	HSRP Secretariat	PM
	HSIU Installation	Health facilities	PM

<b>Measures</b>	<b>Actions</b>	<b>Responsible</b>	<b>Costs USD</b>
Technical measures	Perform ESMP monitoring and evaluation (continuous monitoring, mid-term and annual assessment) EIAs / RAP development Environmental and social guidelines development Health and safety Plans development Supervision and Monitoring ESMP evaluation(midterm and final)	HSRP Secretariat	75 000
<b>SUB-TOTAL INSTITUTIONAL AND TECHNICAL MEASURES</b>			<b>75 000</b>
<b>Training</b>	Training in projects environmental and social management and monitoring and enforcement of environmental measures	HSRP Secretariat	20 000
<b>Awareness</b>	- Information and awareness campaigns on the nature of work, environmental and social issues - Awareness on HIV / AIDS	HSRP Secretariat	50 000
<b>SUB-TOTAL TRAINING AND AWARENESS</b>			<b>70 000</b>
<b>GENERAL TOTAL</b>			<b>145 000</b>

## 1.0 INTRODUCTION

Liberia has made significant efforts in its transition from humanitarian assistance to recovery, reconstruction and development. The government has developed the Poverty Reduction Strategy highlighting the development priorities over the next three years. In the health sector, the Ministry of Health and Social Welfare (MOHSW) has developed the national health policy and plan and reviewed the priorities proving the foundation for health development. This plan reaffirms the MOHSW's commitment to working toward the achievement of the Millennium Development Goals.

The Health System Reconstruction Project (HSRP), financed by IDA, supplements efforts toward health sector reform and development. In essence, the HSRP builds on the work carried out by the MOHSW and international partners in implementation of the national health plan.

During and after the years of conflict, delivery of health services relied heavily on international support with emphasis on basic health care services. Health systems, infrastructure, and equipment were destroyed during the war, and have not been fully resumed and rehabilitated during the transition and recovery period.

The Project aims, therefore, to:

- (i) Strengthen policy making and management functions for the MOHSW, and
- (ii) Provide critical inputs to sustain the referral system needed to support essential health services, by financing three components:
  - a. Support systems to enhance monitoring and evaluation capacity of the MOHSW;
  - b. Human resources for health; and
  - c. Infrastructure and equipment.

The realization of investments related to the latter component (infrastructure and equipment) may generate adverse effects on the biophysical and social: The main environmental issues relevant to the project are medical waste management, construction related issues like health and safety, contamination of surface water, soil erosion and loss of vegetation, handling and disposal of supplies such as medical laboratory substances, X-ray films and other medical products.

Pursuant to the requirements of the World Bank, including OP / BP 4.01, an ESMF for HSRP, subject of this study, is conducted. In fact, the Bank requires the description of measures taken by the HSRP/MOHSW (the Borrower) to address the safeguard policy issues and a provision of an assessment of HSRP/MOHSW's capacity to plan and implement the measures described. These issues will be addressed in the ESMF.

## **2.0 OVERALL APPROACH AND METHODOLOGY**

### **2.1 APPROACH**

The ESMF study has been prepared in accordance with applicable World Bank safeguard policies and Liberian environmental assessment guidelines. The distinct phases of the study include:

- Data Gathering;
- Consultations and discussions with Project teams HSRP funding beneficiary institutions;
- Literature review;
- Environmental screening and scoping;
- Identification of potential impacts;
- Identification of impact mitigation measures;
- Preparation of an Environmental and Social Management Plan; and
- Preparation of sub-project guidelines.

#### ***– Literature Review***

The approach was based on review of available project literature and other strategic planning documents at the national and sector level. Specifically, the following several documents were reviewed (see annex REFERENCES):

During the assessment, there consultations with key stakeholders, affected groups, local communities and non-governmental organizations were held from 17-25<sup>th</sup> of September 2009. Selected HSRP beneficiary health-care facilities were also visited during the period (see Annex 5)

#### ***– Data Gathering***

The ESMF Consultant assembled and evaluated relevant baseline data related to the biophysical and socio-economic characteristics of the environment to be covered by the project. The baseline data reviewed included: topography, soil, water resource, biological and socio-economic data.

## 2.2 METHODOLOGY

KEY ACTIVITIES	SPECIFIC TASKS
<b>Development of the Environmental and Social Management Framework</b>	9. Provide general information on the project
	10. Present the ESMF objectives
	11. Describe the project activities and components
	12. Present and analyze the baseline data (biophysical and socioeconomic environment)
	13. Analyze the national, legal and regulatory framework and the World Bank safeguard policies
	14. Analyze the country environmental and social management institutional framework and within the framework of the project
	15. Assess the project impacts
	16. Develop the Environmental and Social Management Plan including: <ul style="list-style-type: none"> <li data-bbox="678 678 959 709">a. <i>Screening process</i></li> <li data-bbox="678 709 984 741">b. <i>Mitigation measures</i></li> <li data-bbox="678 741 1105 772">c. <i>Environmental monitoring plan</i></li> <li data-bbox="678 772 1292 835">d. <i>Responsibility and Institutional arrangements in implementation and monitoring</i></li> <li data-bbox="678 835 1073 867">e. <i>Capacity Strengthening plan</i></li> <li data-bbox="678 867 954 898">f. <i>Consultation plan</i></li> <li data-bbox="678 898 1032 930">g. <i>Implementation schedule</i></li> <li data-bbox="678 930 930 961">h. <i>Cost estimation</i></li> </ul>
	Technical appendices / recommendations/ List of individuals/institutions contacted/ references

### **3.0 OBJECTIVE OF THE ESMF**

The objective of the Environmental and Social Management Framework (ESMF) is to provide a screening process that will allow the structures responsible for the implementation of the project to identify, to assess the potential environmental and social impact of the HSRP with emphasis on activities related to disposal of medical waste and rehabilitation of seven county hospitals, JFK hospital and at least 200 clinics nationwide and this at stage of planning and development sub-projects. The framework will incorporate environmental and socio-economic assessment of potential impact of the project activities, as well as appropriate mitigation measures and monitoring plans.

A Medical Waste Management Plan (MWMP) will be prepared under a separate consulting assignment.

Specifically, the ESMF will focus on:

- Assessing environmental and social impact of the HSRP; and to propose a screening process
- Recommending practical and cost-effective actions and processes to mitigate any potential adverse environmental and/or social impacts that could arise during project implementation; and
- Identifying capacity building needs for the MOHSW and recommending actions to strengthen the Ministry and its partners to ensure sustained environmental and social compliance monitoring. The implementation of the ESMF will address the safeguard policies of the World Bank and relevant laws of Liberia. A key element of the ESMF is to determine the institutional arrangements for implementing the project, including those relating to capacity building.

Also, as part of the ESMF development, the Consultant will identify the key stakeholders and describe mechanisms for consultation and disclosure of safeguard policies, with emphasis on potentially affected people.

The ESMF will also cover environmental and social issues related to the health sector in general and help produce a national plan to be implemented beyond the project life.

## **4.0 PROJECT DESCRIPTION**

### **4.1 CONTEXT AND OBJECTIVES OF HSRP**

The project is underpinned by many analyses and has been designed in collaboration with all other major donors. A Rapid Needs Assessment of the Health System (USAID and MOHSW), a Comprehensive Nutrition and Food Security Survey (WHO and UNICEF), Liberia Health Evaluation Report (Inter-Agency Health), Millennium Development Goals Report, 2004 (Government of Liberia and UN and others) a Malaria Gap Analysis (MOHSW and WHO), etc constitute the basis for this Project together with other short reports and findings during the three missions in 2006/2007.

To address these weaknesses, the MOHSW will maintain a Steering Committee throughout the period of implementation of the Project, with a structure, functions and responsibilities, acceptable to the Association, for the purposes of overseeing the execution of the Project. The Steering committee shall be chaired by the MOHSW and comprise of the heads of the following units: (a) Service delivery; (b) Policy and Planning; and (c) Administration.

The overall goal of the Project is to help Liberia recover from the damage done to the health sector during the years of civil war. Under the National Health Policy and Plan, the government has reaffirmed its commitment to working toward achievement of Millennium Development Goals (MDGs), with particular focus on activities that will contribute to overall improvements in maternal and child survival.

In partnership with other donors, the proposed Project will contribute to: (a) Strengthening policy-making and management functions of the Ministry of Health and Social Welfare (MOHSW); and (b) providing critical inputs to sustain the referral system needed to support the essential health services.

### **4.2 PROJECT COMPONENTS**

#### **Component A. Support Systems**

This component will strengthen the policy making, management, and monitoring and evaluation capacity of the MOHSW. The component will support the operational capacity of MOHSW to effectively manage the Project by, inter alia, strengthening its management capacity, and expanding its monitoring and evaluation mechanisms, all through the provision of technical advisory services, training and Incremental Operating Costs. It will provide technical assistance and training to MOHSW staff to develop policy in the following areas: (a) health financing; (b) contracting with providers; (c) health labor market dynamics; and (d) decentralization of health services. It will also provide information communication technology to MOHSW staff to support the development of a health management information system.

## **Component B. Human Resources**

This component of the Project will increase the number doctors, nurses, and allied health workers in critical areas of staff shortages through recruitment and training. The component will support hiring of clinical teachers, including medical doctors, nurses, midwives and allied health workers for purposes of training and supervision of Recipient's clinical care staff. It will support hiring of medical officers, laboratory technicians and radiographers to fill in critical staffing needs in the Recipient's health clinics and hospitals. It will provide technical assistance and training to Recipient's public education institutions to reform their curriculum to enhance the education level of medical doctors, nurses and allied health workers. It will also provide, technical advisory services and equipment to enhance the technical and managerial capacity of key staff in the Recipient's health sector including, inter alia: (a) transportation costs of trainers and trainees; (b) per-diem of trainers and trainees; (c) workshops, seminars and courses; (d) rental of training facilities and equipment; (e) acquisition of training equipment and teaching material; (f) internet access to online learning; and (g) study tours.

## **Component C. Infrastructure and Equipment**

This component will contribute to the necessary infrastructure and equipment for MOHSW clinics, county referral centers, and JFK hospital, especially in the case of services used by mothers and children. The component will support a rehabilitation of Recipient's essential medical facilities and medical teaching institutions, including the maternal and child wards at the John F. Kennedy Hospital and the A.M. Dogliotti College of Medicine. It will also support acquisition of basic medical supplies, medical emergency equipment, radiology and laboratory equipment, communications equipment, energy generating equipment, internet connection equipment, and ambulances for MOHSW clinics, health centers, country hospitals and the John F. Kennedy Hospital. It will complement not duplicate action taken by other donors such as the GF, the PMI, and Clinton Foundation as well as the reconstruction of local clinics under the World Bank's LACE project.

The equipment provided would include basic clinical equipment, diagnostic equipment (radiology and laboratory equipment), emergency equipment (OR and casualty departments), communications, ambulances and solar panels. A special effort will be made to ensure supplies and equipment are available needed to deliver integrated management of childhood illness (IMCI). This would include immunization as well as diagnosis and treatment of malaria, diarrhea, acute respiratory illness (ARI), and other maternal and child conditions. New contracts between the MOHSW and health providers will be renewed only if the minimum equipment will be in place and utilized at the time the contracts are negotiated. Priority for equipment supply will be given to clinics, referral centers and hospitals which are of strategic placement or have a higher utilization rate of the services. The Project will introduce contracts with MOHSW targeted clinics and referral centers that will be rehabilitated and equipped. Under the contracts, incentives related with improving the case mix and the utilization rate of the clinics will be the basis for contracts that will be issued over the next three years in clinics that received the equipment as well in other clinics that already have the minimum equipment.

## **5.0 RESULTS OF THE PUBLIC CONSULTATION PROCESS**

To adequately appreciate the views and concerns of stakeholders with regard to the project implementation, field visits and consultation with key stakeholders, Ministries, Departments and Agencies, selected referral hospitals, Health Committees, affected groups, local communities and non-governmental organizations are on-going. The consultations focused on:

- Assessing the views and understandings of the HSRP;
- Identifying and Assessing environmental and social impact of the HSRP
- Proposed or ongoing infrastructure rehabilitation activities under the HSRP
- Segregation, Collection and disposal of healthcare waste (see figures 2, & 4 below: Health Care waste incineration facility at Government Hospital, Grand Bassa County)
- Reviewing the status of compliance and enforcement of environmental regulations within the country.
- Identifying capacity building needs for the MoHSW and recommending actions to strengthen the Ministry and its partners to ensure sustained environmental and social compliance monitoring.

The consultation was basically done in two forms:

- Group discussions with a cross-section officials and professionals from government Ministries, Departments, Hospitals (both Public and Private), Community and NGO.
- Interviews with key informants (MOHSW, MPW, EPA etc) so that views and concerns are more broadly captured.

The table 5.1 below presents the summary of some the key issues that emerged during the consultations. The full text of the consultation and issues discussed is presented in annex 5.

Table 5.1 : Summary of some Key Consultation Issues

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
18/09/09	Montserrado County: Redemption Hospital, Borough of New Krutown	Dr. Taban J. Dada- Medical Director, Lucius Bolley-Hospital Administrator, John Shakpeh-Asst Nursing Director, Osanto J. Korboi and Alfred T. Nyuma	<ul style="list-style-type: none"> <li>• <b>Medical Wastes segregation, collection, storage and handling.</b> Medical wastes are segregated and combustible wastes such as plastic, paper are sent to incinerator. Pathological wastes are separately handled in the operating room and disposed off.</li> <li>• <b>Pharmaceutical wastes are currently stored in dedicated room awaiting proper disposal. Previously, the National Drug Service (NDS) collects expired drugs for proper disposal.</b> This does not happen any longer so the hospital is being confronted with the challenge of how to dispose off expired drugs that are being accumulated.</li> <li>• <b>Hospital Waste Management Policy:</b> Respondents of the hospital are not aware of any national hospital waste management policy or legislation applicable to hospital management though they know it is generally required that hospital waste should be properly managed.</li> </ul>
19/09/09	WHO	Dr Clement Peter	<ul style="list-style-type: none"> <li>• <b>Expired Drugs Disposal:</b> National Drug Service was established in early 1990 as a semi autonomous institution to handle drugs related issues. There are social concerns due to improperly disposed off drugs finding their way into the market. Open air burning of drugs as means of disposal also poses environmental and public health concerns.</li> <li>• <b>Disposal of Pathological Wastes:</b> Pathological wastes are often buried in pits, which if not properly covered could pose a serious health risk to the public.</li> </ul>
21/09/09	Government Hospital, Buchanan, Grand Bassa County	Dr. Saygbeh M. Vanyanpah-Medical Director, Eddisson J. Robert-Pharmacist, Roberta Messan-Laboratory Supervisor, Ninely Johnson-Incinerator Manager, Peter J. Mingle-Secretary	<ul style="list-style-type: none"> <li>• <b>Medical Waste Management:</b> Wastes are segregated into sharps, pathological and general wastes. Wastes are collected on a daily basis in a 3-shift system. Sharps and general wastes are incinerated in an incinerator (installed by UNICEF) at temperatures ranging between 400-600 degrees Celsius. During inspection at the incineration site it was observed that unsegregated waste has been heaped waiting to be burnt in the open because there was shortage of firewood to fire the incinerator. Pathological wastes are buried in a dedicated pit onsite. Expired drugs are incinerated upon consultation with Merline and Clearance.</li> </ul>

23/09/09	Merlin	Mr. Lawrence Oduma- Country Director, Dr George Odongi- Country Health Director, Jane Teversham-Operations Director	<ul style="list-style-type: none"> <li>• No standardized system for medical waste management so health facilities create their own systems. WHO template could be used.</li> <li>• The disposal of placenta and other pathological waste in pits, which are not properly lined could contaminate ground water which is the source of drinking water for several communities.</li> <li>• Serious difficulties by health facilities to dispose of broken down and obsolete laboratory equipments (eg. radiology equipments)</li> <li>• Incinerators are not properly functioning at the required temperatures thus generating dioxins and other polluting substances</li> <li>• Disposal of expired drugs is being done differently by various health facilities, for instance in some of the referral hospitals pit latrines are used for the disposal of expired drugs. The biggest problem of expired drugs disposal is at the community clinics. In some cases the expired drugs find their way into the open market.</li> </ul>
24/09/09	Medicin Sans Frontiers- Belgium (MSF- B)-Bushrod Island Hospital	Mrs Martha Dennis- Medical Director, Mrs Matina Van Assche- Hospital Director, Mulbah Kerkula-Lab Supervisor, Miss Sowllie Lomax-Lab Technician	<ul style="list-style-type: none"> <li>• Medical Wastes generated are mainly sharps and trash. Incinerator and sharps disposal pit exist.</li> <li>• Standards for expired drugs disposal exist.</li> </ul>

## 6.0 BIOPHYSICAL AND SOCIO-ECONOMIC ENVIRONMENT

### 6.1 THE BIO-PHYSICAL ENVIRONMENT

#### 6.1.1 Location, Size and Characteristics

Liberia is situated on the southwest corner of the West Coast of Africa. It lies between the longitudes of 7°30' and 11°30' west and latitudes 4°18' and 8°30' north. It covers a surface area of about 111,370 km<sup>2</sup> (about 43,506 square miles). The dry land extent is 96,160 km<sup>2</sup> or 37,570 sq. miles.

Figure 6-1: Location of Liberia



Liberia is bordered on the west by Sierra Leone, on the north by Guinea, on the east by Côte d'Ivoire and on the south by the Atlantic Ocean. The perimeter is 1,585 km (990 miles), excluding the Atlantic Ocean. The border with Guinea is 563 km (352 miles), Côte d'Ivoire 716 km (446 miles), and Sierra Leone 306 km (191 miles).

There are four topographical regions at different altitudes, each with distinct physical features. Along the sea coast is the coastal plain of 350 miles (560 km), an almost unbroken sand strip, which starts from the lowest elevation up to 30 meters above sea level. Next to the coastal plain is the belt of inundated plateau followed by the belt of high lands and rolling hills in the north and northwest. The lowest point is the Atlantic Ocean at zero meters and highest elevation is the northern highlands, which includes Mount Wutivi (1380 meters), the highest point in Liberia.



*Figure 6-2: Topographical Regions of Liberia*

### **6.1.2 Rivers**

The geomorphologic structures and relief determines the drainage patterns of the watersheds or river systems. The major river basins drain the territory in a general northeast to southwest direction to the Atlantic Ocean. Major exceptions to the pattern is the middle reaches of the Cavalla and Dugbe in eastern Liberia, which flow parallel to the coast in their lower reaches before entering the Atlantic Ocean. There are six major rivers, which drain 66 percent of the country. These are Rivers Mano, St. Paul, Lofa, St. John, Cestos and Cavalla. The short coastal watercourses drain about 3 percent of the country and include the Po, Du, Timbo, Farmington, and Sinoe rivers. The largest and longest is the Cavalla River. These rivers are not navigable and therefore do not supports water transport and industrial fishing.

### **6.1.3 Lakes**

There are only two major lakes in Liberia – Lake Shepherd in Maryland County and Lake Piso in Grand Cape Mount County. Lake Piso is the larger of the two. Both of them are along the Atlantic Ocean. Lake Piso is characterized by a vast expanse of wetlands and lowland forest vegetation. They are one of six proposed protected areas of Liberia. There are other large ponds, which people refer to as lakes. The most popularly known in this category is the Blue Lake in Tubmanburg, Bomi county. This large pond was created from iron ore mining that left a large unclaimed land. It is now a tourist attraction.

#### 6.1.4 Climate and Hydrology

The equatorial position and the distribution of low and high-pressure belts along the African continent and Atlantic Ocean determine the climate of Liberia and more generally, West Africa. Because of this position and the moderating influence of the ocean, a fairly warm temperature throughout the year with very high humidity is common.

Liberia's equatorial position puts the sun almost overhead at noon throughout the year giving rise to intensive insolation in all parts of the country, a consequence of high temperature with little monthly variations. Notwithstanding the temperature would have been much higher had it not been for the effect of the degree of cloud cover, air, humidity and rainfall, which is influenced by the luxurious vegetation cover of the country. The Atlantic Ocean also has an additional ameliorating effect on the temperature along the coast with maximum annual and daily variations. As a whole, the temperature over the country ranges from 27°C to 32°C during the day and from 21°C to 24°C at night. High altitude explains a pleasant climate near the Guinean border.

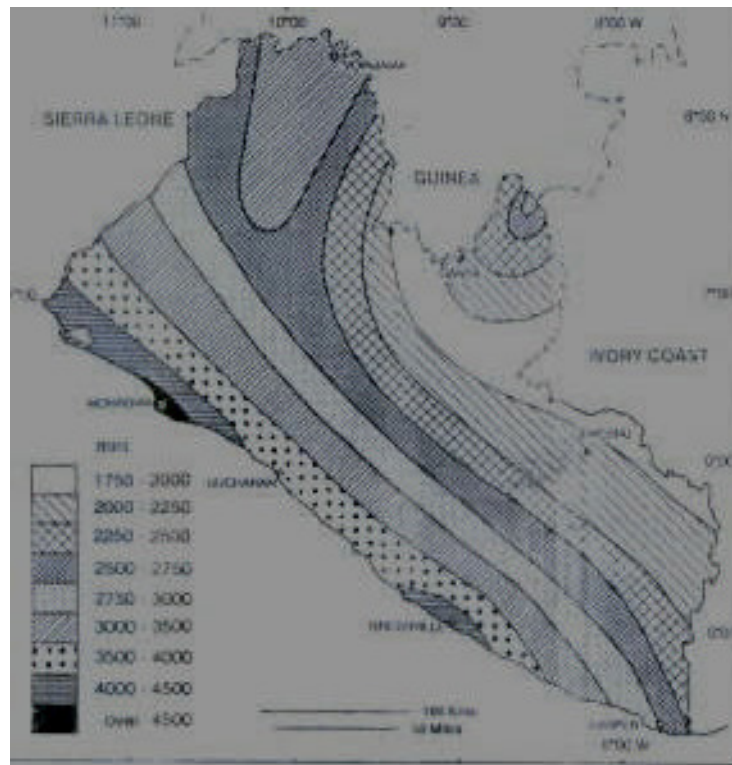


Figure 6-3: Annual rainfall distribution across Liberia

The Country has two seasons: raining and dry seasons. The dry season lasts from mid-November to mid-April; raining season from mid April to late October. Average annual rainfall along the coastal belt is over 4000mm and declines to 1300 mm at the forest-savanna boundary in the north (Bongers, F et al, 1999). Relative humidity is generally high throughout the country; on the coastal belt it does not drop below 80% and on the average is above 90%. There is a wider variation in the interior; it may fall below 20% during the harmattan period.

A relative air humidity of 90% to 100% is common during the rainy season. During the dry season it decreases between 80% and 85%. In March and February the driest period of the year, relative air humidity decreases to as low as 65%.

Total wind speed is greatest in the rainy season and lowest in the dry season. However, there are local variations, with the coastal area having much more wind than the interior of the country. The low wind speed in the interior can be attributed to the vegetation cover. The largest recorded wind speed (45 miles/hour) has been in Buchanan, a coastal city.

The inter-tropical Front, which is the boundary of the air masses, moves south. Also Harmattan influences the climate of much of West Africa, it blows from the Sahara Desert, and reaches Liberia at the end of December with low relative humidity percentage. It brings along a considerable amount of dust and low and chilly temperatures during the night.

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. Rainy and dry seasons with a transitional period can be distinguished. The months of heaviest rainfall are June, July and September. Notwithstanding the rainy season lasts from late April to October. The dry season begins in November and ends early April.

It does not rain continuously during the rainy season. It is common to have sunny days during the months when the rain is heaviest. This is also true for the dry season; there are some rainy days during the dry season. The rainfall ranges from 2000 to 4000 mm/year with an average of 2,372mm.

The internally produced renewable water resource is estimated at 200km<sup>2</sup>. This amount of water is drained into the Atlantic Ocean by two-river systems. The major basins drain the territory in a general northeast –southwest direction. There are six major rivers, which drain the country with north-south pattern: Mano, St. Paul, Lofa, St. John, Cestos and Cavalla. They drain 66% of the country. The short coastal watercourses drain about 3% of the country and include by not limited to the Po, Du, the Timbo, the Farmington, and Sinoe rivers (see map, rivers of Liberia).



*Figure 6-4: Mouth of the Sinoe River near the Coast in Greenville*

### 6.1.5 Geology

The rocks of northern Liberia generally form part of the West Africa Craton, recognized by its stability and general absence of tectonic activity during the last 2.5 billion years. This old and stable base was subsequently penetrated by younger rocks and then covered by metasedimentary and metavolcanic rocks of at least two younger tectonic events.

*Table 6.1: General Stratigraphy of Rocks*

<b>Tectonic Period</b>	<b>Type of Rock</b>	<b>Age (Million years)</b>
Liberia Age	Metamorphic and Igneous Rocks	2,500-3,000
Eburnean	Metamorphic and Igneous Rocks	2,150 ± 100
Pan-African Age	Metamorphic and Igneous Rocks	600 + 100
Post Pre-Cambrian	Unmetamorphosed Sedimentary Rocks and Igneous Intrusives	Less than 600

The rocks of Liberian Age extend into neighbouring Sierra Leone, Guinea, and Ivory Coast and predominately are highly foliated granitic gneisses exhibiting a regional foliation and structural alignment in a north-easterly direction.

Major faults along sections of the Lofa and the St John River are parallel to regional lithological units and have significantly influenced present topography. Massive unfoliated to weakly foliated granitic rocks exist over large areas in the extreme north of the country. Within the Liberian Age Province are Metasedimentary rocks, such as quartzites, amphibolites, pelitic schists and banded ironstones technically called itabarite. Granitic gneisses and the metasedimentary 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.

Rocks of Eburnean Age are restricted to southeast Liberia where they extend into the Ivory Coast. Their structural trend is similar to those of the Liberian Age Province but is more biotite rich. A major tectonic feature within rocks of the Eburnean Age province is the Dube shear zone. It intersects the coastline about 40km west of Harper and strikes a NNE direction into the Ivory Coast. It is 2 to 3km wide and has been delineated on the basis of outcrops, topography and magnetic data.

Rocks of the Pan-African Age are found along the coast from northwest of Greenville in the southeast to Sierra Leone. Unlike the north-eastern regional trends of both the Liberian and Eburnean Age Provinces, structural trends within the Pan-African Province generally are north-westerly and parallel to the coastline. The rock types in this province range from basic igneous to pelitic rock metamorphosed to the granulite and amphibolite grades.

The Post Pre-Cambrian rocks in Liberia outcrop principally along the low-lying coastal area between Monrovia and Buchanan. Two onshore, sediment-filled basins also are located along this section of the coastline: the Roberts Basin filled with sediments of the Farmington River formation and Paynesville sandstone, and the Bassa Basin filled with material from the St John River Formation.

Rocks found in Liberia have been of economic importance and should continue to be in the future. Crystalline Rocks (igneous and metamorphic) are used locally in the construction industry as roadbed materials in building construction and as foundation stones in building construction. Post Pre-Cambrian rocks are used in the building industry where beach and river sands form the major constituents in the manufacture of concrete blocks.

### **6.1.6 Sunshine and Temperature**

The sun is overhead at noon throughout the year, giving rise to intense insolation in all parts of the country. This results in high temperatures with little monthly variations. Temperatures would have been much higher had it not been for the effect of the degree of cloud cover, air, humidity and rainfall, which are influenced by the vegetation cover of the country. Daily sunshine hours are at a minimum during July, August and September. The days with longest hours of sunshine, fall between December and March, averaging more than six hours per day (MPEA 1983). The Atlantic Ocean also has an additional ameliorating effect on the temperature along the coast with maximum annual and daily variations. As a whole, the temperature over the country ranges from 27-32<sup>0</sup>C during the day and from 21-24<sup>0</sup>C at night. High altitude explains a pleasant climate near the Guinean border in the north. Along the coast, the average annual temperature ranges from 24-30<sup>0</sup>C (75-85<sup>0</sup>F). In the interior it is between 27-32<sup>0</sup>C (80-90<sup>0</sup>F) (MPEA 1983). The highest temperature occurs between January and March and the lowest is between August and September. The low temperatures are mainly caused by the amount of cloud cover.

