



NATIONAL ENVIRONMENTAL ACTION PLAN

Government of Sierra Leone
Environment Protection Agency

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LIST OF ABBREVIATIONS

Abbreviations	Meaning
AfDB	African Development Bank
AfP	Agenda for Prosperity
CBO	Community Based Organisation
CFC	Chlorofluorocarbons
CO ₂	Carbon Dioxide
EIA	Environmental Impact Assessment
EPA	Environment Protection Agency
EU	European Union
FAO	Food and Agricultural Organization
FBO	Faith Based Organization
FLEGT	Legal Empowerment Around Legal Logging
GDP	Gross Domestic Product
GHG	Green House Gases
GIS	Geographic Information System
GoSL	Government of Sierra Leone
IDA	International Development Agency
IUU	Unregulated, Unreported
MAFFS	Ministry of Agriculture, Forestry and Food Security
MICS	Multiple Indicator Cluster Survey
MTI	Ministry of Trade and Industry
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NEP	National Environment Policy
NGO	Non Governmental Organization
REDD	Reducing Emissions from Deforestation and Forest Degradation
SLBC	Sierra Leone Broadcasting Corporation
TV	Television
UNCBD	United Nations Convention on Biodiversity
UNICEF	United Nations Children's Fund

EXECUTIVE SUMMARY

Preamble

Over the number of years attempts have been made to address environmental problems in Sierra Leone, which was largely cosmetic, or at best sector oriented and hence limited in scope. The existing policies and legislations are not in harmony with one another nor do they have bearing on present realities of the environment. Thus, there is clearly the need for a new direction and thrust in national development efforts to ensure that plans targeted at improving the economic standards and quality of life take into consideration of the environment.

Accordingly, Sierra Leone is committed to the pursuance of social and economic development without undermining the integrity of the environment. Further, Sierra Leone is committed to the goals of sustainable social and economic development. Also, Sierra Leone recognized and acknowledges the vital role that women and children play in conservation and the sustainable management of the environment and ensures their participation in decision making on the implementation of environmental policies. Finally, Sierra Leone is mindful that regional and international cooperation is essential in attaining global environmental protection and management and thus commits itself to continued participation in global arrangements to protect the environment. It is based on these commitments and acknowledgements that the National Environmental Action Plan of Sierra Leone is formulated.

The management of the environment and natural resources is vital to the development of Sierra Leone as stated in the 1991 Constitution of Sierra Leone under Chapter Two, Fundamental Principles of State Policy, Section 7, Economic Objectives states that, the State shall:

1. Harness all the natural resources of the nation to promote prosperity and an efficient, dynamic and self-reliant economy.
2. Manage and control the national economy in such a manner as to secure the maximum welfare and freedom of every citizen on the basis of social justice and equality of opportunity. To attain these objectives, a number of initiatives were taken but were derailed by the eleven year civil war.

The National Environmental Policy has also been revised and integrated into the NEAP (Chapter 3) to take account of the new realities to ensure that the country is back on track on the road to achieve sustainable development.

Aim of the NEAP

The overall aim of the National Environment Action Plan (NEAP) is to complement the relevant national processes, with a view to improving environmental conditions to contribute to the achievement of economic growth and poverty eradication. It will also build Sierra Leone's capacity to implement regional and international environmental agreements and to effectively address national environmental challenges within the overall context of national development as outlined by the Agenda for Prosperity, Sierra Leone's development blue print and its ambition to become a middle-income green country by

2035. The plan has been prepared in order to achieve the following:

3. Provide a basis for coordination of environmental activities by all actors (private sector CSOs and government)
4. Integrate and coordinate policy towards poverty eradication and economic growth through sustainable development,
5. Strengthen existing planning frameworks,
6. Identify synergies, tensions and contradictions at the interface between efforts aimed at achieving economic growth, social equity and integrity of the natural resources base,
7. Provide a basis not only for achieving sustainable development in Sierra Leone but also a basis for fulfilling international and regional environmental responsibilities.

The NEAP has been prepared with EU funding (Environmental Governance and Mainstreaming Project) and Government of Sierra Leone through the EPA and participation by Government Ministries, NGOs, and individuals from 2011 to date. Various stakeholders were engaged at national and community levels to underpin their relevance in sustainable development. The national development agencies will use this document to set clear objectives, outputs, description of activities, objectively verifiable indicators, means of verification, lead and delegated responsibility, time frames and assumptions to execute their development programmes.

Thematic Areas Covered by the NEAP

The revision focused on the following thematic areas:

8. **Water Resources Management** – this covers the existence of huge water resources, its seasonality in abundance, impact of climate change on water and the problems of its management especially in the face of increasing competition for the resources between communities and the private sector. Amongst other recommendations the NEAP identified integrated water resources management (IWRM) as a priority management option.
9. **Forests** play a vital role in the livelihood of Sierra Leoneans through the provision of forest related goods and services; and most significantly in the supply of energy for domestic use, timber for construction and trees for regulation of water flow. Forest cover is lost every year at a rate of 0.6% through illegal logging, encroachment, settlement of people, cultivation and encroachment of forest reserves as well as forest fires. Decrease in forest cover has led to the decline of ecological functions, including prevention of erosion, water yield and conservation of wildlife habitats and genetic resources. In this NEAP improved management of forests, woodlands, and trees focus and their role as provider of goods and services for fair employment and livelihoods are recommended.
10. **Marine and Coastal Ecosystems** – Sea level rise, water pollution, sand mining and removal of mangroves from coastal areas are the main ecological problems of the Sierra Leone's coast line. Sand mining and mangrove harvesting are providing informal work for people who would otherwise be unemployed, but is also destroying the beauty and integrity of the ecologically sensitive area. Sand mining is the direct cause of erosion. Mangroves are cleared for agriculture, as cheap wood for cooking and smoking of fish and to make space for construction of human

settlements. The NEAP calls for integrated coastal zone management, regulation of sand mining, replanting of mangroves, promotion of energy efficient fish smoking technology, awareness raising and the creation of employment in coastal areas through livelihood programmes.

11. **Biodiversity** – this is a crosscutting thematic area impacted by the extraction of all natural resources. Biodiversity services impact on the life of every Sierra Leonean. Sierra Leone being a biodiversity hotspot but also experiencing biodiversity loss at an alarming rate must take integrated actions to address the rate of biodiversity loss. Amongst other recommendations the NEAP recommends that Sierra Leone must unlock resources to meet the UNCBD Aichi Targets and to continue implement the National Biodiversity Action Plan.
12. **Biofuels** – Sierra Leone has attracted multinational companies investing in Bioethanol and biodiesel using a significant proportion of arable land, water resources and at the same time threatening biodiversity. These agricultural investments will bring about economic development but also have potential to drive land, water and air pollution if they are not well executed. Implementation of the 2013 GoSL and FAO Guidelines for Sustainable Agricultural and Bioenergy Investment (GoSL and FAO, 2013) is recommended. In addition the NEAP recommends biodiversity offsetting by bioenergy proponents.
13. **Resource efficient infrastructure** – this thematic area covers transport, water, housing and energy sectors, which are key in the provision of services to the economy. Provision of transport and energy services is essential for industrialization, social development and improved quality of life. Affordable energy and transport are essential for eradicating poverty, improving human welfare and raising living standards. The environment provides natural resources used as raw materials for energy supply. Activities for energy production, distribution and consumption are the largest single category of benign sources of adverse anthropogenic impact on the environment of