### **6.1.7 Rainfall**

The country has two seasons: rainy and dry seasons. The rainy season is from May to October, and the dry season runs from November to April. Average annual rainfall along the coastal belt is over 4000 mm and declines to 1300 mm at the forest-savannah boundary in the north (Bongers and others 1999). The months of heaviest rainfall vary from one part of the country to another, but are normally June, July and September. Rainfall is caused by the South Atlantic sub-tropical high wind called the southwest Monsoon of the Maritime Tropical Air between April and October. For the rest of the year, the Inter-Tropical Front moves south, and most of West Africa comes under the influence of the low pressure from the Sahara Desert. At this time low humidity prevails usually from the end of December to January, and sometimes till February. This dry wind sweeps across the continent and reaches Liberia between December and February bringing considerable amounts of fog and dust with low cool temperatures during the night. Since the soils in Liberia have low moisture storage capacity, the amount and frequency of rain during the dry season becomes a limiting factor for crop cultivation. Despite the heavy torrential rainfall, it does not rain continuously during the rainy season. It is common to have sunny days even during months when rain is heaviest.

Observations concerning the diurnal distribution of rainfall prove that two-thirds of the rain along the coast, particularly in Monrovia and its environs, falls during the night between 18.00 and 07.00 hours. Most of the rest of the rain usually falls during the morning while only a minimum of rain is recorded between mid-day and early afternoon. This is one of the reasons why the rainy season in Liberia is not as inconvenient and disturbing as in other parts of West Africa.

Data on Liberia's isokeraunic (thunderstorm) condition is not available, but 150 thunderstorms days per annum have been recorded at Roberts International Airport (Schulze 1975).

### **6.1.8 Humidity**

Relative humidity is generally high throughout the country. Along the coastal belt it does not drop below 80 per cent and on average is above 90 per cent. There is a wider variation in the interior, where it may fall to below 20 per cent during the harmattan period. A relative air humidity of 90-100 per cent is common during the rainy season.

In Monrovia, the relative humidity shows a relationship with the existing air temperature and its variation depends on the prevailing season and the hour of the day. During the dry season it decreases to 80-85 per cent. In March and February the driest period of the year, relative air humidity may be as low as 65 per cent. Regardless of the season, the relative humidity at night and in the early morning is usually in the range of 90-100 per cent. Data from other weather stations such as Bomi Hills, Harbel and Greenville show similar results. Only the zone, north of the Inter-Tropical Front, where the continental air masses prevail from mid-December to end of January show arid conditions. At times due to the extreme dryness of the harmattan, the humidity may drop to below 50 per cent (Schulze, W. 1975).

### **6.1.9 Vegetation**

There are three main vegetation zones in Liberia. They include the coastal vegetation (savannah woodland), northern savannah and the tropical rainforest (GTZ/MPEA 1983). The savannah vegetation is influenced by human activities and has developed as a result of clearing the rain forest for agriculture. The coastal vegetation consists of mangrove swamps, savannah woodland and patches of forest scattered in fields of grassland. The northern savannah is found in Lofa and Nimba Counties. The area is densely covered with elephant grass, which grows up to about 10 feet in height. There are also scattered trees and patches of forest in this savannah zone. This vegetation type is encroaching into the rainforest zone as it steadily moves southward

### **6.1.10 Forests**

Liberia is the only country in West Africa that once was covered entirely with rain forest. The forest of Liberia is being reduced at the rate of 1-2 per cent per annum (WRI 2003, FAO/FDA/IDA 1985). More than 50 per cent of the forests have been destroyed over the years. The two remaining dense forest areas are now found in the northwest and southeast of the country separated and isolated from each other by a

corridor extending from Monrovia to Nimba County. These two forest blocks are further fragmented and dissected by the advances of shifting cultivation along existing roads and by the construction of logging roads.

### 6.1.11 Wetlands and Swamps

Wetlands are transitional zones between terrestrial systems and open water systems and are highly productive and rich in flora and fauna. Their economic and ecological functions attract human activities that eventually impact on biodiversity. Liberia has a few wetlands that provide both subsistence and economic benefits to its many inhabitants. Like wetlands all over the world, they have become stressed by human induced activities. There are four wetland types: Inland riverine, inland swamp, coastal and coastal lacustrine. Presently, five of the eight wetlands of conservation status identified have been gazetted by the RAMSAR Secretariat.

Mangrooves characterize the wetlands of Liberia and cover a large area along the coast from Cape Mount to Cape Palmus. Mangroves are mainly found at the edges of lagoons, river banks and estuaries and also in widespread areas of swamps. According to Gatter (1988), mangroves cover about 0.5% of the total land surface of Liberia. This is equivalent to about 500 km-wide belt extending along the total length of the coastline. The Mangroves are vital coastal system: they provide habitat for fish invertebrates and epiphytic plants, and are considered more efficient photo synthesizer than more plants. Besides, mangrove forests provide:

- Spawning grounds for many fish species, crabs, shrimps, mollusks and other forms of sea life,
- Habitats for many endangered species of manatees, crocodiles, turtles, migratory birds,
- Flood regulation and protection from violent storms;
- Protection of shoreline from erosion; and
- Water recharge and improve quality.

*Table 6.2: Wetlands of Liberia*

No	Wetland	Type	Size (acres)	Conservation status
1	Lake piso	Coastal Lacustrine	76,091	Proposed Nature Reserve
2	Marshall	Coastal Lacustrine	38,500	Proposed Nature Reserve
3	Mesurado	Coastal	22,000	None
4	Lake shepherd	Coastal	18,000	None
5	Bafu Bay	Coastal	11,900	None
6	Cesto-senkwehn	Inland Riverine	15,000	Proposed Nature Reserve
7	Gbedin	Inland swamp	11,200	None
8	Kpatawee	Inland riverine	8,800	None

Source: National Biodiversity Strategy and Action Plan (2004)

The national environmental policy of Liberia argues that the importance of wetlands are not fully understood, and that wetlands are threatened with degradation due to

factors such as: pressure from fire wood gatherers and charcoal producers, uncontrolled solid and liquid wastes, unregulated settlements near wetlands, agriculture production and industrial expansion and constructions.

*Figure 6-5: Wetlands with Water hyacinth along Benson River near Buchanan city*



Courtesy of EPA 2004

#### **6.1.12 Mangroves**

Mangroves characterize the wetlands of Liberia and cover a small area along the coast, from Cape Mesurado to Cape Palmas, at the edges of lagoons, riverbanks, and river estuaries and in widespread areas of swamps. Mangroves are estimated to cover 0.5 per cent of the land surface of Liberia, which is equivalent to a 500 km-wide belt extending along the total length of the coastline (Gatter 1988). Mangroves are being degraded due to urban expansion, collection of firewood and construction of makeshift structures. The mangroves are a vital coastal ecosystem. They provide habitat for fish, invertebrates and epiphytic plants, and are considered more efficient photosynthesizers than most plants.

*Figure 6-6: Mangroves of the Mesurado wetlands near Monrovia*



Courtesy of EPA 2004

## **6.2 SOCIO-ECONOMIC ENVIRONMENT**

The Liberia economy has been in decline since the 1980s due to extreme social and political upheaval and mismanagement. The war destroyed productive capacity and physical infrastructure on a massive scale. The result has been a precipitous economic decline and the deepening of national poverty. Liberia- a nation that had achieved food security and middle income status in the 1970s- is totally a shell of the past. Per capita Gross Domestic Product (GDP) in 2005 prices declined from us\$1,269 in 1980 to US\$163 in 2005, a decline of 87%. It is estimated that three fourths of the population is living below the poverty line on less than US\$1 a day (IPRS 2007).

During the war, agricultural production dropped precipitously as people fled their farms and markets closed. Mining and timber activity nearly ceased, rubber plantations closed, manufacturing dropped sharply and services ground to a halt. Basic infrastructure was badly damaged by the conflict. There was virtually no public source of electricity or piped water in the country for 15 years until recently, when power and water was restored to parts of Monrovia in July 2006. Schools, hospitals, and clinics were badly damaged, and most government buildings are in shambles. Many roads are still impassable, which seriously constrains peace building efforts, weakens economic activity and undermines basic health and education services.

### **6.2.1 Demography**

The last population census of Liberia was conducted in 1984. Since then, the Ministry of Planning & Economic Affairs has updated its population projections. Its 2006 population estimate is 3.2 million, with a growth rate of 2.4%. Population density is 84 per square mile. Population distribution is very uneven, with four counties hosting 70% of the total population. The South-East is very sparsely settled. The age-group 0 - 18 years accounts for about 54% of the population. Nearly 15% are under 5 years of age while approximately 3% of the population is over the age of 65.

Average life expectancy at birth is estimated by WHO (2006) at 42 years, with 44 years for women and 39 years for men. The current fertility rate is estimated to be 6.8 (DHS, 1999). Three out of every four women age 20-24 years have had a child. The use of modern family planning methods among women is 11.3%. The average household size is 5.1.

### **6.2.2 Mortality and Morbidity**

The infant mortality rate is currently estimated to be 157/1,000 live births -- well above the Sub-Saharan Africa average of 102/1000 live births and the world average of 54. The under-five/child mortality rate is also high, at 235/1,000 live births. Liberia ranks above the Sub-Saharan Africa average of 171/1,000 live births and the world average of 79/1,000. In 2005, the maternal mortality ratio was estimated by UNFPA at 580/100,000 live births. The crude mortality rate was recently estimated in rural areas at the alarming level of 1.1 deaths per 10,000 persons per day (CFSNS, 2006).

Malaria, acute respiratory infections, diarrhea, tuberculosis, sexually transmitted diseases (STDs), worms, skin diseases, malnutrition, and anemia are the most common causes of ill health. Malaria accounts for over 40% of OPD attendance and up to 18% per cent of inpatient deaths. Diarrheal diseases in Liberia are the second leading cause of morbidity and mortality HIV prevalence rate estimates vary widely, but the Interim Poverty Reduction Strategy (IPRS) suggests a figure of 5.2%. All agree, however, that HIV/AIDS is a problem of mounting severity. Existing data are inadequate to draw firm conclusions' about internal variations in HIV prevalence. It appears that Monrovia and the south-eastern region have higher HIV prevalence rates than the rest of the country.

### **6.2.3 Mortality and Morbidity**

Approximately 27% of children under-five years are underweight. In addition, an-estimated 7% are wasted, while 39% are stunted (CFSNS, 2006). These values are remarkably similar to those registered by the National Nutrition Survey of 2000. In the same year, iron deficiency anemia was 87% in children 6-35 months, 58% in non-pregnant women 14-49 years, and 62% in pregnant women aged 14-49 years. Vitamin A deficiency affects 52.9% of children 6-35 months and 12% of pregnant women. Only 35% of children below 6 months of age are exclusively breast fed (UNICEF). Zinc supplementation for children has not yet been introduced.

### **6.2.4 Water and Sanitation**

Access to safe water declined from 58% of households in 1997 to 24% in 2005, due to the destruction of piped water facilities in urban settings (UNDP, 2006). Nationwide; -26% of households have access to sanitation but significant rural/urban disparities exist- with sanitation available to 49% of urban residents and only 7% of rural residents (UNICEF, 2006). However, the problem of poor sanitation is particularly acute in: cities. The collapse of waste disposal and sewage services and an increase in population have led to extremely poor sanitary conditions in urban areas - especially in Monrovia - generating serious environmental and health problems.

### **6.2.5 Access to Health Care**

Liberia's health services have been severely disrupted by conflict. Health workers fled to camps for internally-displaced people (IDPs), to secure areas or to neighboring countries. Health facilities were looted and vandalized and medical supplies became unavailable. Government funding stopped and health services collapsed (UNDP, 2006). Following the end of the war, the revitalization of the health services has begun, but the health situation is still poor.

The dearth of accurate data on health service access and utilization makes most considerations in this respect only tentative. Available estimates are grossly divergent, suggesting that overall they are unreliable. The Interim Poverty Reduction Strategy (IPRS, 2006) reports that 41% of the population has access to health services. Most data suggest low service consumption and gross imbalances across Liberia. The last EPI survey carried out in 2004 found that less than one third of children received a

DPT-3 shot. EPI reporting has since shown improvements with DPT-3 at 87% and Measles at 94% (WHO immunization monitoring 2005).

### **6.2.6 Health Care Delivery and Resources**

Health care delivery is fragmented and uneven, heavily dependent on donor-funded vertical programs and international NGOs. Disease prevention, and control programs exist for malaria, leprosy, tuberculosis, STDs/HIV/AIDS, and onchocerciasis. Humanitarian relief agencies concentrated their interventions in the most war-affected areas and where refugees and IDPs were resettling. Many health care providers including Community Health Workers are funded by emergency programs, which are being withdrawn as the country stabilizes. The gap created by the reduction in funding for emergency assistance, before development aid starts flowing, has the potential to disrupt health care provision, as witnessed in other post-conflict settings.

In 1990 there were 30 Hospitals, 50 Health Canters and 330 Clinics functional. In 2006, 18 hospitals, 50 health centers and close to 286 health clinics were considered to be functional (RAR, 2006). Many of these facilities struggle to attain acceptable performance levels, and are in need of robust infrastructural interventions to become truly functional and respecting referral functions. The hospital component of the health sector is under-sized. Its technical capacity is grossly inadequate. Large investments are already under way to restore the functionality of some hospitals.

### **6.2.7 Health Needs and Challenges**

Enabling the health sector to play a full and effective role implies addressing immediate as well as long-term challenges in a holistic and balanced way. The health needs of a distressed and impoverished population must be alleviated by urgent measures, while starting to invest in the areas that will make the future growth of the health sector possible. The post war needs include:-

- Assurance of quality equitable antenatal care and safety in obstetric practices
- Assurance of child health
- Addressing nutrition issues
- Dealing with the current burden of disease Addressing the high fertility rate
- Meeting demand for access to quality health services Development of a social welfare policy and strategy.
- Meeting population requirements to access safe water and sanitation

The immediate challenge is expanding access to basic health care of acceptable quality, through immediate interventions such as:

- Ensuring the availability of funds at county level to support the continuous delivery of basic services;
- Improving the availability of essential medicines and other critical health commodities;
- Rehabilitating health facilities in under-served areas;
- Upgrading the skills of health workers and redeploying them to areas where they are most needed;

- Boosting management capacity at all levels to support the delivery of services. The step in this direction is improving the information base and evaluation capacity;
- Improving availability of safe water and sanitary facilities.

## **7.0 POLICY, LEGAL, INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT**

Liberia has put in place several policies and signed a number of protocols aimed at improving environmental management in the country. These range from national laws, regulations, policies, strategies and action plans to multilateral environmental agreements. As the government tries to put the country back on the path of sustainable development, the challenge will be the effective implementation of these various laws and regulations. The Environmental Protection Agency (EPA) is the government authority mandated by law to monitor, coordinate and supervise environmental issues in the country. There are also many other stakeholders involved in the sector. However, the overall responsibility for managing the environment lies with every Liberian.

### **7.1 POLICY FRAMEWORK FOR THE MANAGEMENT OF THE ENVIRONMENT**

The National Environmental Policy of Liberia offers a set of guidelines for sustainable management of the environment. It is part of a strategic plan of action on which laws and regulations related to the environment are based. The overall goal of the policy is to "ensure the long-term economic prosperity of Liberia through sustainable social and economic development to meet the needs of present generation without compromising the potential of future generations to meet their needs".

Particularly, the policy seeks to:

- Maintain ecosystems and ecological processes essential for the functioning of the biosphere;
- Ensure sound management of natural resources and the environment;
- Adequately protect humans, flora, fauna, their biological communities and habitats against harmful impacts, and preserve biological diversity;
- Integrate environmental considerations in sector and socio-economic planning at all levels throughout the nation; and
- Seek common solutions to environmental problems at regional and international levels.

The policy recognizes that environmental concerns are cross-sectoral and require an integrated multi-sectoral management approach. The institutional arrangement to enhance effectiveness of implementing this policy is principally through two corporate bodies.

(i) The National Environmental Council of Liberia, foreseen in the Act Creating the Environmental Protection Agency, will be responsible for policy formulation and implementation of the Environment Protection and Management Law, setting environmental protection priorities, national goals and objectives, ensuring

implementation of environmental policies and programs, and collaborating with the Agency on policy affecting the environment. The Council has yet to be formed; and

(ii) The Environmental Protection Agency shall be responsible for coordinating, integrating and harmonizing implementation of environmental policy and decisions of the Council and line ministries, shall encourage the use of appropriate environmental technologies, and shall propose environmental policies and strategies.

### **7.1.1 National Environmental Action Plan**

The Act creating the Environmental Protection of Liberia requires the EPA to in every five years, in consultation with the Line Ministries and County Environmental Committees, prepare a National environmental Action Plan, the first of which shall be prepared two years following the effective date of EPA act and shall be submitted to the Council for consideration and approval.

The National Environmental Action Plan shall:

- Contain all matters affecting the environment and provide general guidelines for the management and protection of the environment and natural resources of Liberia well as the strategies for preventing, controlling, or mitigating any deleterious effects;
- Be the basis for national environment planning and implementation of development programmes;
- Recommend appropriate economic and fiscal incentives as instruments for environmental protection to be incorporated into the planning and operational processes of the economy and recommend areas for environmental research and outline methods of utilizing research information;
- Recommend methods for building national awareness on the importance of sustainable use of the environment and natural resources for national development;
- Take into account County Environment Action Plans as provided for under section (31) of this Act;
- Identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general adverse impacts on the environment;
- Be disseminated to the public;
- Without prejudice to subsection (1), be reviewed and modified from time to time to take into account emerging knowledge and realities;
- Be in such form and contain other matters as the agency may prescribe.

The National Environment Action Plan shall be binding on all Line Ministries, public organizations, agencies, companies, non-governmental organizations and all persons.

The required National Environmental Action Plan as stipulated in the EPA Act has however not been prepared by the EPA. Instead the EPA has produced a National Biodiversity Strategy and Action Plan and the State of Environment Report for Liberia. The proposal that the EPA has in place taking cognizance of the existing SOE and the NABSAP is to conduct a gap analysis so as to identify and address any inadequacies with the objective of ensuring the adoption of a sustainable environmental management practices across all sectors of the country.

### **7.1.2 National Biodiversity Strategy and Action Plan**

The national biodiversity strategy and action plan (NBSAP) comprises two components: the vision statement, the guiding principles, the goals and objectives on one hand and the Actions for Biodiversity conservation, sustainable use and benefit sharing on the other. The goals and objectives of the NBSAP are developed in consonance with the guiding principles. Six goals were developed upon which all the actions are based.

#### **National Biodiversity Vision Statement**

In commitment to the Millennium Development Goals of the Government and consistent with the National Environmental Policy of Liberia, the overarching biodiversity vision of Liberia is for the people to acknowledge and exercise responsible stewardship over biological resources to meet the needs of the present without endangering the ability of future generations to meet their own needs. The vision statement of the National Biodiversity Strategy and Action Plan (NBSAP) is therefore, “to have a society that lives in harmony with its natural environment, balances livelihood and conservation of biological resources and promotes equitable sharing of benefits arising from the sustainable use of genetic resources as an integral part of national socio-economic development.”

#### **Guiding Principles**

For the realization of the national biodiversity vision, the underlining principles needed to guide the implementation of the NBSAP in Liberia have been comprehensively defined.

#### **National Biodiversity Goals and Objectives**

The goal and objectives of the NBSAP are developed in consideration of the defined principles for the enhancement of effective conservation and sustainable use of biological diversity in Liberia for the benefit of everyone.

#### **Overall goal**

To sustainably use biodiversity on a long-term basis in order to meet the requirements of present generations without endangering the potential of future generations to meet their own needs.

**The specific goals are:**

1. To take appropriate measures to protect critical ecosystems against harmful effects or destructive practices for conservation of biological diversity;
2. To create biodiversity awareness among sectors of the society and promote international cooperation;
3. To commit the people to the sound and sustainable use of biological diversity to bring about socio-economic development;
4. To promote rational utilization and conservation of biological diversity;
5. To promote access to genetic resources and the fair and equitable sharing of benefits arising from their utilization
6. To contribute to the fulfillment of the Millennium Development Goals through poverty alleviation, food security, and women empowerment in biodiversity conservation by 2015.

**7.1.3 State of the Environment Report**

The 2006 State of the Environment Report (SOE) is the first SOE report for Liberia. It is required by the Environmental Protection and Management Law, the SOE report should be produced after every five years. The state of the environment report is a guide for development planning and decision-making and is an important reference for environmental education and awareness. It is expected to serve as a monitoring tool for measuring progress against stated development goals. Within the environmental domain, there are serious data gaps related to Liberia's biodiversity, mountains, solid waste management, and greenhouse gas emissions, among others. This needs to be urgently addressed so as to improve subsequent editions of the SOE.

The 2006 SOE report is divided into four parts: 1) environment and economic development, 2) the state and trend of the natural resources, 3) the human environment, and 4) environmental governance. These are designed to reflect the inter-linkages between environment, development, security and good governance in Liberia and are the broad areas that Liberians will have to think about and act on during the process of reconstructing their country.

**7.2 NATIONAL HEALTH POLICY**

The central vision of the National Health Policy is a nation with improved health and social welfare status as well as equity in health. The Ministry regards health as a basic human right and has devoted itself to ensuring that every Liberian has access to health and social welfare services regardless of economic status, origin, religion, gender or geographic location.

During the crisis the Liberian health sector benefited from extensive support from international humanitarian relief organizations. The mandate of many emergency and relief organizations is close to an end. Both donor community and Liberian government are concerned that some health services could collapse in areas where relief organizations pull out before other organizations have been contracted to deal with the health needs of the population they used to serve.

To secure sustainability of the sector and avoid significant decrease in the provision of essential services during this transition, the National Health Policy calls for a two-pronged approach:

- Begin strengthening the delivery and management of an equitable, effective, efficient, responsive and sustainable health care system.
- Secure and expand access to basic health care of acceptable quality by (a) attracting additional funding for infrastructure, human resources, management systems and recurrent expenditures; and (b) reducing systemic inefficiencies and improving operational management.

### **National Health Plan**

The National Health Plan outlines the objectives, strategies, and resources crucial to reforming the health sector so that it can deliver quality health and social welfare services to the people of Liberia. Both the National Health Policy and Plan are designed around four strategic orientations: Primary Health Care, Decentralization, Community Empowerment, and Partnerships for Health. The operational and integrated framework for implementing the National Health Policy and National Health Plan has four key components:

- Basic Package of Health Services
- Human Resources for Health
- Infrastructure Development
- Support Systems

The plan envisages a variety of partnerships supporting these components. The plan is designed to be implemented in two phases: (a) a transition phase between 2007 and 2008; and (b) a development phase between 2009 and 2011. Transition activities focus on the challenges posed by the withdrawal of humanitarian actors from Liberia, while development activities are oriented toward capacity building and long-term reconstruction.

## **7.3 LEGISLATIVE AND REGULATORY FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT**

### **7.3.1 The ACT Creating the EPA of Liberia**

The Act (approved in November 2002) creating the **Environmental Protection Agency** empowers the EPA to be the principal authority in Liberia for the management of the

environment and to co-ordinate, monitor, supervise and consult with relevant stakeholders on all activities in the protection of the environment and sustainable use of natural resources.

Specifically, the functions of the EPA, inter alia, are:

- to review and approve environmental impact statements and environmental assessments submitted in accordance with the act,
- to monitor and assess projects and activities with regard to their environmental impacts,
- to co-ordinate, integrate, harmonise and monitor the implementation of environmental policy, decisions, legislation and regulations;
- build capacity of line ministries, authorities and organisations through the exchange of data and information, and to render advice, technical support and training in environmental and natural resource management; and
- to review project documents for donor-sponsored environment related projects to ensure and/or recommend to the negotiating ministry or agency, the inclusion of strategies and activities for capacity building of nationals.

The Act further requires a **County Environment Committee (CEC)** to be established in every county to carry out the following:

- collaborate with and facilitate the activities of the Line Ministries in the County relating to the management of the environment and natural resources,
- ensure that the environmental concerns of the county and the local populations are integrated in all plans and projects approved by the government at the County level,
- promote dissemination of information about the environment through education and outreach programs,
- coordinate with the EPA on the design and implementation of community environmental projects and all issues relating to environmental management,
- create District Environment Committees within the County to enable it to carry out its functions at community level,
- advise and receive reports of the District Environment Committees on environmental outreach programs and other matters pursuant to this Act,
- prepare a state of the environment report of the County every 5 years,
- prepare a County Environment Action Plan,
- report to the EPA on all matters relating to the environment and natural resources in the County under its jurisdiction, and
- submit reports as the EPA may require.

The Act further requires the EPA to appoint a **County Environmental Officer** for each County, and shall have the following functions:

- advise the County Environment Committee on all matters relating to the management of the environment and natural resources,
- function as the Secretary to the County Environment Committee,
- compile reports to the EPA as may be prescribed,
- promote environmental awareness through dissemination of information, public education and campaigns,
- conduct public hearings on environmental impact assessment in the county and district as prescribed in this act,
- ensure that the views and concerns of all groups within the local population are represented at public hearings on environment and natural resource management decisions, and
- assist the District Environment Committees to perform their functions.

The County Environment Committee shall create **District Environment Committees** in accordance with the guidelines provided to it by the EPA to enable it to carry out its functions at community level, which are to:

- promote environmental awareness through dissemination of information and public education campaigns,
- mobilize people within the district to conserve natural resources through self help,
- mobilize people within the district to restore degraded environmental resources through self help,
- mobilize people within the district to improve their natural environment through self help,
- create awareness of the people in the district to enhance, preserve and protect their indigenous knowledge and the cultural and spiritual values of biodiversity,
- monitor all activities in the district to ensure that such activities do not have any significant impact on the environment,
- report any events or activities which have or are likely to have significant impact on the environment to the District Environment Officer, and
- perform such other functions as may be prescribed by the County Environment Committee in consultation with the Agency.

Further, this Act requires the EPA to appoint a District Environmental Officer for each district, whose main functions shall be to:

- advise the District Environment Committee on all matters relating to the environment and natural resources,
- function as the secretary to the District Environment Committee,
- liaise with the County Environmental Officer and agency on all matters relating to the environment,
- compile such reports to the EPA as may be prescribed,
- promote environmental awareness through dissemination of information, public education and campaigns,

- assist the County Environmental Officer to conduct public hearings on environmental impacts assessment in the county and the district as prescribed in this Act, and
- ensure that the views and concerns of all groups within the District are represented at public hearings on environment and natural resource management decisions.

Regarding requirements for **Environmental Impact Assessment**, the Act requires:

- the EPA to require an EIA be undertaken on all projects, policies, programs and activities specified by the EPA in consultation with relevant ministries and agencies and published by notice,
- a developer, or project proponent not to commence, carry out, execute, implement or conduct a project or activity for which an EIA is required unless an EIA has been conducted,
- a licensing or permitting agency or authority under any law in force in Liberia shall not issue a license for any project for which an EIA is required under the Act, unless the applicant produces to the licensing agency or authority an EIA license or permit issued under this Act and the regulations made there under, and
- the EPA shall establish all rules, regulations and procedures relating to the implementation of the EIA requirement under this Act, and which shall be reviewed 5 years after implementation date to assure their effectiveness.

### **7.3.2 The Environmental Protection and Management Law of Liberia**

This Act lays out the requirements concerning environmental standards, environment impact assessments, environmental monitoring, environmental audits, registering and handling of pollutants, environmental restoration, and related fees and fines. It requires Liberia to domesticate in national law all international conventions, treaties and other legal items to which Liberia is party.

Finally, it stipulates that Liberia's environment will be best managed if a rational process of land-use planning is followed with full and transparent information, and it assigns responsibilities for this. Full transparency and participation of Liberian society in environmental decision-making is at the core of this law.

This Act lays out most of the details that the EPA is supposed to ensure are implemented.

### **7.3.3 Public Health Law**

An Act adopting a new Public Health Law was approved in 1976. This makes provision for the Control of Acute Communicable Diseases and Conditions, Environmental Sanitation, Health Standards of Public and Private Institutions, Regulation of Drugs and Disposal of Human Remains.

### **7.3.4 International Conventions**

Liberia is party to many international agreements such as:

- Treaty on Marine Life Conservation, 1966
- The Convention on Prevention of Marine Pollution by Dumping of Waste and other Matter, 1972
- Convention on the Prevention of Pollution from Ship, 1973/1978
- Convention on the International Trade in Endangered Species of Wild Flora and Fauna, 1981
- Law of the Sea, 1982
- International Agreement on the Protection of Tropical Timber, 1994
- Comprehensive Nuclear Test Ban Treaty (CTBT), 1996
- Vienna Convention on the Protection of the Ozone Layer, 2001

Some International Environmental Agreements signed but not ratified are:

- United Nations Framework Convention on Climate Change (UNFCCC), 1994
- The Convention on Biological Diversity (Biodiversity Treaty), 1993
- Environmental Modification Treaty, 1997.

It is noticed that Liberia is not party of Basel Convention which take into account Biomedical waste and Bamako convention.

## **7.4 INSTITUTIONAL FRAMEWORK**

Administratively, the Republic of Liberia is divided into 15 counties namely Bomi, Bong, Gbarbolu, Grand Bassa, Grand Cape Mount, Grand Gedeh, Grand Kru, Lofa, Margibi, Maryland, Montserrado, Nimba, River Cess, River Gee and Sinoe.

Counties are further divided into Districts, Townships and Villages. Townships are made up of a number of villages. In the traditional structure, the county is also divided into clans, which are subdivided into sub-clans. Townships are grouped into clans depending on the language groups and traditional affiliations.

The County administrative head is the Superintendent. A District is headed by a Commissioner, a Clan by a paramount chief, a sub-clan by a clan chief, a township by a town chief and the village by a village chief.

In Liberia, the responsibility for environmental protection and management lies with the Environmental Protection Agency (EPA) and within the EPA each county is assigned a County Environmental Officer and a County Environment Committee. While the EPA now exists, County Environmental Officers and County Environment Committees had not yet been established at the time of preparation of this ESMF.

The County Health and Social Welfare Service Administration is the operational management structure, which includes the County Health and Social Welfare Team

(CH&SWT). County health authorities manage county health facilities, including county hospitals.

The following are Ministries whose jurisdictions are relevant to various health facilities:

- Ministry of Gender and Development - created 2002 (the role of gender in development);
- Ministry of Internal Affairs (administration of political subdivisions from counties to towns);
- Ministry of Lands, Mines and Energy (Land Administration Issues);
- Ministry of Planning and Economic Affairs (long-term national planning, coordination of international aid programs, National Health Planning, Financing and Implementation);
- Ministry of Rural Development (integrated rural development including agricultural development); and
- Ministry of Public Works (Infrastructure Planning and Development).
- Ministry of Justice (Policy coordination and regulation for the pharmaceutical sector)

#### **7.4.1 Ministry of Health and Social Welfare**

The Division of Environmental Health and Occupational Health of the Ministry of Health and Social Welfare (MOHSW) is responsible for environmental issues in the Ministry through a strong collaboration with the EPA. The Division has specific mandates covering the following aspects of national environmental and occupational health issues: Water and Sanitation, Food Safety, Chemical Safety, Occupational Health, Medical Waste, Port Health Services and Environmental Sanitation.

The MOHSW provides for capacity building and training of environmental health technicians and is mandated to conduct sanitary inspections, including drinking water surveillance and water quality monitoring, towards the evaluation of compliance with Public Health Law and national standards.

#### **7.4.2 Ministry of Planning and Economic Affairs**

The Ministry of Planning and Economic Affairs (MPEA) is responsible for regional development planning and co-ordination. It is also responsible for identification, development and preparation of suitable programs and projects; both for the public and private sectors development. The MPEA provides technical guidance to all governmental agencies in the preparation of development programs and projects.

### **7.4.3 Ministry of Public Works**

The Ministry of Public Works (MPW) is responsible for the design, construction and maintenance of roads and highways, bridges, storm sewers, public buildings and other civil works in the country. Additionally, it has responsibility for the administration of urban and town planning, as well as provision of architectural and engineering services for all ministries and agencies of government. In principle, the MPW is responsible for the installation of the entire infrastructure required for waste management delivery services including the construction of sanitary landfill facilities.

### **7.4.4 Ministry of Rural Development**

The Ministry of Rural Development (MRD) has the mandate to ensure that safe drinking water and adequate sanitation facilities are provided in rural communities. It also ensures the provision of policy direction on the construction, utilization and maintenance of low cost facilities that are appropriate for rural communities, such as roads and hand pumps. Environmental management in Liberia has been fragmented with each public agency governed by its own policies. The roles and responsibilities amongst the principal agencies responsible for waste management are ambiguous and overlapping in some cases. For example, the mandate of Monrovia City Corporation (MCC) overlaps with that of the MOHSW regarding environmental health inspection activities. These mandates will require further clarification, especially during the development of appropriate institutional framework for the management of solid waste and sanitation.

### **7.4.5 Environmental Protection Agency**

The EPA is the principal authority in Liberia for the management of the environment and is mandated to co-ordinate, monitor, supervise and consult with relevant stakeholders on all activities in the protection of the environment and sustainable use of natural resources.

The agency is empowered to carry out the following key functions among others;

- 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;
- Build the capacity of line Ministries, authorities and organizations through the exchange of data and information, and to render advice, technical support and training in environment and national resource management so as to enable them to carry out their responsibilities effectively;

- Establish environmental criteria, guidelines, specifications and standards for production processes and the sustainable use of natural resources for the health and welfare of the present generation, and in order to prevent environmental degradation for the welfare of the future generations;
- Identify projects, activities, policies, and programs for which environmental impact assessment must be conducted under this Act;
- Review and approve environmental impact statements and environmental impact assessment submitted in accordance with this Act;
- Investigate reports of pollution and other related matters;
- Monitor and assess projects and activities including activities being carried out by relevant ministries and bodies to ensure that the environment is not degraded by such activities and that environmental management objectives are adhered to and adequate early monitoring on impending environmental emergencies is given;
- Exercise or perform any of the pollution control functions with the relevant ministries and organizations;
- Review sectoral environmental laws and regulations and recommend for amendments and to initiate proposals for the enactment of environmental legislation in accordance with this Act or any other Act;
- Review project documents for donor-sponsored environment-related projects to ensure and/or recommend to the negotiating ministry or agency, the inclusion of strategies and activities for capacity building of nationals;

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.

#### **7.4.6 National Environment Policy Council**

The National Environment Policy Council of Liberia is the ultimate policy-making body on the environment. The Policy Council consist of members appointed by the President from Line Ministries and members representative of third respective authorities and organizations as specified in Annex I of the EPA Act.

The Chairman of the Policy Council is a Minister appointed by the President and the Chairman, with approval by the membership of the Policy Council, shall select the Vice Chairman.

The function of the Policy Council on the environment is among others:

- Responsible for policy formulation and directions for the purpose of the EPA Act;
- To set priorities for national goals and objectives for the protection of the environment;

- To Promote co-operation among Line Ministries, local authorities, the private sector, non-governmental organizations engaged in environmental protection programs and the public;

#### **7.4.7 National Environmental Commission of Liberia**

The National Environmental Commission of Liberia (NECOLIB) creates and promotes environmental awareness; develop a national environmental policy, environmental protection and management law. Coordinates the activities of environmental related organizations, including NGOs and oversees international environment related conventions.

#### **7.4.8 Monrovia City Corporation**

The Monrovia City Corporation (MCC) was first created as a Commonwealth District in 1833 by the Commonwealth of Liberia. A legislative Act of 1973 abolished the Commonwealth District and created the Monrovia City Corporation, giving it all municipal rights, powers and authorities, including enforcement of city ordinances, management of municipal wastes, recreation, public education and awareness and provision of services in environmental health and sanitation.

## **8.0 OVERVIEW OF THE WORLD BANK'S SAFEGUARD POLICIES**

The HSRP has been categorized as B implying that the expected environmental impacts are largely site-specific, that few if any of the impacts are irreversible, and that mitigation measures can be designed relatively readily. The environmental assessment for a Category B project,

- examines the project's potential negative and positive environmental impacts,
- recommends measures to prevent, minimize, mitigate, or compensate for adverse impacts, and
- recommends measures to improve environmental performance

The World Bank has 10 Environmental and Social Safeguard Policies to reduce or eliminate the adverse effects of development projects, and improve decision making. These operational policies include:

- OP/BP 4.01: Environmental Assessment
- OP/BP 4.04: Natural Habitats
- OP 4.09 : Pest Management
- OP/BP 4.12: Involuntary Resettlement
- OD 4.20: Indigenous Peoples
- OPN 11.03: Cultural Property
- OP 4.36: Forestry
- OP/BP 4.37: Safety of Dams
- OP/BP 7.50: Projects on International Waters
- OP/BP 7.60: Projects in Disputed Areas

Details on the Bank Environmental and Social Policies are presented in Annex 6. Based on the general applicability of Safeguard Policies to HSRP, OP 4.01 would be triggered by the proposed HSRP sub-project activities.

### OP 4.01 Environmental Assessment

The objective of OP 4.01 is to ensure that projects financed by the Bank are environmentally and socially sustainable, and that the decision making process is improved through an appropriate analysis of the actions including their potential environmental impacts. Environmental assessment (EA) is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project.

OP 4.01 is triggered if a project is likely to present some risks and potential adverse environmental impacts in its area of influence. Thus, in the case of the HSRP, potential negative environmental and social impacts due to construction and rehabilitation activities are likely to include loss of vegetation, soil erosion, soil and groundwater pollution, air pollution, public health impacts such as traffic hazards, noise, dust, and loss of access.

Table 8.1: Compliance with OP 4.01 and national legislation

Aspect	Provision of OP 4.01	EPA Act, 2003	Compliance analysis
Environmental and Social Assessment	The OP 4.01 is triggered if a project is likely to know the risks and potential environmental impacts (negative) in its area of influence.	The Agency shall require that an environmental impact assessment be undertaken on all projects, policies, programmes and activities specified by the Agency in consultation with relevant ministries and agencies and published by notice The EPA Act requires proponent to 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;	In compliance with OP4.01
Categorization and Environmental Screening	The OP 4.01 classifies projects as follows: <ul style="list-style-type: none"> <li>• Category A: Some major negative impact</li> <li>• Category B: Potential negative impact</li> <li>• Category C: no significant negative impact.</li> </ul>	The EPA act has a screening process which indicates the environmental work to do depending on if the project has or not significant impact but no classification of project <ul style="list-style-type: none"> <li>• project / activity which will not have or is unlikely to have a significant environmental impact; or that the project discloses sufficient mitigation measures to ensure the acceptability of the anticipated impacts.</li> <li>• Where further study is necessary to determine the level of EIA required, the applicant will need to prepare an environmental review/ initial environmental examination or evaluation.</li> <li>• The proponent or applicant will be required to prepare an environmental impact study in accordance with Section 14 of the EMPL if the project /activity will have or is likely to have a significant impact on the environment.</li> </ul>	Not in compliance but the environmental work required by project deal with classification
public consultation	The OP 4.01 requires that all projects in Category A and B, groups affected by the project and local NGOs are consulted on environmental aspects of the project, and reflects their views. For category A projects,	The EPA Act requires proponent to 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	The Public Consultation process in place as stipulated by the EPA Act is consistent with the provisions of OP 4.01

Aspect	Provision of OP 4.01	EPA Act, 2003	Compliance analysis
	<p>these groups are consulted at least twice: a) shortly after environmental screening and before the finalization of terms of reference of the EIA, and b) once established draft EIA report. Moreover, these groups are consulted throughout the project, as needed.</p>	<p>effective natural resource management;</p> <p><b>Section 17: Public Consultation on the Environmental Impact Statement, stipulate that the Agency shall:</b></p> <ul style="list-style-type: none"> <li>a) By notice published for the consecutive days, invite comments from the public;</li> <li>b) The public notice shall state the particulars of the project as set out in section (14) above;</li> <li>c) The comments under sub-section (a) shall be received by the agency within 30 days of the publication of the notice or within such extended period as the Agency may grant by published notice.</li> </ul> <p><b>Section 25, sub section f of the EPA Act requires the conduct of public hearings on environmental impact assessment in the County and the District as prescribed in this Act; and ensure that the views and concerns of all groups within the local population are represented at public hearings on environment and natural resource management decisions.</b></p>	
Diffusion	<p>The OP 4.01 has made available the draft EIA (for projects of category A) or separate EIA report (for projects of category B) in the country and in the local language at a public place accessible to groups affected by the project and local NGOs prior to the assessment. In addition, the Bank will issue the appropriate reports to Infoshop</p>	<p><b>Section 18 Public Hearing</b></p> <p>Upon receiving the comments of the public and the Line Ministry or other agencies to whom a copy of the environmental impact statement was sent, or upon the expiry of the period stipulated for receipt of comments, and on considering the opinion from the comments, the Agency shall decide whether to hold a public hearing</p> <p>So, the EIA is sent first for comments. But the final EIA is not mentioned</p>	<p>The mechanism the EPA has in place as required under section 25 of the EPA Act is compliant with the provisions of the OP 4.01 but there is the need to make provision for making reports available and in local language at public places to improve accessibility to affected groups.</p>

## 9.0 CURRENT HEALTHCARE WASTE MANAGEMENT PRACTICES IN LIBERIA

### 9.1 CLASSIFICATION OF WASTES

There are several classifications available for solid wastes. That used by the World Health Organization (WHO) classifies solid wastes into categories: namely general, infectious, pathological, sharps, pharmaceuticals, chemical, radioactive waste, and pressurized containers. Apart from the general wastes, all others may be classified as hazardous.

Reconnaissance visits conducted by the consultant to some selected health facilities revealed the following classification of Health-care waste in Liberia based on the point of generation, method of storage and the treatment options available by the health establishments:

*Table 9.1 : Health –Care Waste Generation in Liberia*

TYPE	CLASSIFICATION AND DESCRIPTION	CONTENT/EXAMPLES
<b>A.</b>	<b>GENERAL/NORMAL WASTE</b> This type of hospital waste is similar to domestic waste. It is not harmful except for the fact that it is produced within the hospital environment and therefore requires special handling. It includes sweeping from lawns, corridors, offices, kitchen workshop, stores etc.	<ul style="list-style-type: none"> <li>Paper, cardboard, plastic materials including those from points of generation, kitchen waste, ash, saw dust, pieces of wood etc.</li> </ul>
<b>B.</b>	<b>INFECTIOUS WASTE</b> This refers to waste generated by both in-patients/out-patients which is known or likely to contain pathogenic micro-organisms. It includes materials that can be dangerous or infectious to patients, hospital workers and the public. It therefore requires special management both inside and outside the hospital until it is finally disposed of. This may further be classified under the following sub classification:	<ul style="list-style-type: none"> <li>Laboratory waste generated by microbiological investigation.</li> <li>Potentially infected blood and human and animal tissue. (e.g. HIV)</li> </ul>
<b>B.1</b>	<b>SHARPS</b> These are sharp edged waste stained or contaminated with blood or body fluids from injection rooms, surgical equipment etc.	<ul style="list-style-type: none"> <li>Needles, syringes, surgical blades, scalpels, test tubes, ampoules, glass instruments, pipettes etc.</li> </ul>
<b>B.2</b>	<b>PATIENT WASTE</b> These are waste generated from in or out-patient activities and may be contaminated or stained with blood or body fluids from surgical operation, injection room (other than sharps)	<ul style="list-style-type: none"> <li>Stained or contaminated material (eg soiled cotton wool, used bandages/dressings, gloves, linen, blood transfusion bags, urine, faeces)</li> </ul>

<b>B 3</b>	<b>CULTURE/SPECIMEN</b> Clinical specimen, laboratory culture and human tissue.	<ul style="list-style-type: none"> <li>• Culture plus specimen (e.g. experimental specimen (animals), tissue culture, urine, stool)</li> <li>• Urine, faeces (stool) from laboratory</li> <li>• Experimental specimen (animals)</li> </ul>
<b>C</b>	<b>PATHOLOGICAL /ORGANIC HUMAN TISSUE</b> This type of waste includes amputations and other body tissues resulting from surgical operations autopsy (post- mortern), birth and require special treatment because of ethical and aesthetic reasons.	<ul style="list-style-type: none"> <li>• Internal body organs, amputated limbs, placentas, foetus.</li> <li>• Human liquid wastes (e.g. urine, blood products)</li> </ul>

<b>TYPE</b>	<b>CLASSIFICATION AND DESCRIPTION</b>	<b>CONTENT/EXAMPLES</b>
<b>D.</b>	<b>HAZARDOUS WASTE</b> This type of waste from the hospital consists of physical and chemical characteristics similar to industrial hazardous waste and therefore require special management.	<ul style="list-style-type: none"> <li>• Includes: pharmaceutical, laboratory, organic substances, heavy metals and other chemical contamination</li> </ul>
<b>D.1</b>	<b>PHARMACEUTICAL WASTE</b> These are wastes generated from the pharmacy	<ul style="list-style-type: none"> <li>• Expired drugs (solid/liquid, plastic or glass containers)</li> <li>• Residuals of drugs in chemotherapy that may be cytotoxic, genotoxic, mutagenic or carcinogenic</li> </ul>
<b>D.2</b>	<b>PHOTOGRAPHIC CHEMICAL WASTE</b> Any waste material (solid or liquid) produced from image processing at the radiology department	<ul style="list-style-type: none"> <li>• Photographic developer</li> <li>• Fixer solution</li> <li>• X-ray photographic film</li> </ul>
<b>D. 3</b>	<b>RADIOACTIVE WASTE</b> Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind.	<ul style="list-style-type: none"> <li>• Solid-papers, gloves, cotton swabs, needles (sharps), equipment etc.</li> <li>• Liquid-patient excretion, rest of solution administered to patient, gastric content</li> <li>• Spent radiation sources</li> <li>• Technetium generators</li> <li>• Radium needles.</li> </ul>
<b>D. 4</b>	<b>LABORATORY WASTE</b> This is made up of basically spent chemicals from research and analytical laboratories, and pharmaceutical companies.	<ul style="list-style-type: none"> <li>• Acid, Alkali, organic substances, Solvents, and heavy metals.</li> </ul>
<b>D. 4.1</b>	<b>ACIDS</b>	<ul style="list-style-type: none"> <li>• Chromosulphuric acid</li> <li>• Glacial acetic</li> <li>• Hydrochloric acid</li> <li>• Oxalic acid</li> </ul>
<b>D. 4.2</b>	<b>ALKALI</b>	<ul style="list-style-type: none"> <li>• Sodium hydroxide</li> <li>• Potassium hydroxide</li> </ul>
<b>D. 4.3</b>	<b>SOLVENTS</b>	<ul style="list-style-type: none"> <li>• Ethanol .Methanol, Xylene, Chloroform and Acetone</li> </ul>
<b>D. 4.4</b>	<b>ORGANIC SUBSTANCES</b>	<ul style="list-style-type: none"> <li>• Hexamine, paraffin, Phenol, resorcin and Polyvinyl chloride tape.</li> </ul>
<b>D. 4.5</b>	<b>HEAVY METALS</b>	<ul style="list-style-type: none"> <li>• Mercury</li> </ul>
<b>E.</b>	<b>INCINERATOR ASH AND SLUDGE</b> This is the waste generated from the combustion of hospital waste which will have to be disposed of in a landfill site.	<ul style="list-style-type: none"> <li>• Incinerator fly ash and its residues</li> <li>• Leachate</li> </ul>

Source: Safe management of wastes from health-care activities , A Pruss, E Giroult P Rushbrook, WHO

## **9.2 PRODUCTION OF WASTE**

### **9.2.1 Solid Waste**

The Health-care wastes are generated from various sources. These sources can be classified as major or minor. The Teaching/Specialist and the Regional hospitals form the major sources. Districts Hospitals, Private Laboratories, Health Centres/Post, other health facilities form the minor sources. The composition of the waste is often a characteristic of the type of source. For example, the operating theatres and surgical wards generate mainly anatomical waste such as tissues, organs, body parts and other infectious waste.

Solid waste generation depends on numerous factors, such as established waste management methods, type of health-care establishments, the proportion of patients treated on a daily basis and the level of complexity and degree of specialisation of the health facility. Hence, the Teaching Hospitals generate larger quantities of waste per unit than other facilities.

Data on waste load generation at the various health institutions are however not available. There are not sufficient facilities and reliable scientific methods in place for health care waste load determination.

### **9.2.2 Liquid Wastes**

Liquid wastes generated include excreta, bath water from wards and waste water from laboratories (specimens, reagents etc), operating theatres and mortuaries. Some have highly infectious potential. Excreta are channelled into septic tanks. Most of the other liquid waste are poured down the drains of sinks and flow into gutters which enter the external sewerage system ending up in water bodies draining the area. In some cases (particularly in the rural areas where plumbing facilities are rudimentary) some of these liquid wastes end up on the ground.

### **9.2.3 Air Emissions**

Few air emissions are generated from healthcare activities. They tend to be generated from the sterilisation processes (e.g. operating theatre). Other areas are the catering and laundry departments. These emissions are in the form of vapour and smoke. Other emissions are also generated secondly from the incineration of waste either from open burning or from the incineration.

### **9.3 SEGREGATION OF WASTE**

In practice, there are no waste segregation policy nor well-defined system for segregation of the wastes into various categories. As a result of some of the sensitization to infection control practices, of health workers, most institutions now segregate some categories of waste (sharps, needles and syringes) from the rest of the waste. Pathological waste in the form of placenta and body parts are also separated from the rest of the waste in most facilities.

The receptacles for the segregated waste are also non-uniform. Needles and syringes discarded after immunization are collected into specially designed UNICEF boxes. In the Out-patient clinic and wards where these boxes are not available, many institutions use improvise boxes with holes at the top.

Others drop the needles into plastic bottles containing bleach while adding syringes to general waste. In other instances all the sharps are combined with the general waste. These practices may all be occurring within the same facility suggesting non-uniformity in segregating waste.

### **9.4 TREATMENT OF WASTE**

#### **9.4.1 Chemical Dis-infection**

Used in some facilities for treating pathological waste in the form of placenta tissue prior to burial. Few institutions chemically disinfect needles before burning or burial. Not applied to vaccine vials which are either burnt or dumped crudely.

#### **9.4.2 Sterilisation**

Dis-infection by autoclave available in larger facilities and not for waste but for re-useable items e.g. instruments, theatre linings etc. In rural facilities where there may be no autoclaves, steam dis-infection by boiling is often employed-not so effective as temperatures reached are not up to the required 120<sup>0</sup>C attained in autoclaving.

### **9.5 WASTE DISPOSAL PRACTICES**

#### **9.5.1 Burial Pathological Waste**

Placentas are usually buried. Sometimes the hole is very shallow with high potential of being dug up by birds and animals. Innovative septic tanks reducing potential for the tissues to be dug up are created in few facilities e.g. MSF-Belgium Island Hospital. Other body parts (e.g. amputated limbs etc) are incinerated where incinerators (e.g. Grand Bassa Hospital, Buchana and S.D.A. Cooper Hospital) are available or buried.

### **9.5.2 Incineration**

Incinerators are available only in some health centres e.g. Grand Bassa Hospital, Buchana and S.D.A. Cooper Hospital. Other incinerator e.g. UNICEF type are used for needles and syringes after immunisations. They are efficient but have small capacity thus reducing efficiency when wastes loads to be incinerated are high.

Improvised incinerators e.g. open metal drum with wire mesh in middle. Waste ampoules and needles are placed on the mesh and fire set to it from below. They are quite effective, but are associated with considerable air pollution.

Open burning is applied to sharps and other infectious wastes. In rural districts with no municipal waste management systems, the open burning is applied to general wastes.

### **9.5.3 Disposal at Dumping Grounds through Monrovia City Corporation**

Method employed for most of the solid waste i.e. infectious, general, pharmaceutical and in some cases, sharps.

Currently, the dumping grounds are not engineered to serve as sanitary landfill sites. They therefore constitute high potential for the spread of infections through run offs during rains and contamination of underground water.

### **9.5.4 Disposal of Liquid Waste**

Excreta are channelled into septic tanks. Other liquid wastes are emptied into sinks and drains thereby entering natural drainage systems. In some cases, liquid wastes are discharged into bushes/ground and may enter water bodies draining the area.

## **10.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS OF HSRP**

### **10.1 ENVIRONMENTAL IMPACTS**

#### **10.1.1 Positive Environmental Impacts**

##### ***10.1.1.1 Aesthetics Improvement***

Many of the health care facilities in Liberia have not experience a major rehabilitation or maintenance over a very long period and are in very deplorable states. A major expected positive impact of the HSRP is that the beneficiary health care facilities will experience significant infrastructure rehabilitation which will lead to enormous aesthetic improvement. Health care staffs environment will also be improved to provide the need working environment for quality health service delivery and comfort for both the patient and health-care staff.

##### ***10.1.1.2 Reduced Health Risks***

The present state of some of the health facilities, medical wastes handling and disposal practices as well as the general work environment posses a potential health risk to visitors to the health-care facilities, patients and the health care staffs. The expected rehabilitation of the health facilities and improvement of medical wastes management systems under the HSRP will reduce the current health risk status of some of the health care facilities.

#### **10.1.2 NEGATIVE ENVIRONMENTAL IMPACTS**

##### ***10.1.2.1 Infrastructure rehabilitation impacts***

The main environmental issues for the project involves some waste generated during the rehabilitation of JFK (see figure 10.1 below) and a couple of other health care facilities. Construction/rehabilitation activities at proposed project sites may involve demolition, generation of construction wastes, sand, stone, and cement transfer to the site, and mortar and concrete mixing. These would be followed by transportation of the equipment and machines to the site and subsequent installation.

In the preparation and construction phase, the expected impacts are inherent to the felling of trees to clear the base construction, generation of construction waste, the delivery of materials. Negative impacts are: sounds temporary dust during construction, construction waste; insecurity linked to transport materials, soil erosion, water pollution and soil borrowing sites. It is not intended to involuntary displacement of people and goods.

These impacts depend on the size of the project and also the importance of involved rolling stock, needs in surface and the availability of this area for site installation, the importance and specialization of enforcement personnel, input requirements, etc. Input requirements pose particular problems of the management of borrow pits.

Indeed, construction of infrastructure requires the use of building materials. These materials include: gravel, sand, rubble from rivers and/or hills, red clay, baked bricks, stones, etc. The operation is to be excavated materials resulting in the loss of flora and fauna of the area selected. The extraction of these materials promotes soil erosion and/or collapse by the terrain. These careers are also involved in the disfigurement of the landscape with the stigma attached to the hole dug for the procurement of materials. Also, they contribute to the formation of stagnant water body promoting the development of insect vectors.

The total direct and indirect effects are:

- Relatively large quantities of waste are generated in the preparation phase, following logging and cleaning sites before the installation sites. At this garbage would add a lot of cut/excavation that will be produced. This garbage should be well managed as any place where they will be filed will face the soil amended with the result of accumulation that may affect the runoff and the runoff of rainwater.
- On the human environment, the rotation of vehicles carrying equipment and building materials could impede movement and mobility in general and more nuisances (noise, dust) to which urban populations are exposed.
- Risk of traffic accidents are also rated in terms of scale and size of sites.
- Various pollution (unregulated discharges of construction waste) caused by construction activities are a threat to hygiene and public sanitation.
- Wastewater generated on various sites, including those from the toilet can be sources of pollution.
- The use of devices that require fuel, oils and fats at sites suggests a risk of contamination of groundwater by infiltration. Also, if companies must use such devices, the use must reflect this risk, although it is also very low.
- On the health front, the construction phase is not without risk to patients, carers and medical staff with regard to pollution and nuisances associated with the work.
- In terms of hygiene and sanitation, dredge/excavation that will be generated during the excavation for the foundations, the rubble and products of logging will generate large amounts of garbage.

- After filling the clutter, inadequate evacuation of excess sand can cause changes in the topography, with consequences that can interfere with the runoff of rainwater.
- During construction, the handling of cement and sand may expose patients, carers, medical staff, neighborhood residents to dust which the wind would facilitate transport.

### **Safety**

There would be possible conflicts between constructional activities and the current land uses. The constructional phase would be characterized by transfer of prefabricated materials, equipment/machinery and convey of workers to the site. These activities would affect the already heavy vehicular movement of trucks and cars on highway. There would be possibility of constructional occupational related accidents resulting from lack of measures to meet constructional occupational hazards e.g. workers falling from heights, dropping working implements to maim themselves and others.

### **Dust generation / Air pollution**

Construction will generate dust as trucks move to and fro project site. In moving soils and materials that are to be discarded from the site to their dumping grounds dust would be introduced into the atmosphere.

### **Noise**

The various constructional activities including moving of heavy construction vehicles and equipment may generate noise.

### **Construction Waste**

During the constructional stage waste would be generated in the form of debris and topsoil from constructional activities (see figure 9.2 below). These would be carried away from the site by trucks.

*Table10.1: Potential Environmental Impacts of Construction*

<b>Phase</b>	<b>Potential negative impacts</b>
<b>Construction</b>	<ul style="list-style-type: none"> <li>- Degradation of storage sites of construction materials</li> <li>- Degradation of areas where construction waste is discharged</li> <li>- Pollution and degradation of coastal waterways</li> <li>- Quarries and other sites of loans not rehabilitated</li> <li>- Felling trees to clear right-of-construction</li> <li>- Air pollution due to vehicle rotation, noise</li> <li>- Soil pollution from motor oil and grease</li> <li>- Generation of waste during construction</li> <li>- Pollution and nuisances, deterioration of living</li> <li>- Soil erosion</li> </ul>
<b>Exploitation</b>	<ul style="list-style-type: none"> <li>- Environmental risks from the waste (air pollution, water, etc.)</li> <li>- Lack of accompanying measures (personnel management, functional toilets connected to water networks and electricity if existing)</li> <li>- No equipment functionality due to a lack of works</li> </ul>



*Figure 10-1: JFK Hospital-West Wing selected for Major Rehabilitation under HSRP*



*Figure 10-2: Ongoing Infrastructure Rehabilitation Activity at Grand Bassa Government Hospital*

### ***10.1.2.2 Potential Impacts of Health-care Waste***

The main environmental issues for the project relate to the handling and disposal of supplies such as medical laboratory substances, X-ray films, and other medical products and waste generated during the provision of health care.

Health-care waste includes a large component of general waste and smaller proportion of hazardous waste. This section addresses the potential impacts on the environment and potential hazards of exposure to hazardous (or risk) health-care waste vis-à-vis the current health-care waste management practices in Liberia as presented in Chapter 9.0 above.

#### **Environmental impact of Health-care Waste**

Unsafe healthcare waste management has the potential to cause damage to the environment (mainly soil, water, air). Despite the fact that unnecessary disposal of waste causes unnecessary burden on resources, the pollution of air and water, in turn, has a negative impact on public health.

Contamination of the soil is mainly caused by depositing sharps and other substances without proper barriers or containment methods. In particular, heavy metals such as mercury from broken thermometers have been found to contaminate the soil. Certain pharmaceuticals and chemicals, if rejected without treatment, may also be a source of soil contamination.

Uncontrolled disposal of toxic substances, for instance heavy metals and chemicals, causes toxic agents to leach into water resources. Pharmaceutical residues, some expired drugs, antibiotics, heavy metals, phenols and their derivatives, some types of disinfectants and antiseptics, represent a high risk if discharged without prior treatment.

The risk of air pollution arises largely from the fact that health care wastes are often incinerated or burnt in the open air in order to eliminate or reduce infection. If poorly designed (or poorly operated), incinerators can pollute the air with: particulate matter arising from inefficient combustion; acidic gases due to the presence of PVC plastic, pharmaceuticals and chemicals (containing chlorine, sulphur, nitrogen, etc.); dioxins formed from organic substances in contact with chlorine during combustion; and heavy metals, in particular mercury which is volatile when heated. The majority of the substances emitted during incomplete incineration is poisonous and carcinogenic and therefore create risks to human health

#### **Public Health impact of health-care Waste**

##### ***Types of Hazards***

Exposure to hazardous health-care waste can result in disease or injury. The hazardous nature of health-care waste may be due to one of the following characteristics:

- It contains infectious agents;
- It is genotoxic;
- It contains toxic or hazardous chemicals or pharmaceuticals;
- It is radioactive;
- It contains sharps.

### **Persons at Risk**

All individuals exposed to health-care waste are potentially at risk, including those within the health-care establishments that generate hazardous waste, and those outside these sources who either handle such waste or are exposed to it as a consequence of careless management. The main groups of risk are the following:

- medical doctors, nurses, health-care auxiliaries, and hospital maintenance personnel;
- patients in health-care establishments or receiving home care
- visitors to health-care establishments;
- workers in support services allied to health-care establishments, such as laundries, waste handling, and transportation;
- workers in waste disposal facilities (such as landfills or incinerators) including scavengers.

### **Impacts of specific waste**

Detailed hazards from specific waste are in annex 5. Below are presented impacts of several types of medical waste.

#### **Impacts of Infectious Waste and Sharps**

For serious virus infections such as HIV/AIDS and hepatitis B and C, health-care workers-particularly nurses are at greatest risk of infection through injuries from contaminated sharps (largely hypodermic needles). Other hospital workers and waste-management operators outside health-care establishments are also at significant risk, as are individuals who scavenge on waste disposal sites (although these risks are not well documented). The risk of this type of infection among patients and the public is much lower. Certain infections, however, spread through other media or caused by more resilient agents, may pose a significant risk to the general public and to hospital patients.

#### **Impacts of Chemical and Pharmaceutical Waste**

There could be an incidence of widespread illnesses among the general public due to chemical or pharmaceutical wastes from hospitals. However there hasn't been any scientific research conducted in Liberia attributing any widespread illness among the general public to chemical and pharmaceutical waste. Improper handling of chemicals or pharmaceuticals in health-care establishments could cause injury or intoxication. Pharmacists, anesthetists, and nursing, auxiliary, and maintenance personnel may be at risk of respiratory or dermal diseases caused by exposure of such substances as vapours, aerosols, and liquids.

### **Impacts of Genotoxic Waste**

To date there are few data on the long-term impacts of genotoxic health-care waste. This is partly because of the difficulty of assessing human exposure to this type of compound. No scientific publication has yet reported adverse effects on health resulting from mismanagement of genotoxic waste.

### **Impacts of Radioactive Waste**

In Liberia there are no scientific data available on the impacts of radioactive wastes

### **Soil Contamination and Groundwater Pollution**

The use of landfill as a means of waste disposal in several health establishments in Liberia is a common phenomenon. Even the teaching/specialist and regional hospitals, which are deemed to be fairly resourced use dumping grounds (the word “landfill” is most often erroneously used to refer to controlled dumping ground. This is not synonymous with the well engineered/sanitary landfill site through the City Waste Management Authorities to dispose off some categories of waste just like the County Health establishments).

The potential impacts of the disposal at the dumping grounds are the release of infectious pathogens to air and water or the risk of access by scavengers. Further, there is the risk of subsequent disease transmission, either directly or indirectly through wounds, inhalation, or ingestion, or indirectly through the food chain or pathogenic host species.

The severity of the impact from the dumping grounds is the fact that none of the dedicated sites currently being used are properly engineered landfills; instead they could best be described as open dumps. There is risk of groundwater pollution since the dumping grounds are not lined with impervious materials as practiced in developed countries. In Liberia people depend on underground water for domestic uses and are likely to be polluted by leachate. However, attempts are made by the City Authorities to ensure some controlled dumping but their effort due to limiting constraints such as financing is not adequate.

### **Impact of Wastewater Disposal**

Wastewater from the Health-care establishments could contain potentially hazardous components such as microbial pathogens, hazardous chemicals, pharmaceuticals etc. There are other related hazards such as cholera. Most of the Health-care establishments in Liberia do not have sewerage treatment plants and or municipal sewer networks. The disposal of wastewater from these health facilities finds their way into water bodies and open public drains. These practices could cause the spread of dangerous diseases and expose both humans and the natural ecology to epidemic threat and health risks.

## **Impact of Air Emissions**

Few air emissions could be generated from healthcare activities and would be generated from the sterilisation process (e.g. operating theatre). Other areas will be the catering and laundry departments. These emissions may be in the form of vapour and smoke. Other emissions could be generated from the incineration of waste either from open burning or from the incineration.

## **10.2 SOCIAL IMPACTS**

### **10.2.1 POSITIVE SOCIAL IMPACTS**

#### ***10.2.1.1 Employment Creation***

There are various construction contracts under the HSRP for various skill levels. The project will therefore be a source of employment opportunities creation in Liberia for both the skilled and unskilled.

#### ***10.2.1.2 Materials and Equipment Supply Opportunities***

There are prospects for various equipments and materials supply under the HSRP. The supply of these equipment and materials will create secondary markets and increased business opportunities for the people of Liberia.

#### ***10.2.1.3 Removal of Geographical Inequalities***

The proposed project will contribute significantly to making Primary Health Care and the Basic Package of Health Services geographically accessible through a decentralized system of health clinics, health centers and hospitals. In pursuance of national health policy goal, the Ministry of Health and Social Welfare would work with communities to ensure the availability of appropriate community based services and address all barriers to access at the local level.

#### ***10.2.1.4 Improving Socio-cultural Access***

There will be reduction in socio-cultural barriers to access to health services. This reduction will ensure:

- appropriate access to health services for priority groups (for example women and children);
- improved access to services for the socially vulnerable, especially people with special needs (the disabled and people living with chronic diseases).

### ***10.2.1.5 Increase in Household Resources***

The project would impact positively on the socio-economic resources of households and communities. The costs, mainly qualitatively described and both direct and indirect would include the following:

- Increase in household members productivity due to good health or decrease in illness and death;
- Increase of human resources in the community;
- There would be a social and emotional satisfaction of greatly decreased child and infant mortality;
- Minimisation of the social and psychological costs to communities of high death rates in epidemic malaria;
- Improved attendance at school by children.

## **10.2.2 NEGATIVE SOCIAL IMPACTS**

### ***10.2.2.1 Restriction of Access***

Under the HSRP, no new construction activities will be financed and therefore there will be no land acquisition. Hence there are no issues of involuntary resettlement under the project. However, the Catholic Hospital Community has issues with some development activities of the A.M. Dogliotti College of Medicine, which is being supported under the HSRP.

The Catholic Hospital Community has reported that the A.M. Dogliotti College of Medicine, which is situated in the community, is currently constructing a perimeter fence sponsored by the World Bank. Upon completion, the fence wall will prevent the Catholic Community dwellers from having access to their source of safe drinking water(hand pumps constructed on the college campus) that the community has been drawing water from for several years. Furthermore, the community alleges that the fence wall will also block the only access road that leads through the college campus to the community. While the community wholeheartedly embraces the rehabilitation of the medical college, they also emphasize the possible impacts that will befall the community residents when the fence wall is completed since they do not have any other water source and alternative safe access road to and from the community. The expectations of the community therefore are that:

- (1) The Liberia Water and Sewer Corporation would complete the construction of pipe-borne water at three locations in the community and
- (2) The Ministry of Public Works Construct an access road from the Catholic Hospital Community to Tubman Boulevard.

### *10.2.2.2 Interruption of Health-Care Service Delivery*

The health-care facilities targeted to benefit under the HSRP are currently delivering health care services to the general public. It is not anticipated that these facilities will completely shut down whilst the rehabilitation and supply of the medical facilities and equipments to these health care centres take place. Rehabilitation activities would take place simultaneously but in a scheduled manner taking cognizance of normal health care service delivery activities. Such an arrangement would certainly interrupt the health care service delivery until the project or activity under the HSRP is completed.



*Figure 100-3: Water Source for the Catholic Hospital Community*



*Figure 10-4: Catholic Hospital Community Access to Tubman Boulevard*

## **11.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)**

During the implementation of HRSP activities, potential environmental and social impacts must be considered and managed as well as the implementation, construction and operation of the projects themselves. The impacts must be mitigated, minimized or preferably avoided particularly to meet the requirements of World Bank safeguards Policies and national law requirements.

The objective of the ESMP is to outline the institutional arrangements relating to: (i) identification of environmental and social impacts arising from activities under these HRSP sub-projects (ii) the implementation of proposed mitigation measures (iii) monitoring and implementation of mitigation measures, (iv) capacity building, (v) proper management of biomedical wastes and other wastes and (vi) the budgetary allocations for the implementation and the chronology.

The ESMP will be included in HRSP Manual of Operations. It includes a method of screening for environmental and social classification of subprojects. Type of environmental study to achieve results from this classification. Furthermore, the ESMP proposes measures for capacity building in environmental management. In short, the ESMP outlines mechanisms for:

- 1) Screening of proposed sub-projects, identifying potential environmental and social impacts and management of safeguard policies implications;
- 2) Institutional arrangements for implementation and capacity building
- 3) Monitoring ESMP measures implementation;
- 4) Public consultation;
- 5) The estimated costs related to the ESMP.

The ESMP therefore focuses on the mitigation measures for construction activities and infrastructure rehabilitation, EIA, and capacity building. Several stakeholders are involved in the implementation of these measures implying the need for close coordination to ensure that the activities of mitigation of negative impacts, awareness are taken into account.

An Environmental and Social Management Plan (ESMP) as an EA instrument defines project-specific proposed environmental and social control and mitigation measures, monitoring programs, and responsibilities and must be developed based upon an assessment of environmental and social impacts and risks for the proposed project. This ESMP is intended to ensure efficient environmental management of these activities. The ESMP includes the following sections:

- the potential environmental and social impacts,
- the proposed mitigation measures,
- arrangement for ESMP implementation,
- responsibilities for ESMP and mitigation measures implementation;
- capacity building needs; and
- ESMP implementation budget.

## **11.1 THE ENVIRONMENTAL AND SOCIAL SCREENING PROCESS**

A screening process, selection and evaluation of HSRP subprojects is required to manage environmental and social aspects of these activities. The sections below show the various stages of this environmental and social process. The extent of environmental and social measures required for HSRP activities depend on outcome of this process.

The various stages of screening and subsequent environmental and social assessment which are detailed below are:

- (i) Screening: identify actions that have negative impacts on environmental and social;
- (ii) Determination of environmental categories: identify appropriate mitigation measures for activities with adverse impacts;
- (iii) Implementation of environmental work: activities that require separate EIA;
- (iv) Review and approval of the selection.
- (v) Dissemination of EIA.
- (vi) Supervision and monitoring

These steps are explained in the following paragraphs and incorporate those responsible for implementing each step. The stakeholders identified and their roles are developed in detail in the chapter "Strengthening institutional capacity".

The screening process determine which project and sub-project activities are likely to have negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the project as appropriate; to review and approve the project's proposals; to monitor environmental parameters during the implementation of activities.

The extent of environmental assessment that might be required prior to the commencement of the projects will depend on the outcome of the screening process. The seven stages of the environmental and social screening process leading to the review and approval of the education project activities to be implemented are described below.

### **11.1.1 The Screening Process**

The purpose of the screening process is to determine whether sub-projects are likely to have potential negative environmental and social impacts; to determine appropriate mitigation measures for activities with adverse impacts; to incorporate mitigation measures into the sub-projects design; to review and approve sub-projects proposals and to monitor environmental parameters during implementation. The extent of environmental and social work that might be required for the sub-projects prior to implementation will depend on the outcome of the screening process.

The institutional arrangements proposed here is based on the involvement of existing structures within the administrative organization for environmental management at national level and institutional organization of HSRP for the implementation of planned activities as key players in central level HSRP Secretariat which will be involved in managing the rehabilitation, the EPA in the management of environmental aspects (review, approval, monitoring and evaluation of ESIA), the Environment Unit of MPW / SIU (project monitoring financed by the WB).

- The MPW/SIU is executing government projects sponsored by the World Bank.
- A well resourced environmental unit has been set up within the unit to ensure that all projects comply with National Environmental requirements as well as that of the World Bank
- The Environmental Unit advises the Director of the SIU on all environmental and social issues relating all relevant projects
- The Unit visits project sites to monitor and evaluate compliance with environmental requirements

Indeed, the Presidency Office has the EPA which is primarily responsible for the conduct and coordination of ESA of any proposed investment in Liberia and is empowered on the validation and evaluation of the ESIA.

MOHSW division at the central level, the CH & SWT in the counties and the HSIU in health structures concerned by the HSRP will be involved in the process of environmental management.

Also, to operate the environmental management of selected sub-projects, we offer the support of stakeholders and structures established locally (NGOs, civil society).

Thus, in order to make effective environmental management under the HSRP, the responsibility for executing each step of the environmental and social management of sub-projects are also assigned to stakeholders planned or already operational.

Members of the EPA are already aware of aspects of environmental assessment.

Training is provided for all other actors in the environmental and social issues of projects to be implemented under the HSRP, screening, monitoring.

Table 111.1: Structures involved in HSRP environment and social management

Intervention level	Environmental structures	Comment	Other environmental stakeholder	Comment
District	District Environment Committee DEC District Environment Officer (EPA)	<u>Not yet functional</u>		
County	County Environment Committee CEC County Environment Officer (EPA)	<u>Not yet functional</u>	CH&SWT (MOHSW)	
National	EPA		MOHSW division, MPW/SIU	
HSRP			Environmental and social specialist / HSRP Secretariat	To be hired in the project
			M&E officer	
Health Centres			HSIU	To be create by each health centre in HSRP

The summary table below outlines the institutional responsibilities for the seven-step process that is developed of environmental screening/environmental safeguards management, including the selection and preparation, appraisal, approval and implementation of sub – projects; the implementation file along with a form of screening will be the starting point of the process.

Indeed, to better identify responsibilities for the execution of steps 1 to 7 of the environmental management of HSRP subprojects, we give below an overview of institutional responsibilities, distinguishing the responsibilities of management and implementation. The overall responsibility for enforcement of environmental seven steps will be the responsibility of HSRP Environmental and social management specialist (ESMS / Secretariat HSRP). It also supports the development of social and environmental guidelines for sub-projects within the Secretariat of the HSRP.

### Step 1 Screening of Sub-projects

The screening process is the first step in the ESMF process. One of the objectives of the screening process is to rapidly identify those subprojects which have little or no environmental or social issues so that they can move to implementation in accordance with pre-approved standards or codes of practices or other pre-approved guidelines for environmental and social management.

For each sub-project proposal the HSRP Secretariat’s Environmental and Social Management Specialist (ESMS) shall carry out a screening process **with HSUI, CH&SWT and NGO**. The ESMS will complete the Environmental and Social Screening Form (Annex 2b). Completion of this screening form will facilitate the identification of

potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, or recommend the execution of an Environmental Impact Assessment (EIA), if necessary.

## **Step 2: Determination of appropriate environmental categories**

Based on screening results, the appropriate environmental category for the HSRP proposed activity will be determined by the environmental specialist (ESMS). After determining the correct environmental category, he/she will determine the extent of environmental work required, either: (a) Category C - an environmental work will not be necessary, (b) Category B2 - simple mitigation measures will suffice, or (c) Category B1 - a separated Environmental Impact Assessment (EIA) will be prepared, it is clear once again that the HSRP is classified in category B.

The sub-projects will be therefore normally classified into three categories:

- a) Project with major environmental and social risk
- b) Project with possible major environmental and social risk
- c) Project without significant impacts on the environment

The distribution of appropriate environmental categories draws on provisions contained in the document OP 4.01 of World Bank on environmental assessment. The determination of environmental categories of subprojects HSRP will be as follows:

a) If the screening form contains only the entries 'N or NA', the environmental category C applies which indicates that environmental impacts and social issues are considered minor and do not require mitigation. For example, some rehabilitation activities (minor repairs, etc.) could be classified as C;

b) Other construction activities and rehabilitation under the HSRP will be classified as environmental category B, which means that their potential negative environmental impacts on human populations or areas important environmentally are specific to site, few, not irreversible and can be mitigated immediately. HSRP activities classified as "B" will require an environmental work, either the preparation of a separate EIA (Category B1) if the screening form contains mostly the words high or the application of simple mitigation measures (Category B2) if the screening form contains mostly the low & moderate terms.

The distinction between categories will be determined based on the implications of the Safeguard Policies as stated in the instructions below.

Table 10.2 summarizes the environmental work to be performed by classification category of activity. ***All sub project involving at the operational phase production of biomedical waste will be in B1 category. Main recommendations related to biomedical waste management and outlined in the MWMP for HSRP as a separate document are summarized in the mitigation measures chapter.***

Table 111.2 : Contents of Environmental Studies

Subproject Category	Environmental work to be implemented
Project Category B1 requiring an environmental and / or social assessment	<p>EIA narrower than for a Category A project, including a ESMP</p> <ul style="list-style-type: none"> <li>- Identify and assess potential environmental impacts of the subproject;</li> <li>- Prepare the ToR for the EIA (Cat. B1);</li> <li>- To the EIA by service providers;</li> <li>- Review and approve the EIA.</li> </ul> <p>Implement all mitigation, institutional and monitoring measures during implementation and operation of achievements to eliminate, reduce or mitigate environmental and social impacts</p>
Project Category B2 requiring no EIA and for which common mitigation measures are sufficient	Environmental and social Management Plan (ESMP)
Project Category C	No environmental assessment is required

### Step 3: Implementation of environmental and social work

The results of the determination of step 2 for both cases in (b), the following environmental work will be performed:

➤ **Sub-projects of Category B2 - Simple analysis of mitigation**

Mitigation measures declined in the next chapter will serve as the basis for the ESMS to determine simple mitigation measures to be applied to sub-project in the framework of an ESMP. This determination will be made in consultation with the appropriate local authorities and persons likely to be affected.

➤ **Sub-projects of Category B1 – Separate Environmental Impact Assessment (EIA)**

The planning and implementation of environmental work including the EIA are described in the box below.

The Environmental Specialist of HSRP (ESMS) prepare terms of reference for the EIA, the recruitment of consultants for EIA will be conducted by the Secretariat of the HSRP.

To determine mitigation measures for inclusion in the sub-project TDR, the elements of the mitigation measures section below (the impacts and associated mitigation measures) organized as a checklist will serve as the basis. In addition, TDR must verify that the contents of ESMP sub-projects comply. To facilitate the formulation of TDR, a TDR-type has been prepared and placed in the appendix.

The EIA will identify and evaluate potential environmental impacts for the proposed activities, evaluate alternatives, and design mitigation measures based on measures of Chapter mitigation measures. The preparation of the EIA will be done in consultation with stakeholders, including people who may be affected. Public consultations are critical in preparing a proposal for the activities of the HSRP likely to have impacts on the environment and population. The public consultations should identify key issues and determine how the concerns of all parties will be addressed in the EIA.

When an EIA is necessary, the administrative process enacted by the EPA will be followed and executed.

*Table 111.3: Procedures for EIA*

<p><b>Procedures for sub-projects requiring an EIA</b></p> <p><b><u>First step:</u></b> Preparation of Terms of Reference The results of identification, and extent of the EIA (scoping), the terms of reference will be prepared by the environment specialist (ESMS / HSRP).</p> <p><b><u>Second step:</u></b> Choice of consultant</p> <p><b><u>Third stage:</u></b> Implementation of the EIA with public consultation The report will follow the following format:</p> <ul style="list-style-type: none"> <li>• Description of the study area</li> <li>• Description of the subproject</li> <li>• Discussion and evaluation of alternatives</li> <li>• Environment description</li> <li>• Legal and regulatory</li> <li>• Identifying potential impacts of proposed sub-projects</li> <li>• Process of public consultations</li> <li>• Development of mitigation measures and a monitoring plan, including estimates of costs and responsibility for implementation of surveillance and monitoring</li> </ul> <p><b><u>Step Four:</u></b> Review and approval of the EIA for the sub-project; Publication / Dissemination of EIA</p>
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**Step 4: Review and approval**

General procedure in force in Liberia

The EPA will evaluate the project brief and transmit a copy with comments to relevant line ministries /agencies. The sector agencies/ministries in turn shall review the document and submit to the EPA their comments on the project brief within 10 days of receiving copies of the project brief. After receiving comments on the Project brief, the EPA will

communicate its decision on the project to the proponent 25 days from date of its submission. The decision will take into account comments from relevant sector agencies/ministries. The following determination may be made from the screening process:

- A certificate of approval may be issued to the applicant where the EPA considers that the project / activity will not have or is unlikely to have a significant environmental impact; or that the project discloses sufficient mitigation measures to ensure the acceptability of the anticipated impacts.
- Where further study is necessary to determine the level of EIA required, the applicant will need to prepare an environmental review/ initial environmental examination or evaluation.
- The proponent or applicant will be required to prepare an environmental impact study in accordance with Section 14 of the EMPL if the project /activity will have or is likely to have a significant impact on the environment.

#### Review and approval of categories and environmental work of sub-projects C and B2

The ESMS will review and verify: (i) the results and recommendations presented in the forms of environmental and social screening, (ii) the proposed mitigation measures contained in the control environmental and social lists to ensure that all environmental and social impacts have been identified and that mitigation measures were proposed.

Based on the results of the analysis process above and discussions with stakeholders and those likely to be affected, ESMS approves or disapproves for additional screening. Once approved the screening, the ESMS conducts the environmental classification of the subproject indicating its class and the environmental work required.

When an EIA is not required (Category C and B.2 requiring only simple mitigation measures such as environmental work), the ESMS sends the document to the EPA which in turn consults the ESMP and the checklist for approve the work done by the ESMS following the procedure in force.

#### Review and approval of the EIA of subprojects B1

As it is sub-category B1 project requiring an EIA, the review of the EIA is conducted by EPA and the World Bank.

The EIA document submitted by the consultant is sent by the HSRP to EPA and the World Bank for review and comments. EPA will implement the procedure for EIA approval in force

#### **Review of the EIA Report**

The EPA will study the report to ensure that it is of standard and addresses the scope of work outlined in the terms of reference. If the report is satisfactory in these respects, the Agency will distribute copies of it to relevant line ministry/agency and other relevant

public agencies, and communities for comments. Comments from the public will be received within 30 days of the publication of notice in respect of the report. If deemed appropriate, on consideration of comments from public and sector agencies/ministries the EPA may determine the need for a public hearing to be held at a location suitable to persons who are likely to be affected by the project.

After receiving comments from stakeholders on the report, the EPA will constitute a Committee (Environmental Assessment Committee) to review the report. The committee will comprise technical experts from the Agency and sector agencies/ministries, a representative from the project, and also a representative from the project area. The body will give its opinions to the Agency for consideration.

***Approval / disapproval:***

The final EIA is referred to the EPA and the World Bank through the HSRP following the same procedure for approval or disapproval based on management comments from the review session.

Based on the results of the analysis process above and discussions with stakeholders and those likely to be affected, the EPA approves or rejects the proposed EIA. Once approved, the public hearing process is activated (see diffusion).

**Making a Decision on the EIA Report**

Following the review of the EIA Report and considering comments received during the review period, the EPA will make a decision on the proposed project. In Pursuance of Section 21 of the EMPL, the Agency may:

- Approve the project unconditionally;
- Approve the application conditionally;
- Request for further study and/or submission of additional detail; or
- Reject the application if the project is likely to cause significant or irreversible damage to the environment.

**Environmental License or Permit**

The issuance of EIA permit/ license will be made within the time period specified below for different categories of projects:

- For project not requiring, EIA 15 days from of date of decision indicated in communication to the applicant.
- For projects requiring EIA, three months following receipt of the EIA Report.

However, this process will not be initiated without EIA approval by the World Bank. In case of classifying a subproject in (B1) the complete screening forms, accompanied by a copy of the plans for infrastructure if necessary, will be forwarded by the HSRP to EPA for review and approval of selection results and the World Bank.

That once the selection was approved as the process continues, so EPA proposes to approve or reject the selection process.

### **Step 5: Dissemination of EIA**

The EIA report will be formally made publicly available by the secretariat of the HSRP. In addition, the results of the EIA study will be shared with local stakeholders at a public meeting attended by representatives of the EPA for populations comment.

In fact, public consultation is essential throughout the process of screening, impact assessment and environmental monitoring sub-projects, including sub-projects likely to have impacts on the environment and population.

The first step is to hold public consultations with local communities and all other interested parties and / or affected during the screening process and during the preparation of the EIA. These consultations should identify key issues and determine how the concerns of all parties will be addressed, eg in the Terms of Reference for the EIA. The results of consultations will be incorporated in the screening form.

The following procedure is adopted: EPA files a copy of the report at the concerned community (offices in the townships, districts, counties involved in the HSRP), informed by various means including public displays that the sub-project EIA is available in these locations for public consultation and also a public hearing will be held. After the public hearing, public concerns are incorporated by the consultant on the report prepared by the ESMS / HIU. The finalized report integrating the report of the public hearing is forwarded to the EPA which prepares a validation note and notifies the HSRP. The EPA will issue a memorandum to the Coordinator for the official start of activities implementation.

### **Step 6: Environmental Monitoring**

Environmental monitoring aims to ensure compliance with: (i) the measures proposed in the ESMP and possibly the EIA of a sub-project, including mitigation measures, (ii) the commitments of Contractor in connection with the permissions required, (iv) requirements relating to laws and regulations.

Environmental monitoring involves both the construction phase and the operation phase. The monitoring program may allow, if necessary, to reorient the work and possibly improve the course of the construction and implementation of different project components. Monitoring goes hand in hand with the establishment of impacts and proposed measures for prevention, mitigation.

Monitoring is essential to ensure that: (i) the impact predictions are accurate (monitoring effect), (ii) prevention / mitigation can achieve the desired objectives (monitoring effect), (iii) regulations and standards are met (compliance monitoring), (iv) the criteria for use of the environment are respected (inspection and monitoring).

Environmental monitoring of HSRP activities will be conducted under the project general system of monitoring. It will be done at two levels:

➤ Performance monitoring at central level:

At central level, the HSRP will involve MPW/SIU.

➤ Implementation of monitoring at local level / health facility:

At the local level, monitoring will be conducted by the HSIU and Control Office.

The tracking system relies on a set of sheets to prepare and submit to ensure that all recommendations regarding environmental and social issues, mitigation and strengthening measures are applied. For monitoring, these reports can be:

- A verification form: on the basis of individual project impacts and measures laid down a plan for verification of their implementation is adopted.
- A control form: it is used to detect non-compliance with environmental requirements, potential environmental risks unreported among impacts. This leads to demands for compliance and implementation of preventive action.

### **Step 7: Development of Monitoring Indicators**

Monitoring measures focus on key indicators emerged including the impacts both positive and negative. Indicators are parameters which the use provides quantitative and / or qualitative information on direct and indirect impact and HSRP environmental and social benefits. The choice of indicators will be guided by the characteristics of relevance, reliability, usefulness and measurability.

To evaluate the effectiveness of mitigation measures of HSRP activities impacts, we propose to use the indicators listed in the table below. Environmental guidelines for firms serve as indicators.

If a project is categorized B2, ESMS will indicate on the basis of mitigation measures relevant monitoring indicators. If a project is B1, the consultant who conducted the EIA will do also this exercise on the basis of mitigation measures.

Oversight for the environmental and social management process of the sub-projects will be assured by the HSRP Secretariat Environmental and Social Management Specialist. The environmental monitoring and supervision program for the implementation of the HSRP will serve as an integral part of the operational activities of the HSRP Secretariat and will generate the requisite information for environmental management and environmental information dissemination.

The following monitoring indicators are proposed for assessing the efficiency of the mitigation measures:

- Safe waste management related to construction works
- Compliance with the MOHSW/EPA Environmental Guidelines for Contractors
- Best practice in the implementation of project activities,
- Equipment for safe medical waste disposal and management provided by projects where required.

*Table 111.4: Monitoring indicators of EMP measures*

<b>Measures</b>	<b>Intervention field</b>	<b>Indicators</b>
<b>Technical measures (studies)</b>	Conducting Environmental Impact Assessment (EIA and ESMP) and RAP Elaboration of health and safety plan	Number of study elaborated
<b>Measures for monitoring and evaluating projects</b>	Perform monitoring and evaluation ESMP (continuous monitoring, mid-term and annual assessment)	Number and types of indicators tracked Number of monitoring missions
<b>Institutional measures</b>	Recruit an environmentalist to enhance HSRP Secretariat staff  Create HSIU	ESMS operational  HSIU are functional in health facilities
<b>Awareness</b>	Awareness about HIV / AIDS Communication campaign and awareness before, during and after construction The good conduct in the camps, hygiene measures and safety, compliance with development standards	Number and types of people sensitized

Table 111.5: Indicators and monitoring mechanism of environmental and social issues

<b>Elements of monitoring and indicator</b>	<b>Methods and devices for monitoring</b>	<b>Responsibles</b>	<b>Period</b>
<b>Water Pollution</b>	<ul style="list-style-type: none"> <li>- Follow up of procedures and facilities for the disposal of liquid wastes</li> <li>- Monitoring of groundwater and surface water around project site</li> <li>- Monitoring surface water using activities</li> </ul>	CH&SWT Service Hydraulic services	Start, mid-term and end of Rehabilitation / construction activities operating infrastructure
<b>Soils Erosion / gulying Pollution / degradation</b>	<ul style="list-style-type: none"> <li>- Visual assessment for soil erosion</li> <li>- Availability of approved applications to open career</li> <li>- Availability of career opening statements</li> <li>- Number of regaled reforested careers</li> <li>- Verification of suitable measures for the management of lubricants / Diesel/ used oils</li> </ul>	Control Office	Start, mid-term and end of activities
<b>Vegetation / Wildlife Degradation rate Rate of reforestation</b>	<ul style="list-style-type: none"> <li>- Visual assessment of reforestation / plantation measures</li> <li>- Controls on clearing</li> <li>- Control and monitoring of sensitive areas</li> <li>- Control of attacks on wildlife</li> </ul>	Forest Service Control Office	Start, mid-term and end of activities
<b>Human environment</b>	<ul style="list-style-type: none"> <li>- Hiring local labor priority</li> <li>- Respect the heritage and sacred sites</li> <li>- Monitoring the level of noise at construction site</li> <li>- Follow-up measures to reduce dust</li> <li>- Verification of the use of landfill sites licensed for construction waste</li> <li>- Truck noise</li> </ul>	Control Office	Start, mid-term and end of activities
<b>Hygiene and health Pollution and nuisances</b>	<p>Verification:</p> <ul style="list-style-type: none"> <li>- Of disease vectors presence and the onset of diseases related to work</li> <li>- Diseases associated with various projects (HIV / AIDS, etc..)</li> <li>- Respect of hygiene measures on the site</li> <li>- Monitoring management practices of biomedical waste (whole chain)</li> <li>- Existence of biomedical waste management plan and necessary equipment</li> <li>- Existence of health and safety plan</li> </ul>	Control Office Health services  CH&SWT	Start, mid-term and end of activities  operating infrastructure

<b>Elements of monitoring and indicator</b>	<b>Methods and devices for monitoring</b>	<b>Responsibles</b>	<b>Period</b>
<b>Safety in construction sites</b>	Verification: <ul style="list-style-type: none"> <li>- Availability of safety guides in case of accident</li> <li>- Availability of appropriate signage</li> <li>- Compliance with traffic regulation</li> <li>- Respect the speed limit</li> <li>- Appropriate protective equipment wearing</li> </ul>	Control Office	monthly

### 11.1.2 Responsibilities for the Implementation of the Screening Process

The ESMF will be implemented by the HSRP Secretariat. The HSRP Secretariat will collaborate with the EPA and the World Bank to ensure effective execution. Table 11.2 provides a summary of the stages and institutional responsibilities for the screening, preparation, assessment, approval and implementation of the health system reconstruction construction/rehabilitation activities.

The extent of environmental assessment that might be required prior to the commencement of the projects will depend on the outcome of the screening process. The key stages of the environmental and social screening process leading to the review and approval of the HSRP project activities to be implemented are described below:

*Table 11.6: Summarised Environmental Screening Process and Responsibilities*

<b>Stage</b>	<b>Management responsibility</b>	<b>Implementation responsibility</b>
<b>1. Screening Environmental and Social Infrastructure Project: Selection including public consultation</b>	HSRP Secretariat	ESMS, HSUI, CH&SWT, NGO
<b>2. Determination of appropriate environmental categories</b>		
<b>2.1 Selection validation</b>		
<b>2.2 Classification of Project Determination of Environmental Work Review of screening</b>	HSRP Secretariat	ESMS EPA
<b>3. Implementation of environmental work</b>		
<b>3-1. If EIA is necessary</b>		
<b>3.1.a Preparation of terms of reference</b>	HSRP Secretariat	ESMS
<b>3.1 b Choices Consultant</b>	HSRP	

<i>Stage</i>	<i>Management responsibility</i>	<i>Implementation responsibility</i>
<b>3.1 c Realization of the EIA, Public Consultation Integration of environmental and social management plan issues in the tendering and project implementation, 4 Review and Approval</b>	ESMS/HSRP  Infrastructure Unit of MOHSW/HSRP	<b>Consultant</b>
<b>4.1 EIA Approval (B1)</b>	EPA	<u>EPA</u>
<b>4.2 Approval simple measures (B2&amp;c)</b>	ESMS	ESMS/EPA
<b>5. Public Consultation and disclosure</b>	HSRP Secretariat	ESMS/Proponent/Consultant
<b>6. Surveillance and monitoring</b>	HSRP/EPA/	ESMS/ M&E officer / Proponent
<b>7 Development of monitoring indicators</b>	<b>HSRP</b>	<b>ESMS / Consultant</b>

## 11.2 MITIGATION MEASURES

### 11.2.1 General mitigation measures

Environmental mitigation consists of measures that can reduce the negative environmental impacts associated with implementation (construction, expansion, rehabilitation etc) of the project. Mitigation measures have been identified that would reduce both existing and potential impacts associated with existing facilities rehabilitation and operations of the HSRP. Potential impacts and the mitigation measures are identified in Table 11.7.

The table indicates the areas to which the potential impact applies. In addition, mitigation measures are identified as either social or physical measures. Social mitigation includes the measures used to mitigate effects such as noise and other effects to the human environment. Physical mitigation includes measures that address impacts to the physical environment, such as vegetation, air quality, and others. The measures serve as the basis for the cost estimates.

#### *Design Measures*

The quantities, specifications and estimated costs of design measures to avoid or mitigate negative impacts will be assessed by the civil design contractor and incorporated into the bidding documents. The contractor will execute all required works and will be reimbursed through pay items in the bill of quantities, which will be financed by the project.

### ***HIV/AIDS Awareness Program***

The quantities, specifications and estimated costs of the HIV/AIDS Awareness Program and condom distribution will be assessed by the design consultant and incorporated into the works bidding documents. The contractor will execute the program through a subcontractor and will be reimbursed through pay items in the bill of quantities, which will be financed by the project.

### ***Contract Provisions and Pre-Tender Meeting***

Specific provisions will be included in construction contracts to mandate the use of formal health, safety and environment (HSE) measures to minimize accidents and avoid fatalities during construction. Standard environmental and social requirements (as contained in the general environmental management conditions for construction contracts in Annex 6), including provision for HIV/AIDS awareness campaigns and distribution of condoms will be incorporated into the contract provisions.

To ensure full understanding of the contract requirements by the contractors at the pre-bid inspection stage, all participating contractors will attend a Pre-Tender Meeting, where they will be briefed on their responsibilities to address environmental, social, health and safety issues

### ***Post Construction Costs***

During implementation, the costs of mitigation in the course of maintenance contracts will be incurred by the contractor and borne by the HSRP.

Table 111.7: General mitigation measures

Measures	Proposed actions
Technical measures	<ul style="list-style-type: none"> <li>- EIA / RAP Studies</li> <li>- Preparation of manual procedures and environmental and social guidelines to be included in works contracts</li> </ul>
Construction and operational measures	<ul style="list-style-type: none"> <li>- Proceed to the reasoned choice of implantation sites</li> <li>- Conduct a communication campaign and advocacy before construction work</li> <li>- Ensure compliance with hygiene and security in facilities sites</li> <li>- Undertake the marking of site under construction site</li> <li>- Use the local workforce as a priority</li> <li>- Ensure adherence to safety rules at work</li> <li>- Ensure the collection and disposal of waste arising from work</li> <li>- Provide the project accompanying measures (connection to water networks, electricity and sanitation, equipment, program management and maintenance)</li> <li>- Conduct awareness campaigns on HIV / AIDS</li> <li>- Engage closely MOHSW services in monitoring the implementation</li> <li>- Rehabilitate quarries and other sites for loans</li> <li>- Respect of protected species including trees</li> <li>- Management of Environmental and Health Hazards by biomedical waste (nosocomial infections, infection diseases such as hepatitis B and C, HIV / AIDS, etc..) <b>Refer to MWMP of HSRP</b></li> </ul>

### 11.2.2 Specific construction impacts mitigation measures

Table 111.80: Summary of Environmental Mitigation Measures

Potential Impacts	Recommended Mitigation Measures
<b>Physical</b>	
<b>Land Use</b>	
<ul style="list-style-type: none"> <li>▪ Visual impact following the disposal of construction and demolition waste onto roadsides</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular collection and evacuation of work site refuse towards authorized dumps</li> <li>▪ Involvement of the Local Government Authorities and Communities in the selection of discharge sites</li> </ul>
<b>Noise</b>	
<ul style="list-style-type: none"> <li>▪ Employees and communities exposed to high noise level</li> <li>▪ Disturbance of healthcare activities during construction works</li> </ul>	<ul style="list-style-type: none"> <li>▪ Installation of sound insulation.</li> <li>▪ Schedule work periods to avoid peak hospital hours</li> </ul>
<b>Air Quality</b>	
<ul style="list-style-type: none"> <li>▪ Emission of pollutants from mobile (vehicles) and stationary (mixers, etc) sources.</li> <li>▪ Air pollution from burning of demolition wastes e.g. wood, paper etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ Introduction of dust reduction measures in construction sites</li> <li>▪ Safety measures put in place</li> </ul>
<b>Soil</b>	
<ul style="list-style-type: none"> <li>▪ Point source contamination from diesel, lubricants etc around workshop areas.</li> <li>▪ Increased soil erosion due to vegetation clearing , soil trampling and compaction</li> <li>▪ Increased rapid runoff due to vegetation clearing and soil compaction diminishing infiltration capacity</li> <li>▪ Deterioration of soil characteristics due to increased erosion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriate containment measures for all operational areas and proper disposal of used lubricants.</li> <li>▪ Soil erosion control measures (e.g. reforestation, reseeding of grasses, land preparation, terracing etc)</li> </ul>
<b>Water Quality</b>	

<ul style="list-style-type: none"> <li>▪ Potential pollution of surface and ground water through runoff of pollutants e.g. lubricating oil, diesel fuel etc from workshop areas etc</li> <li>▪ Water pollution due to seepage from tanks (diesel, sanitary wastes etc)</li> <li>▪ Lack of water for sanitation or toilet facilities</li> <li>▪ Heavy water usage resulting in reduction of surface and groundwater sources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriate containment measures for all operational areas and proper disposal of used lubrication oil.</li> <li>▪ Work sites installed far from waterways</li> <li>▪ Regular collection of work sites wastes for proper disposal</li> <li>▪ Liquid waste discharged at designated outfalls after effluent treatment to protect water resources</li> <li>▪ Regular emptying of on-site latrines and toilets</li> </ul>
<b>Biological Resources</b>	
<b>Vegetation</b>	
<ul style="list-style-type: none"> <li>▪ Vegetation clearing resulting in loss of valuable habitat, species diversity and population levels.</li> <li>▪ Impacts on protected areas; critical habitats for rare species or of ecologic or domestic importance.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No siting and excavations in sensitive habitat</li> <li>▪ Careful planning and selection of sites</li> <li>▪ Forests and cultural heritage sites protection enforced.</li> </ul>
<b>Wetlands</b>	
<ul style="list-style-type: none"> <li>▪ Expansion and new construction encroaching on the wetland and directly impact wetland plant communities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Preservation, restoration, and enhancement of existing wetland.</li> <li>▪ Sensitive and critical habitats avoided</li> </ul>
<b>Solid/Hazardous Waste Management</b>	
<ul style="list-style-type: none"> <li>▪ Solid waste generated from demolition and construction activities containing potentially hazardous materials (e.g. asbestos).</li> <li>▪ Waste generation during building works piling on the roadside</li> </ul>	<ul style="list-style-type: none"> <li>▪ Quick sorting, collection and disposal of waste removed from the sites in accordance with applicable regulations.</li> </ul>
<b>Social</b>	
<b>Health and Safety</b>	
<ul style="list-style-type: none"> <li>▪ Risks of road accidents during work</li> <li>▪ Contamination risk by HIV from the labour force.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conduct an awareness raising campaign for the work sites staff and the users of hospital infrastructure</li> <li>▪ Conduct awareness raising campaigns on HIV/AIDS</li> </ul>
<b>Land Use</b>	
<ul style="list-style-type: none"> <li>▪ Involuntary displacement of populations or economic activities</li> <li>▪ Changes of existing uses within affected communities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Acquisition and relocation should occur in accordance with appropriate regulations including <i>World Bank OP/BP 4.12 Involuntary Resettlement</i>.</li> <li>▪ Avoid facilities in areas that will need resettlement, the displacement; or the encroachment on historic, cultural or traditional use areas</li> </ul>

### 11.2.3 MEDICAL WASTE IMPACT MITIGATION MEASURES

Inspections and consultations conducted reveals that there is lack of a well integrated and comprehensive waste management policy within the health establishments in the country. Some critical observations made were:

- There are no regulations, guidelines or effective means of control for the storage, handling, packaging and transporting of hospital waste in Liberia.
- There is lack of health education and training of staff with regard to the management of medical waste.
- All forms of liquid waste are simply drained into sinks, and eventually into the sewerage system. (e.g. acids and alkali are usually not neutralized but occasionally diluted before disposal.)
- Hospital and laboratory officials are unable to indicate quantities of wastes generated.
- Containers for hazardous/infectious waste are not properly labelled as a caution to handlers.
- Most hospitals/clinics visited lacked adequate waste treatment facilities.

However there some efforts being made at some of the health centres to bring the situation under control. In view of the observations through the inspections conducted to some of the health facilities in the country, consultations with key persons and concerns of relevant Ministries, Departments and Agencies, the following mitigation measures are proposed (Table 11.18).

However it is important to specify that health facilities should refer to the Medical Waste Management Plan in preparation under the HSRP in parallel the development of this ESMF. This MWMP develop several tools and among these prepare :

- Guidelines for the safe management of HCW from the health care sector in Liberia Health-care waste Guideline which develop : relevant legislation and guidance; classification and segregation, logistics for health care waste; treatment and disposal of HCW,; management aspect for HCW
- A training program which take into account strengthens, weaknesses and opportunities identified of the current practices and recommend a national HCW capacity building system, propose a complete training program at HWT level including waste management plan (plans, policies and action plan), training of trainer ;
- A behaviour change communication and public awareness strategy;
- A national policy on HCWM dealing with among others : awareness raising and education; safety of health personnel; safe management of HCW; monitoring and evaluation; documentation and information; institutional framework

The guidelines on Health-care waste management is to enable hospital administrators, engineers, environmental health officers and other para-medical professionals to be aware of the requirements for the proper and safe management of Health-care waste in compliance with the approved policy .

Table 11.8: Medical Wastes Impacts and Mitigation Measures

<b>Treatment Type</b>	<b>Potential Environmental and Health Risks</b>	<b>Mitigation</b>
<b>Undeveloped pit</b>	<ul style="list-style-type: none"> <li>-Pollution of groundwater</li> <li>-bite attendants during unprotected access to the pit</li> <li>Proliferation of insect vectors</li> </ul>	<ul style="list-style-type: none"> <li>-development of the pit in a location chosen so as to avoid any contact or direct contact with leachate surface water or groundwater, a supply point (sink, source)</li> <li>-consider the future use of the site that should not be used for agricultural or residential</li> <li>-the soil should be waterproofed and the opening closed and surrounded</li> </ul>
<b>Evacuation in the assembly points (transfer site, buckets) of infectious waste and not put spikes or sterilized</b>	<ul style="list-style-type: none"> <li>-Injury / infection of the recyclers of opportunity for reuse and sale of syringes (pharmacies sidewalks);</li> <li>-Possible increase in infections such as tetanus, typhoid, diarrheal diseases, hepatitis B, HIV / AIDS;</li> <li>-Increase in respiratory diseases and other infections in the general population by the fact the transport of waste to not put these sites with unsuitable equipment (carts, bins not covered)</li> </ul>	<ul style="list-style-type: none"> <li>-perform the source separation of waste and spines make their disposal specific</li> <li>avoid-up the presence of infectious waste in the garbage of health facilities by effective separation (using bins differentiated)waste must be packed appropriately</li> <li>-transport must be conducted outside the healthcare facility to the disposal site and disposal with a closed vehicle and identified by a particular sign (transportation conformity with international law).</li> <li>- attendants to transport have specific training, running at speed limit, will have a logbook to complete mandatory for each trip. They have the same safety equipment.</li> </ul>
<b>Incineration</b>	<ul style="list-style-type: none"> <li>Air-pollution due to the lack of filter and immediate fallout of MES (dioxins, furans, heavy metals, although much reduced because the flue t °) towards the terraced houses</li> <li>-professional attendant risks of incineration (cohabitation with the waste, waste handling loading the incinerator during the incineration of heavy metals, gases and dust ((PCBs and other organo-chlorinated PAH) and other substances), heat</li> <li>-risk for the officer to transport waste to the incinerator.</li> </ul>	<ul style="list-style-type: none"> <li>-development of a local waste disposal</li> <li>-supply system of gas treatment or change in elimination strategy</li> <li>-increasing the height of chimneys for proper distribution of the remaining pollutants.</li> <li>follow-plastics, inert materials (glass - metal) and pressurized containers (avoidance of malfunction of the incinerator and toxic fumes or explosions)</li> <li>- the staff-incineration waste handlers and those responsible for the collection and processing will be equipped with safety equipment including the port will be particularly monitoring (mask - glove-gown - boot);</li> </ul>
<b>Illegal dumping and burning in open air in site or off-site</b>	<ul style="list-style-type: none"> <li>-pollution of groundwater by leachate</li> <li>-wind dispersal and potential spread of microorganisms including the most resistant in the enclosure and outside the health structure</li> <li>-increase in respiratory diseases proliferation of insect vectors and rodents</li> <li>-increase in nosocomial infections dissemination of smoke-containing air pollutants due to incomplete combustion (dioxins, furans, chlorine, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>-Site development of storage</li> <li>- Acquisition and development of suitable disposal systems</li> <li>- packaging-waste</li> </ul>
<b>Jets syringe needles in the windows of treatment rooms</b>	<ul style="list-style-type: none"> <li>bite-health workers and visitors</li> </ul>	<ul style="list-style-type: none"> <li>-separation at source and appropriate packaging</li> <li>-awareness training and sound management of waste</li> </ul>

### 11.3 MONITORING PLAN

The objective of the monitoring plan is to establish appropriate criteria to verify the predicted impact of the project, and to ensure that any unforeseen impacts are detected and the mitigation adjusted where needed at an early stage. The plan will ensure that mitigating measures are implemented during rehabilitation, upgrading and maintenance. Specific objectives of the monitoring plan are to:

- check the effectiveness of recommended mitigation measures;
- demonstrate that sub-project activities are carried out in accordance with the prescribed mitigation measures and existing regulatory procedures; and
- provide early warning signals whenever an impact indicator approaches a critical level.

Oversight for the environmental and social management process of the sub-projects will be assured by the supervisory consultants in collaboration with the HSRP Secretariat. Monitoring will be conducted during all phases of the project.

The monitoring procedure is described below.

The HSRP Secretariat Environmental and Social Specialists will prepare a long term monitoring strategy that will encompass clear and definitive parameters to be monitored for each sub-project. The monitoring plan will take into consideration the scope of development, the environmental and social sensitivity and the financial and technical means available for monitoring. The plan will identify and describe the indicators to be used, the frequency of monitoring and the standard (baseline) against which the indicators will be measured for compliance with the ESMP.

A number of indicators would be used in order to determine the status of the affected environment as follows:

- Has the pre-project human and natural environmental state been maintained or improved at the health care facilities and;
- Has the effectiveness of the ESMF technical assistance, review, approval and monitoring process been adequate to pre-empt and correct negative impacts inherent in certain types of health care infrastructure projects.
- Environmental Indicators: Loss of vegetation; Land degradation; Compliance with Legislations.
- Social indicators: Population incomes; number of people provided with environmental training to implement the ESMF; The number of local workers used during of the works

## 11.4 RESPONSIBILITY AND INSTITUTIONAL ARRANGEMENT FOR IMPLEMENTATION AND MONITORING

### 11.4.1 Institutions responsible for implementation

The institutions responsible for implementation of ESMP activities are described below:

*Table 111.91: Institutions responsible for implementation of ESMP*

Measures	Areas of intervention	Structures Responsible		
		Execution	Control	Supervision
Mitigation measures	Mitigation of negative impacts of construction and rehabilitation (environmental monitoring)	Firms	Control Office	ESMS . ME
Technical measures	Conducting Environmental Impact Assessment (EIA and ESMP)	Consultant	ESMS	HSRP
	Elaboration of health and safety plan	Firms	Control Office	ESMS
	ESMP implementation assessment (permanent, at mid-term and final)	Consultants	ESMS	HSRP Secretariat
Training	Subprojects environmental and social assessment, Monitoring and enforcement of environmental measures	Consultants	ESMS	HSRP Secretariat
Awareness	Communication campaign and awareness before, during and after construction (HIV)	Local NGOs	ESMS	HSRP Secretariat

### 11.4.2 Institutional arrangements for ESMP implementation

Below are summarized the tasks assigned to different institutions in the screening process, monitoring and evaluation of mitigating measures implementation:

## **EPA**

It will review and approve the environmental classification of subprojects of types B1, conducts the review of the B2 and C; EIA approval.

It will monitor at national level implementation of environmental measures.

## **The Secretariat of the HSRP**

It will recruit the ESMS. ESMS main task is to analyze screening document, participation in EIA review, monitoring activities of mitigation measures implementation, he is the interlocutor of CH & SWT and HSUI of different structures. The secretariat is accountable in the development of environmental and social guidelines to be included in tender documents as the MPW / SIU; training in environmental and social assessment, monitoring and evaluation. The Secretariat will also disseminate the ESMF/EMP and any EIA.

### **11.4.3 Strengthening special measures for environment**

For the implementation and environmental monitoring of HSRP project managers, beneficiaries and support services must have adequate expertise to play their roles effectively. To this end, the ESMP recommends implementing a plan to strengthen institutional and technical capacity relating specifically:

- Institutional arrangements at the HSRP and areas of intervention
- Training of key stakeholders involved and implementing awareness programs.

#### ***11.4.3.1 . Institutional arrangements planned for implementation***

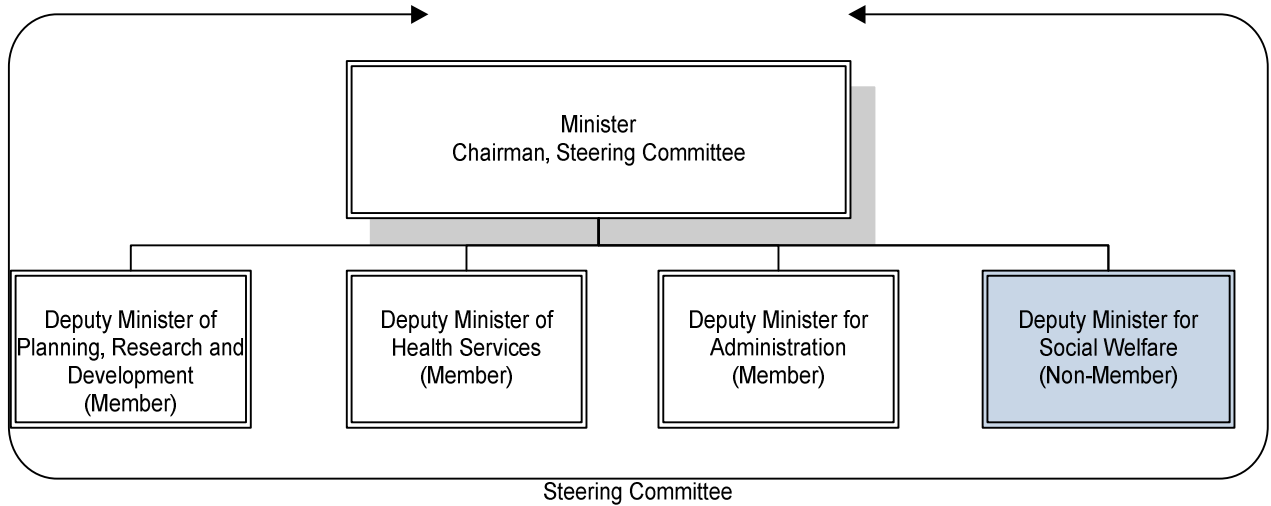
##### **General**

The project will be implemented by the County Health Systems, J F K Medical Center, and the A M Digliotti College of Medicine. The overall supervision of the project will be carried out by Steering Committee chaired by the Minister of Health and Social Welfare. A Project Coordination Team (PCT) is established to directly supervise the project on a day-to-day basis. There is a Project Coordinator (PC) who will coordinate the project inputs and request between the MoHSW and the Bank, as well as serve as liaison and administrator. The Office of Financial Management (OFM) and the Procurement Office will perform their normal function as related to the project.

##### **The Steering Committee (SC)**

This is the apex body for the management of all MoHSW projects and it is chaired by the Minister of Health and Social Welfare with the four (4) deputy ministers as members.

**Figure 11.1 : Steering Committee (SC)**



Given this structure of the HSRP Secretariat (*Source: HSRP Project Operations Manual*), environment is not taken into account.

#### ***11.4.3.2 Institutional arrangements for implementation of ESMP***

Taking into account environmental and social aspects in the ESMP and the effective monitoring of environmental and social performance indicators should be guaranteed to ensure that subprojects implemented under the HSRP's objectives do not result effects that could negate any benefits. To this end, it is appropriate to establish an efficient mechanism for the management of environmental and social aspects of the sub-projects to be executed. This device such as the institutional arrangements foreseen, will cross from central to local level.

The HSRP Secretariat will provide staff to achieve the following objectives:

- propose management rules and specific measures that are compatible with sustainable development while implementing the project
- promote awareness by its personnel and the general public regarding environmental protection,
- propose concrete means of applying the ESMP.

Our key recommendations for HSRP institutional strengthening meet the needs as presented in the summary of institutional responsibilities of the table 10.10 and are presented in the following table:

Table 111.102: Institutional arrangements for ESMP implementation

<b>INSTITUTIONAL MEASURES</b>		
<b>Proposed actions</b>	<b>Responsibles</b>	<b>Means and schedule</b>
ESMS Recruitment	HSRP coordinator	At the start of activities
HSUIs Constitution	MOHSW	At the start of activities

Thus, in terms of environmental and social requirements of HSRP, it is essential to strengthen the Secretariat staff centrally by an environmental specialist in charge of supervision / coordination of different activities related to environment and social issues.

Also, it will be relevant to establish the post of ESMS in charge of environmental and social aspects. The recruitment of an ESMS meets the need to provide the ESMP of HSRP coordination mechanisms more effective to ensure the inclusion of environmental and social aspects in the implementation of activities, but also to ensure monitoring of environmental and social indicators, it is understood that the activities of ESMS are transversal within the HSRP Secretariat.

This position will be for an environmentalist familiar with the for projects environmental and social assessment procedures.

The environmental specialist attached to the HSRP Secretariat will be responsible for the implementation of the ESMP in close collaboration with the EPA and MOHSW.

The environmental specialist at the HSRP Secretariat will be responsible for the implementation of the environmental monitoring and the ESMP. His/her responsibilities shall include:

- Coordination, liaison with and monitoring of the contractors;
- Compilation and preparation of periodic environmental reports for submission to the World Bank;
- Review of ESIA reports from consultants in collaboration with EPA and MOHSW;
- Data Management; and
- Sub-project Inspections

**The Beneficiary Health Care facilities** shall establish a HSRP Sub-project Implementation Unit (HSIU) to serve as interface between the Health Care Institution and HSRP Secretariat. The HSIU shall ensure that implementation process complies with all relevant policies and procedures. Figure 11.1 shows the system to be used for managing the HSRP ESMF, particularly relationships and reporting responsibilities.

The companies contracted by the HSRP to achieve some sub-projects are responsible for implementing mitigation measures as stated in the "Environmental Guidelines for Contractors", including rehabilitation of quarries.

The resources required for implementing the ESMP are basically personnel and finance. The key stakeholders in the ESMP implementation are the HSRP Secretariat, contractor/consultants, FMOHSW, EPA and the beneficiary health care facilities.

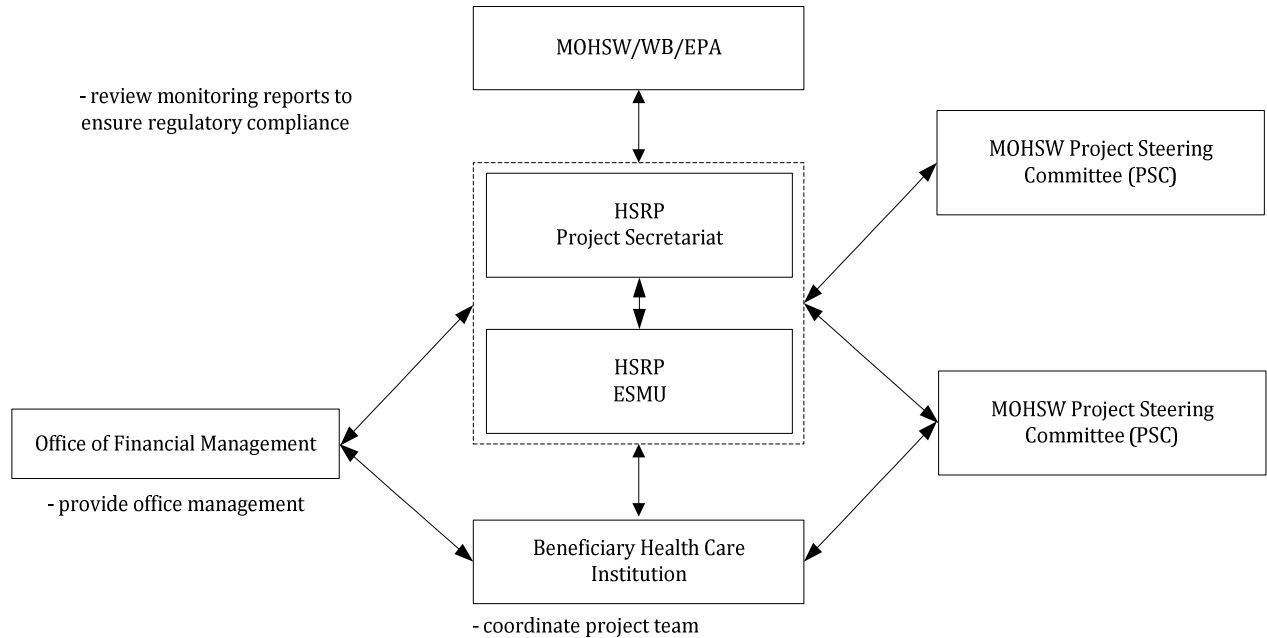


Figure 111-2: ESMP Implementation Arrangement

The World Bank has the overall responsibility to ensure that its Safeguards Policies are complied with. In addition, the WB is responsible for the final review and clearance of the ESMPs (or ESIA's); as well as for the review and approval of ESMP TORs.

### 11.5 CAPACITY STRENGTHENING FOR ESMP IMPLEMENTATION

In order for HSRP Secretariat to effectively carry out the environmental and social management responsibilities for sub-project implementation, institutional strengthening will be required. Capacity building will encompass MOHSW/HSRP Secretariat and sub-project executing institutions such as the Regional, County and District Hospitals. The HSRP Secretariat should therefore ensure that the following concerns and needs are addressed:

- Institutional structuring within the relevant departments to ensure that required professional and other technical staff are available;
- Establishment of consultancy groups to ensure cross departmental discussions and information exchanges.

To successfully implement this ESMP a training programme for MOHSW/HSRP secretariat is necessary. Proposed training needs for the ESMS at HSRP secretariat are as follow:

- Environmental and Social Management Process.
- Use of Screening form and Checklist
- Preparation of terms of reference for carrying out EA
- Design of appropriate mitigation measures.
- Review and approve EA reports
- Public consultations in the ESMF process.
- Monitoring mitigation measures implementation.
- Integrating ESMP into sub-projects implementation.

The proposed capacity building programme will be conducted over 5 days and be implemented in the first quarter of 2010. The total cost is estimated at US \$ 20,000. This estimate is based on the assumption that resource persons are likely to come from other parts of the country and therefore require travel allowances; participants will come from the institutions and attend during the day only but will receive a per diem.

### **11.5.1 Training program and awareness**

The effectiveness of environmental and social issues consideration in the implementation of activities goes particularly through training of HSRP key actors approached in validation, monitoring, implementation of identified mitigation measures. The training activities target: control offices, construction companies, operating agents.

Training modules will be determined and prepared by consultants specializing in environmental assessment under ESMS/HSRP's supervision. Topics will be centered around: (i) environmental and social issues of infrastructure projects and environmental assessment procedures, (ii) hygiene and safety, requirements of national legislation, World bank safeguards requirements, environmental monitoring of construction sites.

The training aims to enhance their competence in environmental assessment, environmental control of work and environmental monitoring so they can play their roles more effectively in the implementation of subprojects.

HSRP's secretariat will also implement the awareness program in which NGOs and other relevant actors to proven expertise in community awareness will be particularly involved. Awareness will mainly focus on HIV/AIDS. The awareness program will be established throughout the project, specific actions will be initiated and recommended by a consultant in social awareness.

The training schedule is shown in the table below

Table 111.113: Training Schedule

Participants	Duration	Period
- Control office, companies, - CH&SWT ; HSIU)	5 days training workshop	1st quarter 2010

### 11.5.2 Technical strengthen measures

The technical measures include:

- *Developing a Health and safety Plan by companies.*

These are documents showing all environmental and safety procedures required in construction: proceedings of liquids and solids waste; procedures of clearing and trees cutting, used oils management process, safety and health procedures. All these procedures must take into account the national legislation

- *A provision for conducting any Environmental Impact Assessment (EIA)*

EIAs could be required for activities in class "B1" to ensure they are sustainable environmentally and socially. If the environmental classification of activities indicates the need to conduct EIA, the project will include a provision that will pay consultants to conduct these studies. Also, it is identified negative social impact of A.M. Dogliotti College of Medicine which need a specific social study to mitigate this impact; it will need a specific resettlement action plan.

- *Development of environmental and social guidelines*

HSRP Secretariat will be supported in preparing an environmental and social procedure manual with social and environmental provisions to be included in the files of tender, the model environmental clauses to be included in execution files; monitoring environmental indicators, etc.

- *HSRP Monitoring and evaluation activities*

The monitoring program will focus on continuous monitoring, supervision, mid-term and annual evaluation. Support provided in the budget is needed for local monitoring conducted by ESMS / M & E officer and control office but also to monitor a wider scale provided by the ESMS, EPA.

## 11.6 ESMP IMPLEMENTATION SCHEDULE

Timetable for implementation and monitoring of HSRP environmental activities will be as follows

*Table 111.124: Timetable for implementation and monitoring of environmental activities*

Measures	Proposed actions	Implementation period in the project cycle	
Mitigation measures	View list of mitigation measures	During subprojects implementation	
Institutional measures	ESMS's Recruitment HSIUs Constitution	Before subprojects implementation	
Technical measures	Development of EIA for certain projects RAP for A.M. Dogliotti College of Medicine rehabilitation	After screening of specific activities at a site	
	Development health and safety plan (construction companies)	After signing the contract by company	
	Development of environmental and social guidelines to be included in tender document	After approval of the ESMF and the recruitment of ESMS	
Training	Training of ESMP implementing actors in environmental and social assessment	1st quarter 2010	
Awareness	awareness	During the implementation of activities and after identification of all sites where the HSRP project will be implemented	
Follow-up Action	Project Environmental Monitoring	Close monitoring	During the implementation of the HSRP
		Supervision	Every mounth
	ESMP Evaluation	At mid-term End of HSRP project	

## 11.7 COSTS

The budget needed for ESMP / HSRP environmental and social management is the recapitulation of the following:

- Institutional development activities
- Training program, awareness
- Allowances for the preparation / implementation of sub-projects EIA / EMP. (The costs of implementing such plans measures are included in the budgets of sub-projects.)
- Annual assessments.

The costs of environmental measures as well as training and awareness are summarized below. We believe that under the HSRP Category B project, two sub-projects will be classified as category B1 and therefore will require the development of EIA.

*Table 11.135: Estimated costs of technical measures*

<b>Activity</b>	<b>Quantity</b>	<b>Unit cost (\$US)</b>	<b>Total cost (\$US)</b>
EIA / RAP development	3 studies	10 000	30 000
Environmental and social guidelines development (ESMS / HSRP)	1 guide		
Development health and safety plan (construction companies)	FF	5000	5 000
Supervision and permanent monitoring (to add in HSRP M&E budget)	During 2 years	20 000	20 000
ESMP Evaluation (mi-term, final)	2	10 000	20 000
<b>TOTAL</b>			<b>75 000</b>

Table 111.146: Training and awareness measures costs

Actors involved	Topics	Quantity	Unit cost (\$US)	Total cost (\$US)
<b>Training</b>				
CH&SWT HSIU	<ul style="list-style-type: none"> <li>- Training on Environmental and Social Assessment (screening and classification of activities, identification of impacts, mitigation options and indicators)</li> <li>- Drafting ToR for EIA</li> <li>- Selection of mitigation measures in the checklists</li> <li>- Legislation and national environmental procedures</li> <li>- Safeguard Policy World Bank</li> </ul>	5 days workshop	10000	10 000
Control office, companies, operating agents	<ul style="list-style-type: none"> <li>- Impact of sub-projects and mitigation measures</li> <li>- Environmental measures monitoring</li> <li>- health and safety standards monitoring</li> <li>- Safety and hygiene at work and operation</li> </ul>	1 atelier	10000	10 000
				<b>Sub TOTAL 20 000</b>
<b>Awareness</b>				
<ul style="list-style-type: none"> <li>- Population riparian health facilities</li> <li>- Local associations and NGOs</li> <li>- Maker of construction companies</li> <li>- Accompanying patients</li> </ul>	<ul style="list-style-type: none"> <li>- Public awareness and advocacy on projects environmental and social issues, good environmental practices, good conduct in the yards, respect for hygiene and safety, compliance with development standards</li> <li>- Awareness Campaign HIV / AIDS</li> </ul>	withdrawal		50 000
				<b>Sub TOTAL 50 000</b>
<b>TOTAL</b>				70 000

Table 111.157: Estimated budget for Environmental and Social

Measures	Actions	Responsible	Costs USD
Institutional measures	ESMS recruitment	HSRP Secretariat	PM
	HSIU Installation	Health facilities	PM
Technical measures	Perform ESMP monitoring and evaluation (continuous monitoring, mid-term and annual assessment) EIAs / RAP development Environmental and social guidelines development Health and safety Plans development Supervision and Monitoring ESMP evaluation(midterm and final)	HSRP Secretariat	75 000
<b>SUB-TOTAL MEASURES</b>	<b>INSTITUTIONAL AND TECHNICAL</b>		<b>75 000</b>
<b>Training</b>	Training in projects environmental and social management and monitoring and enforcement of environmental measures	HSRP Secretariat	20 000
<b>Awareness</b>	- Information and awareness campaigns on the nature of work, environmental and social issues - Awareness on HIV / AIDS	HSRP Secretariat	50 000
<b>SUB-TOTAL TRAINING AND AWARENESS</b>			<b>70 000</b>
<b>GENERAL TOTAL</b>			<b>145 000</b>

### 11.8 ESMF/ ESMP DISSEMINATION

Under the approach advocated by the World Bank, environmental assessments are not only an expert analysis, but part of a participatory process involving all stakeholders in the project.

The various stakeholders must be :(i) viewed as sources of information and points of view and different interests; (ii) systematically informed of the findings and progress of the project (through a communication plan), and iii) loans at any time to make their voices heard by decision makers.

To do this, an information system and public communication must be established early of subproject assessment. The system also includes a provision of formal public reports,

once the assessments are completed. The OP 4.01 outlines the requirements for consultation and dissemination of environmental assessments in accordance with the policy of dissemination of the World Bank (BP 17.50).

Regarding the dissemination of ESMF document publicly and under dissemination policy of the World Bank (BP 17.50), the ESMF will be disseminated as well as in Liberia and through the World Bank in Washington (Infoshop).

Separate EIA of specific subprojects will be disseminated in country.

Thus, after approval by the EPA and the World Bank, the ESMF will be published in an official gazette (summary) and full in the Infoshop of the World Bank. The document will also be available for public consultation in different relevant sites in Liberia.

Table 11.18: Environmental and Social Management Plan

Potential Impact	Mitigation Measures	Implementation Schedule	Monitoring Indicators	Monitoring	Responsibility		Frequency	Cost Estimate (US\$)
					Implementation	Supervision		
<p><b>Soil</b></p> <p>Possible increase in soil erosion as a result of the construction activities (clearing of vegetation and soil excavation)</p> <p>Loss of productive topsoil resulting from soil excavation</p> <p>Soil contamination resulting from the release of chemicals (lubricant, fuel, paint) from the equipments</p>	<p>Re-vegetate the construction site by planting rapidly growing vegetation/plants</p> <p>Use excavated soil for construction work</p> <p>Ensure immediate clean up of the area by removing the contaminated topsoil and disposing properly in a designated place</p>	<p>During and after the construction activities</p> <p>During construction</p> <p>During construction</p>	<p>Erosion</p> <p>Soil</p>	<p>Monitor erosion occurrence within and around the construction site</p> <p>Ensure that all the excavated soil are used for construction</p> <p>Monitor and document the contaminated soil disposal procedure</p>	Contractor/supervising consultant	Infrastructure Unit of MOHSW	Weekly	\$
<p><b>Water</b></p> <p>Run-off erosion may occur from unprotected excavated areas during heavy rain resulting to sedimentation of nearby water-bodies</p> <p>Run-off erosion may occur from heaps of excavated soils during heavy rain resulting to sedimentation of nearby water-bodies Potential water pollution through run</p>	<p>Attend to any excavation area as quick as possible or create an embankment to avoid run off</p> <p>Create barrier for appropriate containment measures</p> <p>Proper disposal of</p>	<p>During excavation activities</p> <p>During construction</p>	<p>Sediments</p> <p>Sediments</p>	<p>Monitor BOD, Nitrate, pH, Heavy metals of the nearby water bodies before the construction and thereafter weekly during the construction activities</p>	Contractor/supervising consultant	Infrastructure Unit of MOHSW	Weekly	\$

off of hazardous construction waste (lubricants, paint)	construction waste	During construction	Heavy metals					
<b>Air</b> Particulate matters emission from excavation and construction activities  Potential emission of pollutants from the construction machineries (NOx, SOx, CO, THC)	Spray water periodically to control dust  Limit the vehicles allowed into the site and use efficient machineries	During excavation and construction activities  During construction activities	PM  NOx, SOx, THC and CO	Monitor PM, NOx, SOx, THC and CO in the surrounding air before the construction and thereafter hourly during the construction	Contractor/supervising consultant	Infrastructure Unit of MOHSW	Weekly	\$
<b>Noise</b> Noise resulting from the construction works	Equipment (e.g. cement-sand mixer machine) to be placed as far as possible from the sensitive area/ human settlement  Construction should not be done during peak hospital hours  Construction staff to wear ear muffs	During construction activities	Noise	Monitor staff compliance to the use of ear muffs/plugs	Contractor/supervising consultant	Infrastructure Unit of MOHSW	Daily	\$
<b>Ecosystem</b> Destruction of vegetation, loss of habitat and biodiversity  Possible loss of endangered and rare specie	Re-vegetate the construction site by planting rapidly growing vegetation/plants	During and after construction	Vegetation	Monitor the re-vegetation process	Contractor/supervising consultant	Infrastructure Unit of MOHSW	Monthly	\$

Change in land use and disturbance of ecosystem								
<b>Social</b> Possible loss of access to assets or resource.	Provide alternative route for access to resource.	Before construction begins	Complaints from the affected people	Document relocation procedures  Monitor the road traffic before and during construction activities	Contractor/supervising consultant	Infrastructure Unit of MOHSW		
<b>Soil</b> Contamination of soil as a result of waste (reagent, solid waste) disposal	Pre-treat waste before disposal (through neutralization, thermal pretreatment, oxidation, etc)	Before disposal	pH, BOD,COD, Nitrate etc (based on the type of chemical waste generated)	Monitor the surrounding soil pH, BOD,COD, Nitrate etc (based on the type of chemical waste generated). Monitoring to be before construction and monthly during the construction	Respective institution's Lab supervisors/ Laboratory attendants		Monthly	\$350
<b>Water</b> Depletion of water resources  Contamination of surrounding water bodies through improper disposal of waste water  Possible run off from the temporary solid waste storage site into the drainage system	Reuse and recycle water, also minimize water usage  Install water flow meter  Pre-treat waste water before disposal (through neutralization, thermal pretreatment, oxidation, etc)  Avoid siting temporary	During operation  Before waste water disposal  During site selection  Implement	Increase in water utility payment.  Increase in water flow meter reading  pH, BOD,COD, Nitrate etc (based on the type of chemical waste	Monitoring the water flow meter  Monitor the surrounding water bodies pH, BOD,COD, Nitrate etc (based on the type of chemical waste generated). Monitoring to be before construction and monthly during			Monthly	\$300

	<p>solid waste storage close to drainage system or water ways.</p> <p>Dispose waste as soon as possible to avoid leachate generation</p> <p>Ensure proper containment of the temporary waste storage site</p>	<p>mitigation measures through the operation phase</p>	<p>generated)</p>	<p>the construction</p>				
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## 12.0 RECOMMENDATIONS

The Health System Reconstruction Project (HSRP) is in support of the National Health Plan intending to reform the health sector so that it can deliver quality health and social welfare services to the people of Liberia. The project is funded by the World Bank to: strengthen policy making and management capacity of the Ministry of Health and Social Welfare (MoHSW); and to provide critical inputs to sustain the referral system needed to support essential health services

In this respect, it is a health and social programme, and its beneficial aspects outweigh the adverse effects. According to the World Bank operational policies, the HSRP has been classified as a category B, and only the Environmental Assessment policy would be triggered (Environmental Assessment, OP/BP/GP 4.01). The main environmental issues for the project relate to the handling and disposal of supplies such as medical laboratory substances, X-ray films, and other medical products and waste generated during the rehabilitation of JFK and a couple of health facilities.

The environmental adverse effects generated by the HSRP can be easily mitigated. However, the environmental issues relating medical wastes, construction-related issues such as health and safety, contamination of surface water, soil erosion, loss of vegetation etc needs to be addressed by an Environmental and Social Management Framework (ESMF). This ESMF covers environmental and social issues related to the health sector in general and constitutes a national plan for implementation throughout the period of the HSRP project and beyond. The aspects relating to a comprehensive Medical Supplies and Medical Waste Management Plan (MSMWMP) are being addressed by a separate study.

For a better inclusion of the environmental and social requirements in the preparation and implementation of the HSRP activities, the following recommendations that are necessary before the identification of the sites intended to receive the HSRP sub-projects:

- (i) identify good environmental practice measures (environmental and social clauses) to be included in the terms of references of the implementation of activities to be achieved;
- (ii) Organize frequent environmental supervision missions of the HSRP project and ensure that the mitigation measures of the HSRP project recommended by the EIA are complied with. During the project implementation, evaluation missions will include environmental agents and members trained in environmental issues who will produce a report on the implementation of the environmental and social management plan.

More specifically, the project will have to focus on the following recommendations:

- Recruit a ESMS within the HSRP Secretariat of the MOHSW;
- Organization of meetings in the areas concerned by the sub-projects in order to provide some information on the project and define with them the collaboration conditions in the framework of the implementation monitoring.
- Requiring national expertise in EIA (specialized firms in EIA) environmental training sessions.
- Formalize with EPA the institutional arrangement proposed in the screening process in order to empower the ESMS and the HSRP Secretariat in screening the HSRP sub-projects.

In addition, the following recommendations need to be followed:

The contractors should:

- Comply with the environmental guidelines described in Annex 5
- Comply with all of the requirements of the EA and ESMP and shall, in accordance with accepted standards, employ techniques, practices and methods of construction that will ensure compliance with this standard and, in general, minimise environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources, and minimize effects on surrounding landowners, occupants and the general public.

To further ensure a sustainable and effective environmental stewardship within the Liberia Health Sector the following key recommendations have been proposed:

**(i) Recommendations for Improvements of Current Status of Health Facilities and Basic Healthy delivery Services**

The Health-care waste management issues should be tackled seriously. Modern and efficient technologies of waste collection, segregation, treatment and disposal should be adopted to replace the present situation in areas where improper technologies and practices are being adopted. Additionally the waste handlers must be adequately trained so as to ensure some professionalism in the health-care waste management.

In order to achieve acceptable practices in Health-care waste management and compliance with policies it is essential for all managers and other personnel involved receiving appropriate skills.

**This is the main objective of the MWMP elaborate in a separate document for HSRP which will be attached as annex of this document when finalized**

**(ii) Recommendation for Liberia’s National Legislation Pertaining to the Generation and Disposal of Hospital Wastes**

Liberia has no framework legislation that seeks to address hospital wastes management in the country. It is therefore recommended that legislation must be enacted.

The legislation must be clear as to the following elements:

- Scope or coverage i.e. the specific type of wastes preferably to be stated in an appendix;
- The institutional basis for waste disposal (Private Sector Participation, if allowed must be specified);
- The various methods of disposal must be stated;
- Prohibited acts;
- Deterrent penalties.

There must be broad consultations so that all stakeholders would see the final output as their own. This way, efficiency and effectiveness would be assured.

### **(iii) Recommendation for appropriate Environmental and Social Capacity Building within the MOHSW**

There is the need for a management structure to run through all levels of the Ministry of Health and Social Welfare. At each level, the components of the management structure should work in collaboration with all other stakeholders such as the Ministry of Rural Development, the Ministry of Public Works, Ministry of Health and Social Welfare, the County Health Teams, Liberian Health Service, the Teaching Hospitals, the Environmental Protection Agency and the Regional and District Authorities with a responsibility of environmental management.

The roles of the identified collaborating Ministries, Departments and Agencies should be clearly defined. The proposed role of the MOHSW should be to ensure the formulation of policies, guidelines and provision of general direction for implementation.

## **13.0 ANNEXES:**

### **ANNEX 1A: ENVIRONMENTAL AND SOCIAL SCREENING (ESS) OF SUB-PROJECTS**

This stage marks the beginning of the ESIA or ESMP process, which should be initiated as early as possible along with the sub-project planning process after the sub-project is conceived. During this stage, the important functions that need to be performed are:

- i. Establish the likely study area by identifying broad boundaries for the sub-project;
- ii. Make a preliminary assessment of the significance of potential environmental impacts, and likely mitigating measures;
- iii. Identify possible alternatives and the major potential environmental impacts associated with each, as well as the likely corresponding mitigation measures;
- iv. Estimate the extent and scope of ESIA to be performed, and offer an initial recommendation as to whether a full ESIA is required;
- v. Estimate the time frame of the ESIA study;
- vi. Identify the expertise and human resources needed for the ESIA study; and
- vii. Prepare the terms of reference for the conduct of an initial environmental examination.

The value of conducting environmental and social screening at the early conception and planning phase of a development project is to provide useful technical input to the project team for their planning and budgeting, thereby eliminating the possibility of costly remedial environmental work and delays caused by problems with adverse environmental damage. Such early input on environmental considerations also provides useful information that helps the project team to gain government approval and win public acceptance.

The environmental and social screening process considers the following aspects in the recommendation: project type, environmental and social setting, and magnitude and significance of potential environmental and social impacts. Some of the typical questions asked in the environmental and social screening process are outlined in the figure in the next page below.

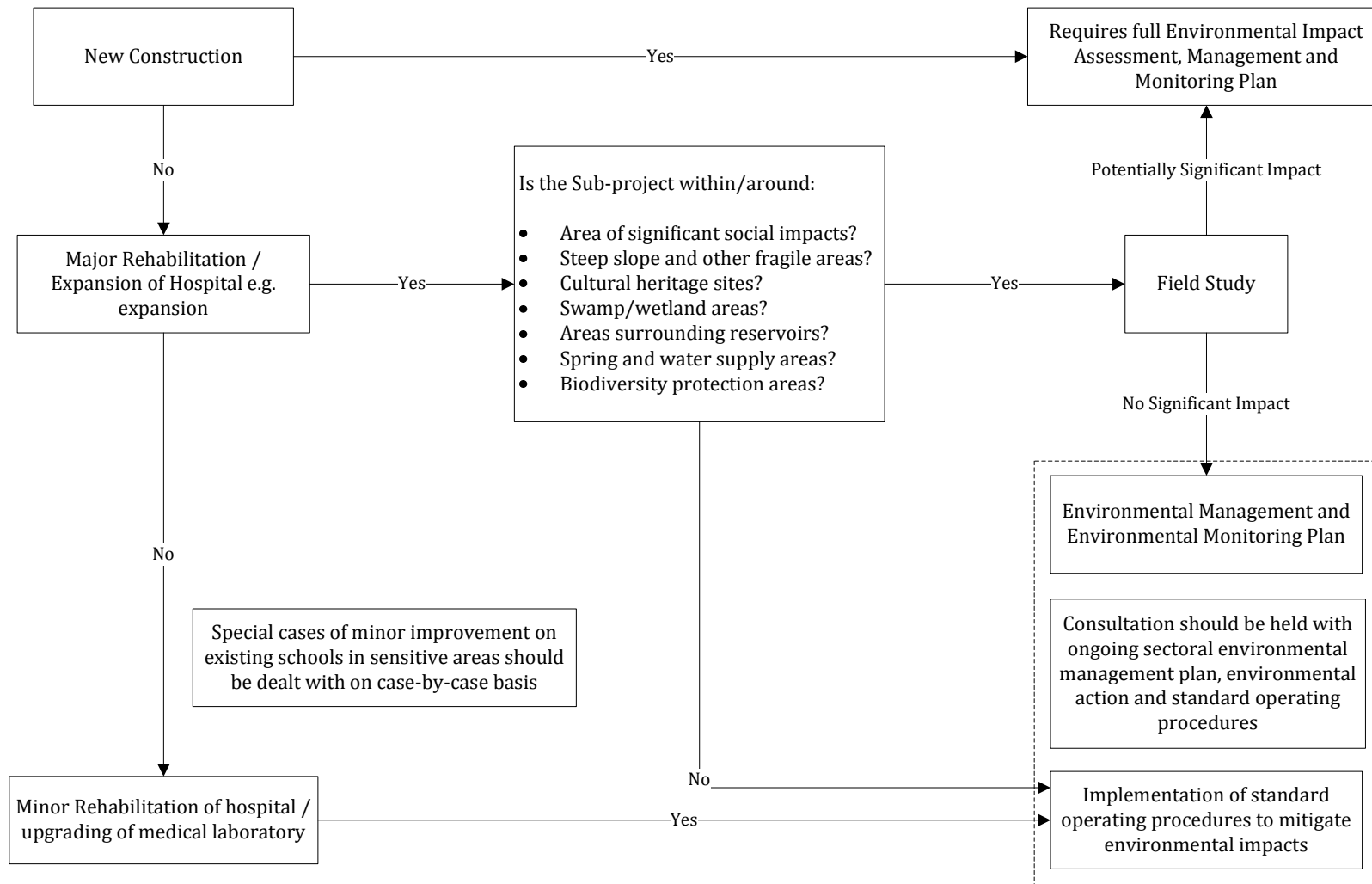


Figure 133-1: Typical Environmental Screening Procedure

## **ANNEX 1B: STANDARD FORMAT FOR SCREENING REPORT**

1. GENERAL DESCRIPTION
  - 1.1. Overview of the study area
  - 1.2. List of Selected Health Facilities
  
2. PROJECT-SPECIFIC SCREENING (FOR EACH SUB-PROJECT):
  - 2.1. Existing infrastructure
  - 2.2. Proposed Works
  - 2.3. Estimated Cost
  - 2.4. Summary of Environmental and Social Issues
    - 2.4.1. Land Resources
    - 2.4.2. Hydrology and Water Resources
    - 2.4.3. Air and Noise
    - 2.4.4. Biological Resources
    - 2.4.5. Socio-Economic and Cultural
      - 2.4.5.1. Population
      - 2.4.5.2. Employment and Other Benefits
      - 2.4.5.3. Other site-specific issues
  - 2.5. Environmental Screening Category
  - 2.6. Applicable Safeguard Policies
  
3. ATTACHMENTS
  - 3.1. Maps
  - 3.2. Photos
  - 3.3. Location and Administrative Maps
  - 3.4. Environmental and Social Checklist

**ANNEX 1C: SCREENING REPORT-ENVIRONMENTAL AND SOCIAL CHECKLIST**

*Table 133.1: Environmental and Social Checklist*

<b>County:</b>	<b>District:</b>	<b>Date:</b>
<b>Health Care Facility Name:</b>	<b>Location:</b>	
<b>Issue</b>	<b>Degree*</b>	<b>Comment</b>
<b>Land Resources</b>		
Worksite/Campsite Areas		
Excavation Areas		
Disposal Areas		
Others		
<b>Water Resources &amp; Hydrology</b>		
Sources of Water for Construction		
Drainage Issues		
Others		
<b>Biological Resources</b>		
Special Trees/Vegetation around		
Protected Areas directly affected		
Others		
<b>Air Quality &amp; Noise</b>		
Special issues (e.g. quiet zone for hospital)		
Residential Areas		
<b>Socio-Economic &amp; Cultural</b>		
Involuntary Resettlement**		
Graveyards and Sacred Areas affected		
Cultural Resources		
Population affected/provided access		
Others		

\*Degree: N = Negligible or Not Applicable  
L = Low  
M = Moderate  
H = High

\*\*If yes, indicate # of persons likely to be affected and nature of the effect

## **ANNEX 2: STANDARD FORMAT FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)**

### **EXECUTIVE SUMMARY**

1. PROJECT DESCRIPTION
  - 1.1. Overview of the County where the Health Care Facility is located
  - 1.2. List of Health Care Facilities
  - 1.3. Environmental Screening Category
2. POLICY AND ADMINISTRATIVE AND LEGAL FRAMEWORK
3. HEALTH CARE -SPECIFIC ESMPs
  - 3.1. Location
  - 3.2. Proposed Works
  - 3.3. Estimated Cost
  - 3.4. Baseline Data
    - 3.4.1.Land Resources
    - 3.4.2.Hydrology and Water Resources
    - 3.4.3.Air and Noise
    - 3.4.4.Biological Resources
    - 3.4.5.Socio-Economic and Cultural
  - 3.5. Potential Impacts
    - 3.5.1.Land Resources
      - 3.5.1.1. Construction Phase
      - 3.5.1.2. Post Construction Phase
    - 3.5.2.Hydrology and Water Resources
      - 3.5.2.1. Construction Phase
      - 3.5.2.2. Post Construction Phase
    - 3.5.3.Air Quality and Noise
      - 3.5.3.1. Construction Phase
      - 3.5.3.2. Post Construction Phase
    - 3.5.4.Biological Resources
      - 3.5.4.1. Construction Phase
      - 3.5.4.2. Post Construction Phase
    - 3.5.5.Socio-Economic and Cultural
      - 3.5.5.1. Construction Phase
      - 3.5.5.2. Post Construction Phase
  - 3.6. Analysis of Alternatives
  - 3.7. Mitigation Measures
    - 3.7.1.Construction Phase
    - 3.7.2.Post Construction Phase
  - 3.8. Monitoring and Supervision Arrangements
  - 3.9. Summary ESMP Table
4. ATTACHMENTS
  - 4.1. Photos
  - 4.2. Summary of Consultations and Disclosure
  - 4.3. Other

### ANNEX 3: GUIDANCE ON ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN BY PROJECT PHASES

Table 13.2: Guidance on ESMP by Project Phases

Phases	Issue/Potential Impact	Mitigation Measure(s)	Implementing Responsibility	Monitoring Responsibility	Cost
<b>Design Phase</b>	Impacts on physical environment: air quality, hydrology, waste, soils, noise	Consider the impact of the construction activities on the physical environment for the design of civil works	Design Consultant	PPT	<b>To be determined</b>
	Impact on Air Quality: Emission of dust and other pollutants	Bid document will include requirement to ensure: <ul style="list-style-type: none"> <li>- Adequate watering for dust control</li> <li>- Prohibition of open burning</li> <li>- Ensure stockpile of materials are properly secured</li> <li>- Proper unloading/storage of construction materials</li> <li>- On-site mixing of materials in shielded area</li> <li>- Equipment and materials to be properly covered during transportation.</li> </ul>	Design Consultant	PPT	<b>To be determined</b>
	Noise impact	Bid document to include requirement to ensure: <ul style="list-style-type: none"> <li>- Noise silencers be installed on all exhaust system</li> <li>- Use of ear plugs for construction workers</li> <li>- Equipment placed as far as possible from sensitive land users.</li> </ul>	Design Consultant	ESMU/PPT	<b>To be determined</b>
	Impact on hydrology: Degradation of surface water quality	The contract document should specify: <ul style="list-style-type: none"> <li>- use of good engineering practice during construction, including adequate supervision</li> <li>- Minimal water usage in construction area</li> <li>- Minimal soil exposure time during construction</li> <li>- Minimal chemical usage (lubricants, solvents, petroleum products).</li> </ul>	Design Consultant	ESMU/PPT	<b>To be determined</b>

	Alteration of surface drainage	Contract document to include requirement to ensure: - installation of adequately sized drainage channels - stabilization of slopes to avoid erosion	Design Consultant	ESMU/PPT	<b>To be determined</b>
	Waste generation and disposal (solid/ oily/hazardous)	Contract document to include requirement to ensure: - Provision of waste management plan. - Proper handling and disposal /recycling of oily waste	Design Consultant	ESMU/PPT	<b>To be determined</b>
	Impact on Soil: Increased soil erosion	Contract document to include requirement to ensure: - Use of less erodable materials, - Lined down-drains to prevent erosion	Design Consultant	ESMU/PPT	<b>To be determined</b>
	Socioeconomic Impact: Disruption during work-demand for local infrastructure increase	- Avoid the creation of congested and unsafe road conditions at intersections and in villages or cities.	Design Consultant	ESMU/PPT	<b>To be determined</b>
	Disruption to traditional lifestyles and other services	- Ensures access to homes, businesses, other key services	Design Consultant	ESMU/PPT	<b>To be determined</b>
<b>Construction</b>	Impact on Air Quality: Emission of dust and other pollutants	- Periodically use water to spray areas under construction - Construction workers to wear face masks and gloves - Ensure that all equipment and materials loaded on trucks are covered during transportation	Contractor, Supervising consultant	ESMU/PPT	<b>To be determined</b>
	Noise Impact	- Noise standards to be enforced to protect construction workers - Ensure that silencers are installed on all exhaust systems. - Ear plugs to be worn by construction	Contractor, Supervising consultant	ESMU/PPT	<b>To be determined</b>

	workers	- Turn off construction equipment when not in use			
Impact on hydrology: Degradation of surface water quality		<ul style="list-style-type: none"> <li>- Use good engineering practice during construction</li> <li>- Ensure wastewater from cleaning of equipment is not disposed of in water course.</li> <li>- Wastewater should be collected and treated suitably before being disposed of in water courses.</li> <li>- Ensure minimal use of water in construction area</li> <li>- Minimal soil exposure time during construction</li> </ul>	Contractor, Supervising consultant	ESMU/PPT	<b>To be determined</b>
Alteration of surface drainage		<ul style="list-style-type: none"> <li>- Install adequately sized drainage channels</li> <li>- Ensure stabilization of slopes to avoid erosion</li> </ul>	Contractor, Supervising consultant	ESMU/PPT	<b>To be determined</b>
Solid waste generation and disposal		<ul style="list-style-type: none"> <li>- Ensure all waste earth and materials associated with construction activities are disposed land without prior consent of PPT.</li> <li>- Daily life rubbish and waste materials associated with construction activities should be daily collected and disposed of in suitable approved dumpsites.</li> <li>- Ensure that solid wastes are not disposed of in water courses.</li> </ul>	Contractor, Supervising consultant	ESMU/PPT	<b>To be determined</b>
Poor Sanitation at construction camp and site		- Provide adequately located and maintained latrines	Contractor	ESMU/PPT	
Accidental spill of toxic material/oil		<ul style="list-style-type: none"> <li>- Design and implement safety measures</li> <li>- Provide an emergency plan to contain accidental spill</li> </ul>	Contractor	ESMU/PPT	

Impact on Soil: Increased soil erosion	<ul style="list-style-type: none"> <li>- Avoid erosion of cuts and fills by providing proper drainage,</li> <li>- Lined down-drains to prevent erosion</li> </ul>	Contractor, Supervising Consultant	ESMU/PPT
Impact on vegetation	- Replanting of land within project area.	Contractor, Supervising Consultant	ESMU/PPT
Health and Safety Impact	<ul style="list-style-type: none"> <li>- Ensure adequate health facility systems are in place on-site to deal with influx of temporary workers.</li> <li>- Ensure use of nets, insect repellent and other malaria preventive measure for workers on site.</li> <li>- Health education about STDs should be introduced.</li> <li>- Training of construction crew and supervisors on health and safety guidelines</li> <li>- Personal protective equipment to be worn by all workers</li> </ul>	Contractor, Supervising Consultant	ESMU/PPT
<b>Socioeconomic Impact: Loss of property</b>	<ul style="list-style-type: none"> <li>- <b>Avoid or reduce loss of property</b></li> <li>- <b>Avoid land where farmers will be displaced.</b></li> </ul>	<b>Contractor</b>	<b>Supervising Consultant/ESMU</b> <b>To be determined</b>

#### ANNEX 4 : DETAIL OF HAZARDS FROM MEDICAL WASTE

##### **Hazards from infectious waste and sharps**

Infectious waste may contain any of a great variety of pathogenic organisms. Pathogens in infectious waste may enter the human body by a number of routes:

- through a puncture, abrasion, or cut in the skin;
- through the mucous membranes;
- by inhalation;
- by ingestion.

Examples of infections that can be caused by exposure to health-care waste are listed in table 3, together with the body fluids that are the usual vehicles of transmission.

There is a particular concern about infection with immunodeficiency virus (HIV) hepatitis B and C, for which there is strong evidence of transmission via health-care waste. These viruses are generally transmitted through injuries from syringe needles contaminated by human blood.

The existence of health-care establishments of bacteria resistant to anti-biotics and chemical disinfectants may also contribute to the hazards created by poorly managed health-care waste. It has been demonstrated for example, that plasmids from laboratory strains contained in health-care waste were transferred to indigenous bacteria via the waste disposal system. Moreover, anti-biotic resistant *Escherichia coli* have been shown to survive in an activated sludge plant, although there does not seem to be significant transfer of this organism under normal conditions of waste disposal and treatment.

Concentrated cultures of pathogens and contaminated sharps (particularly hypodermic needles) are probably the waste items that represent the most acute potential hazards to health.

Sharps may not only cause cuts and punctures but also infect these wounds if they are contaminated with pathogens. Because of this double risk-of injury and disease transmission-sharps are considered very hazardous waste class. The principal concerns are infections that may be transmitted by subcutaneous introduction of causative agent, e.g. viral blood infections. Hypodermic needles constitute an important part of the sharps waste category and are particularly hazardous because they are often contaminated with patients' blood.

*Examples of infections caused by exposure to health-care wastes, causative organisms, and transmission vehicles*

<b>Type of infection</b>	<b>Examples of causative organisms</b>	<b>Transmission vehicles</b>
Gastroenteric infections	Enterobacteria, e.g. <i>Salmonella</i> , <i>Shigella spp.</i> ; <i>Vibrio cholerae</i> ; <i>helminthes</i>	Faeces and/or vomit
Respiratory infections	<i>Mycobacterium tuberculosis</i> ; measles virus; <i>Streptococcus pneumoniae</i>	Inhaled secretions; saliva
Ocular infection	Herpesvirus	Eye secretions
Genital infections	<i>Neisseria gonorrhoea</i> ; herpevirus	Genital secretions
Skin infections	<i>Streptococcus spp.</i>	Pus
Anthrax	<i>Bacillus anthracis</i>	Skin secretions
<i>Meningitis</i>	<i>Neisseria meningitis</i>	Cerebrospinal fluid
Acquired Immunodeficiency syndrome (AIDS)	Human Immunodeficiency Virus (HIV)	Blood , sexual secretions
Haemorrhagic fevers	Junin, Lassa, Ebola, and Marburg viruses	All bloody products and secretions
Septicaemia	<i>Staphylococcus spp.</i>	Blood
Bacteraemia	Coagulase-negative <i>Staphylococcus spp.</i>	
Candidaemia	<i>Candida albicans</i>	Blood
Viral hepatitis A	Hepatitis a virus	Faeces
Viral hepatitis B and C	Hepatitis B and C viruses	Blood and body fluids

Source: Safe management of wastes from health-care activities , A Pruss, E Giroult P Rushbrook, WHO

### **Hazards from Chemical and Pharmaceutical waste**

Many of the chemicals and pharmaceuticals used in health-care establishments are hazardous (e.g. toxic, genotoxic, corrosive, flammable, reactive, explosive and shock sensitive). These substances are commonly present in small quantities in health-care waste; larger quantities may be found when unwanted or outdated chemicals and pharmaceuticals are disposed off. They may cause intoxication, either by acute or by chronic exposure, and injuries, including burns. Intoxication can result from absorption of a chemical or pharmaceutical through the skin or the mucous membranes, or from inhalation or ingestion. Injuries to the skin, the eyes, or the mucous membranes of the airways can be caused by contact with flammable, corrosive, or reactive chemicals (formaldehyde and other volatile substances. The most common injuries are burns.

Disinfectants are particularly important members of this group: they are used in large quantities and are often corrosive. It should be noted that reactive chemicals may form highly toxic secondary compounds.

Obsolete pesticides, stored in leaking drums or torn bags, can directly or indirectly affect the health of anyone who comes into contact with them. During heavy rains, leaked pesticides can seep into the ground and contaminate the ground water. Poisoning can occur through direct contact with the product, inhalation of vapours, drinking of

contaminated water, or eating contaminated food. Other hazards may include the possibility of fire and contamination as a result of inadequate disposal such as burning or burying.

Chemical residues discharged into the sewerage system may have adverse effects on the operation of biological sewage treatment plants or toxic effects on the natural ecosystems of receiving waters. Similar problems may be caused by pharmaceutical residues, which may include antibiotics and other drugs, heavy metals such as mercury, phenols, and derivatives, and disinfectants and antiseptics.

### **Hazards from Genotoxic Waste**

The severity of the hazards for health-care workers responsible for the handling and disposal of genotoxic waste is governed by a combination of the substance toxicity itself and the extent and duration of exposure. Exposure of genotoxic substances in health care may also occur during the preparation of or treatment with particular drugs or chemicals. The main pathways of exposure are inhalation of dust or aerosols, absorption through the skin, ingestion of food accidentally contaminated with cytotoxic drugs, chemicals, or waste, and ingestion as a result of bad practice, such as mouth pipetting. Exposure may also occur through contact with the body fluids and secretions of patients undergoing chemotherapy.

Many cytotoxic drugs are extremely irritant and have harmful local effects after direct contact with skin or eyes. They may also cause dizziness, nausea, headache, or dermatitis.

Special care in handling genotoxic waste is absolutely essential; any discharge of such waste into the environment could have disastrous ecological consequences.

### **Hazards from Radioactive Waste**

The type of disease caused by radioactive waste is determined by the type and extent of exposure. It can range from headache, dizziness, and vomiting to much more serious problems. Because radioactive waste, like certain pharmaceutical waste, is genotoxic, it may also affect genetic material. Handling of highly active sources, e.g. certain sealed sources from diagnostic instruments, may cause much more severe injuries (such as destruction of tissue, necessitating amputation of body parts) and should therefore be undertaken with the utmost care.

The hazards of low-activity waste may arise from contamination of external surfaces of containers or improper mode or duration of waste storage. Health-care workers or waste handling or cleaning personnel exposed to this activity are at risk.

### **Public Sensitivity**

Quite apart from fear of health hazards, the general public is very sensitive about the visual impact of *anatomical waste that is recognisable human body parts* including fetuses. In no circumstances is it acceptable to dispose of anatomical waste inappropriately, such as on a landfill.

## **ANNEX 5: DRAFT TERMS OF REFERENCE FOR SUB-PROJECT REQUIRING AN ESIA**

Based on the screening and scoping results, ESIA terms of reference will be prepared. A local consultant will conduct the ESIA and the report should have the following format:

### **Introduction and Context**

This part will be completed at a time and will include necessary information related to the context and methodology to carry out the study.

### **Objectives of the Study**

This section will indicate (i) the objectives and the project activities; (ii) the activities that may cause environmental and social negative impacts and needing adequate mitigation measures.

### **Mission/Tasks**

The Consultant should realize the following:

- Describe the biophysical characteristics of the environment where the project activities will be realized; and underline the main constraints that need to be taken into account at the field preparation, during the implementation and exploitation/maintenance of equipments.
- Assess the potential environmental and social impacts related to project activities and recommend adequate mitigation measures, including costs estimates;
- Assess the need of solid and liquid waste management and suggest recommendation for their safe disposal;
- Review political, legal and institutional framework, at national and international level, related to environmental, identity constraints and suggest recommendations for reinforcement;
- Identify responsibilities and actors for the implementation of proposed mitigation measures;
- Assess the capacity available to implement the proposed mitigation measures, and suggest recommendation in terms of training and capacity building, and estimate their costs;
- Develop an Environmental Management Plan (EMP) for the project. The EMP should underline (i) the potential environmental and social impacts resulting from project activities; (ii) The proposed mitigation measures; (iii) the institutional responsibilities for implementation; (iv) the monitoring indicators; (v) the institutional responsibilities for monitoring and implementation of mitigation measures; (vi) the costs of activities; and (vii) the schedule of implementation.

### **Public consultations**

The EIA results and the proposed mitigation measures will be discussed with population, NGOs, local administration and other organizations mainly involved by the project activities. Recommendations from this public consultation will be included in the final EIA report.

### **Plan of the EIA Report**

- Cover page
- Table of Contents
- List of Acronyms
- Executive Summary
- Introduction

- Description of project activities
- Description of Environment in the project area
- Description of policy, legal and Institutional Framework
- Description of the methodology and techniques used in assessment and analysis of the project impacts
- Description of environmental and social impacts for project activities
- Environmental Management Plan (EMP) for the project including the proposed mitigation measures; institutional responsibilities for monitoring and implementation; Summarized table for EMP.
- Recommendations
- References
- List of Persons/Institutions met

#### **Qualification of the Consultant**

The Consultant will be agreed upon by the EPA in carrying out the EIA studies

#### **Duration of Study**

The Duration of study will be determined according to the type of activity

#### **Production of final Report**

The Consultant will produce the final report one (1) week after receiving comments from EPA and HSRP Secretariat. The final report will include comments from these institutions.

#### **Supervision of Study**

The consultancy will be supervised by the Environmental and Social Management Specialist (ESMS) of the HSRP Secretariat.

- ◆ Description of the study area
- ◆ Description of the sub-project
- ◆ Legislative and regulatory considerations
- ◆ Determination of the potential impacts of the proposed sub-projects
- ◆ Environmental Management Plan
- ◆ Public consultations process
- ◆ Development of mitigation measures and a monitoring plan, including cost estimates.

## **ANNEX 6: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS**

### **General**

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:
  - (a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
  - (b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
  - (c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
  - (d) Prevent oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
  - (e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
  - (f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.
  - (g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

- (h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
  - (i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
  - (j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
  - (k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
  4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
  5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

### **Worksite/Campsite Waste Management**

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/construction materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

### **Material Excavation and Deposit**

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
  - a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.
  - b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
  - c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
  - d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
  - e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
  - f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.
15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

### **Rehabilitation and Soil Erosion Prevention**

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29. Minimize erosion by wind and water both during and after the process of reinstatement.
30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

### **Water Resources Management**

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.
36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

### **Traffic Management**

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

### **Blasting**

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

### **Disposal of Unusable Elements**

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.
46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.

47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.
48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

### **Health and Safety**

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.
50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

### **Repair of Private Property**

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
53. In cases where compensation for inconveniences, damage of assets etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

### **Contractor's Health, Safety and Environment Management Plan (HSE-MP)**

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:
  - For the Contractor, for internal purposes, to ensure that all measures are in place for adequate HSE management, and as an operational manual for his staff.
  - For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the HSE aspects of the project, and as a basis for monitoring of the Contractor's HSE performance.
55. The Contractor's EHS-MP shall provide at least:
  - a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
  - a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
  - a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and

- the internal organizational, management and reporting mechanisms put in place for such.
56. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

### **HSE Reporting**

57. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor HSE report is given below. It is expected that the Contractor's reports will include information on:
- HSE management actions/measures taken, including approvals sought from local or national authorities;
  - Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);
  - Lack of compliance with contract requirements on the part of the Contractor;
  - Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and
  - Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.

58. It is advisable that reporting of significant HSE incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE's reports to the Client.

### **Training of Contractor's Personnel**

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfill their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:
- HSE in general (working procedures);
  - emergency procedures; and
  - social and cultural aspects (awareness raising on social issues).

### **Cost of Compliance**

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable HSE impact.

## Example Format: HSE Report

**Contract:**

**Period of reporting:**

**HSE management actions/measures:**

Summarize HSE management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), HSE training, specific design and work measures taken, etc.

**HSE incidents:**

Report on any problems encountered in relation to HSE aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

**HSE compliance:**

Report on compliance with Contract HSE conditions, including any cases of non-compliance.

**Changes:**

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects.

**Concerns and observations:**

Report on any observations, concerns raised and/or decisions taken with regard to HSE management during site meetings and visits.

**Signature (Name, Title Date):**

Contractor Representative

## Example Format: HSE Incident Notification

Provide within 24 hrs to the Supervising Engineer

**Originators Reference No:**

**Date of Incident:**                      **Time:**

**Location of incident:**

**Name of Person(s) involved:**

**Employing Company:**

**Type of Incident:**

**Description of Incident:**

Where, when, what, how, who, operation in progress at the time (only factual)

**Immediate Action:**

Immediate remedial action and actions taken to prevent reoccurrence or escalation

**Signature (Name, Title, Date):**

Contractor Representative

## ANNEX 7: SUMMARY OF WORLD BANK SAFEGUARD POLICIES AND HOW THEY WILL APPLY TO THE FUTURE PROJECT ACTIVITIES

- ***Environmental Assessment (OP 4.01)***. Outlines Bank policy and procedure for the environmental assessment of Bank lending operations. The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA process. This environmental process will apply to major infrastructure rehabilitation projects under HSRP.
- ***Natural Habitats (OP 4.04)***. The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified. Should the sub-project-specific ESMPs indicate that natural habitats might be affected negatively by the proposed sub-project activities with suitable mitigation measures, such sub-projects will not be funded under the project.
- ***Pest Management (OP 4.09)***. The policy supports safe, affective, and environmentally sound pest management. It promotes the use of biological and environmental control methods. An assessment is made of the capacity of the country's regulatory framework and institutions to promote and support safe, effective, and environmentally sound pest management. This policy will most likely not apply to HSRP sub-projects.
- ***Involuntary Resettlement (OP 4.12)***. This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. Though the HSRP project will not entail taking of land for new infrastructure development there are aspects of the project that cause restriction of access to sources of water and convenient passage of the Catholic Hospital Community. The appropriate impact mitigation measures have been put in place.

- ***Indigenous Peoples (OD 4.20)***. This directive provides guidance to ensure that indigenous peoples benefit from development projects, and to avoid or mitigate adverse effects of Bank-financed development projects on indigenous peoples. Measures to address issues pertaining to indigenous peoples must be based on the informed participation of the indigenous people themselves. Sub-projects that would have negative impacts on indigenous people will not be funded under the HSRP.
- ***Forests (OP 4.36)***. This policy applies to the following types of Bank-financed investment projects: (a) projects that have or may have impacts on the health and quality of forests; (b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests; and (c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned. The Bank does not finance projects that, in its opinion, would involve significant conversion or degradation of critical forest areas or related critical habitats. If a project involves the significant conversion or degradation of natural forests or related natural habitats that the Bank determines are not critical, and the Bank determines that there are no feasible alternatives to the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs, the Bank may finance the project provided that it incorporates appropriate mitigation measures. Sub-projects that are likely to have negative impacts on forests will not be funded under HSRP.
- ***Cultural Property (OP 11.03)***. The term “cultural property” includes sites having archeological (prehistoric), paleontological, historical, religious, and unique natural values. The Bank’s general policy regarding cultural property is to assist in their preservation, and to seek to avoid their elimination. Specifically, the Bank (i) normally declines to finance projects that will significantly damage non-replicable cultural property, and will assist only those projects that are sited or designed so as to prevent such damage; and (ii) will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. The management of cultural property of a country is the responsibility of the government. The government’s attention should be drawn specifically to what is known about the cultural property aspects of the proposed project site and appropriate agencies, NGOs, or MOHSW should be consulted; if there are any questions concerning cultural property in the area, a brief reconnaissance survey should be undertaken in the field by a specialist.
- ***Safety of Dams (OP 4.37)***. For the life of any dam, the owner is responsible for ensuring that appropriate measures are taken and sufficient resources provided for the safety to the dam, irrespective of its funding sources or construction status. The Bank distinguishes between small and large dams. Small dams are normally less than 15 m in height; this category includes, for example, farm ponds, local silt retention dams, and low embankment tanks. For small dams, generic dam safety measures designed by qualified engineers are usually adequate. This policy does not apply to HSRP since the policy is not triggered under the project.

- ***Projects on International Waterways (O 7.50)***. The Bank recognizes that the cooperation and good will of riparians is essential for the efficient utilization and protection of international waterways and attaches great importance to riparians making appropriate agreements or arrangement for the entire waterway or any part thereof. Projects that trigger this policy include hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, and similar projects that involve the use or potential pollution of international waterways. This policy will not apply to HSRP.
- ***Disputed Areas (OP/BP/GP 7.60)***. Project in disputed areas may occur between the Bank and its member countries as well as between the borrower and one or more neighbouring countries. Any dispute over an area in which a proposed project is located requires formal procedures at the earliest possible stage. The Bank attempts to acquire assurance that it may proceed with a project in a disputed area if the governments concerned agree that, pending the settlement of the dispute, the project proposed can go forward without prejudice to the claims of the country having a dispute. This policy could be triggered if the understanding reached among the Catholic Hospital Community, Ministry of Public Works, Liberia Water and Sewer Corporation and HSRP are not carried out.

**ANNEX 8: LIST OF INDIVIDUALS/INSTITUTIONS CONTACTED**

MINISTRY OF HEALTH AND SOCIAL WELFARE  
HEALTH SYSTEM RECONSTRUCTION PROJECT (HSRP)

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
17/09/09	Health System Reconstruction Project (HSRP) Office	Mrs. Arabella Greaves	<ul style="list-style-type: none"> <li>• Introduction of ESMF Consultant to the Minister of Health and Social Welfare, Architect working on design issues for JFK Hospital, HSRP Project Officers;</li> <li>• Briefing on HSRP covering project background, project components and some activities to date;</li> <li>• Some relevant project documents namely the National Health Policy and National Health Plan, International Development Association Project Paper on the Republic of Liberia Health System Reconstruction Project and MOHSW Annual Report 2008.</li> <li>• Scheduled appointment to meet with technical committee on 17<sup>th</sup> September 2009 at 2.30pm;</li> <li>• Scheduled appointment for Video Conference with World Bank Washington Office on 22<sup>nd</sup> September 2009.</li> <li>• Scheduling of appointments for Consultant to meet with relevant institutions (Redemption Hospital and Government Hospital, Buchanan, Grand Bassa Co.) and individuals regarding the preparation of ESMF;</li> </ul>
17/09/09	MOHSW: Technical Sub-committee on Waste Management	Mr Pratt Oliver-Technical Officer, Dr Clement Peter-Task Force/WHO, Dr Bernice Dahn-Chief Medical Officer, Mr David Joseph-Environmental Health Officer, Mrs Arabella Greaves-HSRP	<ul style="list-style-type: none"> <li>• Concerns regarding the late preparation of the ESMF and MWMP, which are key requirements under the HSRP;</li> <li>• Some shortfalls relating the preparation of Environmental Waste Management Policy identified in the TOR for the MWMP and the acceptance by MWMP Consultants to adjust and work according to schedule;</li> <li>• Complementation of ESMF assignment by the MWMP Consultants and the need for collaboration between among the consultants for the ESMF and MWMP;</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
		Project Coordinator.	<ul style="list-style-type: none"> <li>• Preparedness by the committee to collaborate with and provide the need support to the ESMF consultant to develop the ESMF successfully.</li> <li>• Dr Clement and the ESMF Consultant have agreed to meet again to discuss some relevant aspects of the TOR for the ESMF.</li> </ul>
<b>18/09/09</b>	Montserrat County: Redemption Hospital, Borough of New Krutown	Dr. Taban J. Dada- Medical Director, Lucius Bolley-Hospital Administrator, John Shakpeh-Asst Nursing Director, Osanto J. Korboi and Alfred T. Nyuma	<ul style="list-style-type: none"> <li>• The Redemption Hospital is the Second Referral Hospital and a free Hospital under the MOHSW;</li> <li>• The Hospital has 136 beds including Emergency Room, Medical, Paediatrics, Surgical and OB Delivery wards. The hospital records 100 inpatients per day or 4000 inpatients per month and 350 outpatients per day or 7000 outpatients per month. Other facilities available are EPI-Vaccination Centre, Pre-natal section, Laboratory Department, X-ray room and Blood Donor room.</li> <li>• Medical Wastes segregation, collection, storage and handling. Medical wastes are segregated and combustible wastes such as plastic, paper are sent to incinerator. Pathological wastes are separately handled in the operating room and disposed off.</li> <li>• Pharmaceutical wastes are currently stored in dedicated room awaiting proper disposal. Previously, the National Drug Service (NDS) collects expired drugs for proper disposal. This does not happen any longer so the hospital is being confronted with the challenge of how to dispose off expired drugs that are being accumulated.</li> <li>• X-ray equipment which had ceased to function was collected by MSF of Belgium, who donated it to the Hospital. The X-ray room is however under rehabilitation to receive new X-ray equipment being acquired under the HSRP Fund.</li> <li>• Personnel Involved in the management of hospital waste: There is a sanitation crew under a house keeping department. The general qualification and level of education of designated personnel ranges from High School Graduates, Junior High School and Elementary levels. Waste Management training programmes, workshops and training of trainers programme have been organized for members of the sanitation crew. There are 2 supervisors and 17 general staff membership of the sanitation crew.</li> <li>• <b>Hospital Waste Management Policy:</b> Respondents of the hospital are not aware of any national hospital waste management policy or legislation applicable to hospital</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
			<p>management though they know it is generally required that hospital waste should be properly managed.</p> <ul style="list-style-type: none"> <li>• <b>Activities being Funded under HSRP:</b> There are minor refurbishments of the existing laboratory and X-ray room in progress in anticipation of new equipments to be installed to enhance the laboratory and X-ray services of the hospital. However, the level of awareness of the hospital management as well as supervisors and technicians of the laboratory about the scope works, technical arrangements and the HSRP funding is non-existent. The needed coordination between MOHSW and Redemption Hospital Management that will ensure a proper ownership and management of the facility is lacking. Hospital officers admitted that there hasn't been adequate sensitization among them about the project.</li> <li>• The main negative impact of the refurbishment is the interruption of the of the laboratory services due to the intermittent nature of minor construction works.</li> <li>• It is expected that a successful completion of the refurbishment will significant enhance the laboratory services to many patients.</li> <li>• The hospital management are of the view that there should be proper information dissemination about the project coupled with proper planning and coordination indicating what ,where, when is to be done and by whom with much greater involvement of the management of the hospital.</li> </ul>
<b>18/09/09</b>	JFK Hospital	JFK Hospital Receptionist	<ul style="list-style-type: none"> <li>• The ESMF Consultant and HSRP Assistant Project officer were in JFK Hospital at 2pm but met the absence of the Hospital Administrator so the intended consultation with the hospital management and inspection proposed activities under the HSRP was rescheduled to Friday, 25th September 2009.</li> </ul>
<b>19/09/09</b>	WHO	Dr Clement Peter	<ul style="list-style-type: none"> <li>• Discussed relevant issues relating to ESMF Consultant's visit to Redemption Hospital on 18/09/09</li> <li>• <b>Management of Redemption Hospital:</b> Redemption Hospital was under the Management of MSF/Belgium until a year ago, when it was handed over to the MOHSW. MOHSW is now therefore soliciting for funds to improve the Hospital's facilities and enhance quality service delivery to the people. The Redemption Hospital as an alternative to JFK Hospital, is currently being used additionally as a training hospital for skill improvement of health workers in emergency obstetric</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
			<p>care.</p> <ul style="list-style-type: none"> <li>• <b>Paediatric Hospital in Monrovia:</b> MSF is managing free services Paediatric Hospital in Monrovia but MSF will be pulling out very soon. Government is therefore taking the necessary steps to provide additional facilities at Redemption Hospital for Paediatrics.</li> <li>• <b>Consultation:</b> For many development projects in the Counties no consultation with stakeholders takes place except in the communities where some level of consultation is done but mainly because the community land and people's labour are needed for the project. Several projects have been undertaken in this county without proper consultation and engagement of affected communities on key environmental and social impacts so as ensure their participation and project ownership. This is the time to move away from this practice to help improve the execution of both Public and Private projects in the future for environmental and social sustainability.</li> <li>• <b>Equipment Supplies:</b> Generally equipments supply or donation to health establishments are done without due consideration of the associated expertise requirement needed for effective and sustainable use of such equipments. In many of these cases no feasibility studies were conducted before such equipment were supplied or donated. Generally the required capacity for laboratory supervisors and technicians is grossly lacking.</li> <li>• <b>Establishment of reference Laboratory:</b> Currently Government is making arrangements to establish a Nation Reference Laboratory-at Liberia Institute for Biomedical Research (LIBR).</li> <li>• <b>Expired Drugs Disposal:</b> National Drug Service was established in early 1990 as a semi autonomous institution to handle drugs related issues. There are social concerns due to improperly disposed off drugs finding their way into the market. Open air burning of drugs as means of disposal also posses environmental and public health concerns.</li> <li>• <b>Disposal of Pathological Wastes:</b> Pathological wastes are often buried in pits, which if not properly covered could pose a serious health risk to the public.</li> <li>• <b>Environmental Regulations:</b> There are clear environmental regulations in place.</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
			<p>There is however the National Public Health Act, which created the Environmental Health Division of MOHSW. The ACT is outdated and the Environmental Health Division does not also have enforcement powers.</p> <ul style="list-style-type: none"> <li>• <b>EPA:</b> There is no Ministry in charge of Environment so all environmental related issues nation-wide falls under the jurisdiction of the Liberia EPA. However, due to the resource and capacity limitations of the EPA, the EPA is stretched by enormity of the environmental challenges in the country. Also there are not adequate environmental legislations in place to give the EPA the requisite compliance and enforcement powers to ensure a sound environmental stewardship and sustainable development by both Public and Private sector actors in Liberia.</li> <li>• <b>Ministry of Internal Affairs:</b> In charge political and administrative governance at all levels of the governance structure in Liberia. However, there seem to less control over the county, cities and communities planning and development thus leading to the emergence of uncoordinated developments and springing up of slums.</li> <li>• <b>Ministry of Public Works:</b> Responsible for public infrastructure construction and control but I am not sure if coordination between this ministry and other sector ministries such the Ministry of Internal Affairs and the EPA on cross-cutting issues.</li> </ul>
21/09/09	Government Hospital, Buchanan, Grand Bassa County	Dr. Saygbeh M. Vanyanpah-Medical Director, Eddisson J. Robert-Pharmacist, Roberta Messan-Laboratory Supervisor, Ninely Johnson-Incinerator Manager, Peter J. Mingle-Secretary	<ul style="list-style-type: none"> <li>• The Government Hospital is the main referral hospital in Grand Bassa County. Medical, Surgery, Emergency Care, VCT, TB2, HIV and Laboratory Services are provided.</li> <li>• There are 80 beds and occupancy rate is 80%. They serve over 200,000 populations in the county and its neighbourhood.</li> <li>• Staff level is 172, there are 2 Physicians, about 20 Registered Nurses and 12 Housekeeping staffs who are maintained by Merlin (NGO).</li> <li>• <b>Medical Waste Management:</b> Wastes are segregated into sharps, pathological and general wastes. Wastes are collected on a daily basis in a 3-shift system. Sharps and general wastes are incinerated in an incinerator (installed by UNICEF) at temperatures ranging between 400-600 degrees Celsius. During inspection at the incineration site it was observed that unsegregated waste has been heaped waiting to be burnt in the open because there was shortage of firewood to fire the incinerator.</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
			<p>Pathological wastes are buried in a dedicated pit onsite. Expired drugs are incinerated upon consultation with Merline and Clearance.</p> <ul style="list-style-type: none"> <li>• <b>Laboratory Services:</b> There are 2 technicians, 1 Supervisor and 4 Assistants. Main service provided is hematological services. General Chemistry services are not being provided due to lack of capacity and non-functioning equipments. Observations at the laboratory indicate that a good number of laboratory equipments supplied to the hospital by UNDP and MOHSW are not being used due to lack of reagents, technical expertise, adequate electricity supply and unavailability of laboratory space. No maintenance policy in place</li> <li>• <b>HSRP Benefits:</b> The management of the Hospital has no knowledge of any proposed benefits in terms of infrastructure support or medical equipment supplies by the hospital under the HSRP Funding.</li> </ul>
<b>22/09/09</b>	Seventh Day Adventist Cooper Hospital		<ul style="list-style-type: none"> <li>•</li> </ul>
<b>22/09/09</b>	Video Conference with World Bank Office, Washington	Daniele Jaekel-World Bank Washington, Djibril Doucoure, Mrs Arabella Greaves, Dr Clement Peter, Dr. Patrick Okoth , Dyson	<ul style="list-style-type: none"> <li>• The subject of the late commencement of the development ESMF of the HSRP and MWMP contrary to the expectation of the Bank and the MOHSW was highlighted.</li> <li>• In-country and World Bank disclosure of Final ESMF incorporating the MWMP;</li> <li>• The consistency of the content of the ESMF with the requirement of the World Bank Safeguard Policy OP 4.01</li> <li>• Discussed review comments made by Djibril Doukoure on Technical Proposal for ESMF and how it has been factored into the methodology of ESMF development by the Consultant,</li> <li>• The Consultant is to be provided with a copy of the draft Project Implementation Manual (PIM) by the Mrs Arabella Greaves.</li> <li>• Working arrangements among all parties connected to the ESMF development for a timely and quality ESMF delivery</li> <li>• The implications to the ESMF delivery schedule due to the requirement by the TOR to incorporate the MWMP, which has much longer completion date that is not in sync</li> </ul>

<b>Date</b>	<b>Institutions/ Organizations</b>	<b>Persons Contacted Address/Email/Tel</b>	<b>Issues Discussed</b>
			<p>with the delivery date and disclosure of the ESMF. Daniele Jaekel is to discuss this with the Safeguard Staff for the World Bank to arrive as a decision.</p> <ul style="list-style-type: none"> <li>• The Consultant preparing the MWMP has submitted an Inception Report. The Inception Report has identified the need to prepare a Waste Management Policy first to give a basis for the preparation of the MWMP. Preparing a Medical Waste Management Policy is an addendum to the TOR but the Consultant is willing to do so at no additional cost but at some variation of the work plan for MWMP. This was largely agreed upon but it was stressed that proper priorities must be given to avoid any ripple effect that may delay the ESMF.</li> <li>• In Conclusion, Djibril and Dyson are to establish contact and collaborate effectively, ESMF Inception Report to be submitted by the Consultant on 23/09/09, Daniele to contact safeguard staffs of the World Bank to discuss ESMF/MWMP disclosure, Mrs. Greaves to provide more information on Medical Waste Management Policy issue to Daniele, and Djibril will send comments on ESMF Inception report by Mid of next week.</li> </ul>
<b>23/09/09</b>	Division for Environmental and Occupational Health of MOHSW	Mr. Yeabah Dehwehn-Director	<ul style="list-style-type: none"> <li>• The Division has seven major mandates including Environmental Sanitation and operates mainly under the Preventive Services pillar of MOHSW</li> <li>• There is no National Policy on Environmental and Occupational Health. There is however a Public Health and Safety Law. Attempts to develop an Environmental and Occupational Health Policy have failed. However, there new initiatives in place to get it the policy developed and follow it up with a five year strategic plan</li> <li>• The Division is confronted with severe human resource inadequacy couple with the lack of career development programme for staffs</li> <li>• There seem to be an overlapping of mandate of several sector agencies such the EPA, Water and Sanitation, MOHSW, Public Works, Liberia Water and Sewerage Corporation thus hindering effectiveness of delivery of quality services</li> <li>• Level of involvement of the Division in the construction and rehabilitation of health facilities to ensure proper citing, medical waste management etc is low.</li> </ul>
<b>23/09/09</b>	Environmental Protection Agency	Mr. Jerome Nyenka (Ag. Director), Henry O.	<ul style="list-style-type: none"> <li>• The EPA was established in 2003</li> </ul>

<b>Date</b>	<b>Institutions/ Organizations</b>	<b>Persons Contacted Address/Email/Tel</b>	<b>Issues Discussed</b>
	(EPA), Liberia	Williams- Manager for Inter Sectoral Coordination, Mr. Varney L. Conneh-Coodinator for EIA, Mr. Johansen Voker-Policy Planning and Legal	<ul style="list-style-type: none"> <li>• There are three legal instruments forming the bedrock of the EPA, Liberia in Environmental Governance: These are i) the Act creating the EPA ii) National Environmental Policy iii) Environmental Protection and Law. These three acts emphasize intersectoral coordination. They stresses on Public/Private and Community Partnership</li> <li>• The EPA has EIA Procedures in place.</li> <li>• By the EIA Procedures, the MOHSW has to formally notify the EPA of the HSRP for the necessary advice and clearance to ensure compliance.</li> <li>• The EPA has an Environmental and Social Management Plan (ESMP) and Environmental and Social Impact Assessment (ESIA) processes in place for existing establishments and new undertakings respectively.</li> <li>• There are a stakeholder review processes, monitoring and environmental audit systems in place.</li> <li>• Medical Waste management practices as observed by the EPA at most health care centres in the country are very poor. Many hospitals do not have the capacity for proper Medical Waste Management</li> <li>• There are no standards for Medical Waste Management</li> <li>• There is no infrastructure for toxic or hazardous waste as well as medical waste disposal.</li> <li>• The EPA itself has gross capacity and resource constraints thereby hindering the agencies effectiveness.</li> </ul>
<b>23/09/09</b>	Merlin	Mr. Lawrence Oduma- Country Director, Dr George Odongi- Country Health Director, Jane Teversham-Operations Director	<ul style="list-style-type: none"> <li>• Merlin support in the health sector covers infrastructure provision, curative support and training. Their focus now is towards building capacity of the County Health Teams.</li> <li>• There is no clear policy on medical waste management</li> <li>• No standardized system for medical waste management so health facilities create their own systems. WHO template could be used.</li> </ul>

<b>Date</b>	<b>Institutions/ Organizations</b>	<b>Persons Contacted Address/Email/Tel</b>	<b>Issues Discussed</b>
			<ul style="list-style-type: none"> <li>• The disposal of placenta and other pathological waste in pits, which are not properly lined could contaminate ground water which is the source of drinking water for several communities.</li> <li>• Serious difficulties by health facilities to dispose of broken down and obsolete laboratory equipments (eg. radiology equipments)</li> <li>• Incinerators are not properly functioning at the required temperatures thus generating dioxins and other polluting substances</li> <li>• Disposal of expired drugs is being done differently by various health facilities, for instance in some of the referral hospitals pit latrines are used for the disposal of expired drugs. The biggest problem of expired drugs disposal is at the community clinics. In some cases the expired drugs find their way into the open market.</li> <li>• Policy guideline needs to be developed to streamline the provision of medical supplies and services support by various groups and NGOs</li> <li>• County Health Teams under the MOHSW do not have the capacity to perform the roles expected of them</li> </ul>
<b>23/09/09</b>	Ministry of Public Works/SIU	Professor David Wiles	<ul style="list-style-type: none"> <li>• The MPW/SIU is executing government projects sponsored by the World Bank.</li> <li>• A well resourced environmental unit has been set up within the unit to ensure that all projects comply with National Environmental requirements as well as that of the World Bank</li> <li>• The Environmental Unit advises the Director of the SIU on all environmental and social issues relating all relevant projects</li> <li>• The Unit visits project sites to monitor and evaluate compliance with environmental requirements</li> </ul>
<b>24/09/09</b>	Infrastructure Unit of MOHSW	Mr B. Garmondyu Zogar-Ag Director, Sarkoh Saydee	<ul style="list-style-type: none"> <li>• The Infrastructure Unit is an arm of the MOHSW responsible for the coordination and supervision of all infrastructure projects of the Ministry. They have standard designs for health infrastructure development.</li> <li>• They have no policy framework but developments are guided by standards.</li> </ul>

<b>Date</b>	<b>Institutions/ Organizations</b>	<b>Persons Contacted Address/Email/Tel</b>	<b>Issues Discussed</b>
			<ul style="list-style-type: none"> <li>• Procedures for infrastructure development involves assessment, preparation of feasibility report, bill of quantities, tendering and procurement according to national procurement ACT</li> <li>• Environmental considerations depend on the scope of work and Environmental Health Division is consulted but the priority and importance attached is not high. In most cases the emphasis is placed on getting construction permit from the MPW</li> <li>• Laboratory spaces specification were issued for laboratory equipment procurement under the HSRP. Health Services Division of MOHSW is supposed to notify laboratory supervisors of equipment specifications and supplies</li> <li>• Environmental Units established by EPA in Ministries are not active due to lack of high level management support.</li> <li>• The Infrastructure unit is facing serious funding difficulties and therefore not being able to perform its monitoring and supervision roles. Operational funds only come from UNICEF. MOHSW does not provide any operational budget.</li> <li>• Human resource and technical capacity is very low</li> </ul>
<b>24/09/09</b>	Medicin Sans Frontiers-Belgium (MSF-B)-Bushrod Island Hospital	Mrs Martha Dennis-Medical Director, Mrs Matina Van Assche-Hospital Director, Mulbah Kerkula-Lab Supervisor, Miss Sowrllie Lomax-Lab Technician	<ul style="list-style-type: none"> <li>• The Bushrod Island Hospital is mainly a Paediatric Hospital fully supported and managed by MSF-B. Children between the ages of 0-15 years are admitted at the hospital for Pediatric services. Other service areas include Emergency services, TB, HIV and Malnutrition (Now handed over to Redemption Hospital)</li> <li>• Hospital has 150beds and occupancy is over 100%. There are 375 staff comprising of Medical(about 50%), Non-Medical(15%), Office Staff (5-10%).</li> <li>• Laboratory for basic services, HIV and X-ray facilities exist</li> <li>• Negotiations have been ongoing for the past two years to agree on the handing over of the hospital to the MOHSW.</li> <li>• Medical Wastes generated are mainly sharps and thrush. Incinerator and sharps disposal pit exist.</li> <li>• Standards for expired drugs disposal exist.</li> </ul>

<i>Date</i>	<i>Institutions/ Organizations</i>	<i>Persons Contacted Address/Email/Tel</i>	<i>Issues Discussed</i>
			<ul style="list-style-type: none"> <li>• The main challenge of the hospital is the lack of Pediatric beds.</li> </ul>
25/09/09	JFK	Mr. Francis Cooper	•
25/09/09	St Joseph Catholic Hospital		•

## **ANNEX 9 : REFERENCES**

- Liberia Poverty Reduction Strategy Paper;
- National Health Policy and Plan by MOHSW
- HSRP Project Appraisal Document (PAD),
- Integrated Safeguards Data Sheet (ISDS);
- Environmental Protection Agency ACT of Liberia
- Environmental Impact Assessment (EIA) Procedures in Liberia
- State of Environment Report for Liberia,
- Draft Project Implementation Manual (PIM)
- Relevant policies and guidelines,

## **ANNEX 10 : TERMS OF REFERENCE FOR HSRP ESMF**

### **HEALTH SYSTEM RECONSTRUCTION PROJECT MINISTRY OF HEALTH AND SOCIAL WELFARE/LIBERIA**

#### **I: BACKGROUND:**

##### **Background Specific to this Assignment**

Liberia has made significant efforts in its transition from humanitarian assistance to recovery, reconstruction and development. The government has developed the Poverty Reduction Strategy highlighting the development priorities over the next three years. In the health sector, the Ministry of Health and Social Welfare (MOHSW) has developed the national health policy and plan and reviewed the priorities providing the foundation for health development. This plan reaffirms the MOHSW's commitment to working toward the achievement of the Millennium Development Goals.

The Health System Reconstruction Project (HSRP), financed by IDA, supplements efforts toward health sector reform and development. In essence, the HSRP builds on the work carried out by the MOHSW and international partners in implementation of the national health plan.

During and after the years of conflict, delivery of health services relied heavily on international support with emphasis on basic health care services. Health systems, infrastructure, and equipment were destroyed during the war, and have not been fully resumed and rehabilitated during the transition and recovery period.

The Project aims, therefore, to (i) strengthen policy making and management functions for the MOHSW, and (ii) provide critical inputs to sustain the referral system needed to support essential health services, by financing three components: (i) support systems to enhance monitoring and evaluation capacity of the MH&SW; (ii) human resources for health; and (iii) infrastructure and equipment.

## **Environmental and social issues relevant to the Project**

The main environmental issues for the Project relate to the handling and disposal of supplies such as medical laboratory substances and other medical products and waste generated during the provision of health care. It also involves some waste generated during the rehabilitation of JFK and other health care facilities. In addition, construction-related issues like safety as well as contamination of surface water might exist. Therefore, the safeguard policy on environmental assessment is triggered

In support of the safeguard policy triggered, the Ministry plans to prepare an Environmental and Social Management Framework (ESMF), which include the production of a Medical Waste Management Plan (MWMP). *The ESMF will also cover environmental and social issues related to the health sector in general and help produce a national plan to be implemented, with a lifespan beyond that of the Project.*

### **II: Objectives of the Assignment:**

The objective of the Environmental and Social Management Framework (ESMF) is to assess the potential environmental and social impact of the HSRP with emphasis on activities related to disposal of medical waste and rehabilitation of seven county hospitals, JFK hospital and at least 200 clinics nationwide. The framework will incorporate environmental and socio-economic assessment of potential impact of the project activities, as well as appropriate mitigation measures and monitoring plans.

A Medical Waste Management Plan (MWMP) will be prepared under a separate consulting assignment, and it will be the responsibility of the consultant undertaking the ESMF to incorporate the MWMP into the ESMF (including the full document in annex, and making reference to mitigation measures as needed).

During the assessment, there will be consultation with key stakeholders, affected groups, local communities and non governmental organizations.

Specifically, the assessment will focus on:

- assessing environmental and social impact of the HSRP;
- recommending practical and cost-effective actions and processes to mitigate any potential adverse environmental and/or social impacts that could arise during project implementation; and
- identifying capacity building needs for the MoHSW and recommending actions to strengthen the Ministry and its partners to ensure sustained environmental and social compliance monitoring.

### **Methodology**

The methodology of the assessment will include desk review, community meetings and consultation with relevant government agencies. Further discussion on the methodology will commence once the consultant has been recruited.

### **III: Scope of Services**

During the assessment, the consultant will collaborate and work closely with:

- HSRP Project Coordinator, MOHSW;
- MWMP consultant; and
- Environmental Protection Agency (EPA) of Liberia;

The work shall be carried out according to the following tasks.

Tasks:

- (1) Present an overview of Liberia's environmental policies, legislation, regulatory and administrative frameworks in conjunction with the World Bank's safeguard policies. Where gaps exist between these policies, make recommendations to bridge the gaps in the context of the proposed project.
- (2) Develop a stakeholders' consultation process that ensures that all key stakeholders, including potentially affected persons, are aware of the objectives and potential environmental and social impacts of the proposed project, and that their views are incorporated into the projects' design as appropriate.
- (3) Review the biophysical and socio-economic characteristics of the environment to be covered by the project, and highlight the major constraints that need to be taken into account in the course of the project implementation.
- (4) Assess the potential environmental and social impacts (positive and negative) of planned sector investments and rehabilitation activities such as rehabilitation of JFK hospital and other health facilities in the country; agree on appropriate mitigation measures; and make necessary recommendations.
- (5) Assess the current institutional ability at the central, regional, county, and local level to implement the recommendations of the ESMF and make appropriate capacity strengthening recommendations;
- (6) In light of the available information, develop an environmental and social screening process, including monitoring indicators for future rehabilitation and construction activities referred to above, capturing the below mentioned steps:
  - (i) Screening of physical infrastructure investments;
  - (ii) Assigning the appropriate environmental categories;
  - (iii) Outline steps for carrying out environmental work, i.e. preparation of:
    - a) Environmental and social checklist;
    - b) Draft terms of reference to facilitate preparation of separate Environmental Impact Assessment (EIAs) during project implementation;
  - (iv) Outline review and approval process for the screening results and as necessary for separate EIA reports;
  - (v) Procedures for public consultations and disclosure of project safeguard instruments prior and during project implementation;
  - (vi) Outline appropriate mitigation measures as well as a monitoring framework with key indicators for envisioned activities; describe relevant institutions in charge of monitoring and their capacity strengthening measures;

**Output/Deliverables:**

- |  |               |
|--|---------------|
| - Inception report                           | End of week 2 |
| - Draft reports (2), including diagrams/maps | End of week 4 |
| - Final Report                               | End of week 5 |

The Consultant is expected to provide 10 (ten) spiral bound **final** reports with diagrams, photos/pictures and maps where necessary to the MH&SW, as well as 2 (two) CDs containing electronic copies of the report and data collected during the assessment period.

#### **IV: Report**

The consultant will prepare an ESMF that will be used by project implementers at the planning stage of the planned project activities. The ESMF will include the following sections:

- Cover page
- Table of contents
- List of acronyms
- Executive summary
- Introduction
- Project description
- Objectives of ESMF
- Methodology used to prepared the ESMF
- Results of the public consultation process
- Overview of Liberia’s environmental policies, procedures, legislation, regulatory and administrative frameworks
- Overview of World Bank’s safeguard policies
- Description of the current biophysical and socio-economic environment
- Description of the potential environmental and social impacts of the proposed project
- Outline of the environmental and social screening process:
  - Steps required
  - Annexes:
    - Environmental and Social Screening form
    - Environmental and Social checklist (sample)
    - Draft terms of reference for separate sub-projects – EIA reports
    - Summary of the World Bank’s safeguard policies and how they will apply to the future project activities
- Recommendations
- List of individuals/institutions contacted

References

**ANNEX 11 : MEDICAL WASTE MANAGEMENT PLAN ( NOT YET FINALIZED)**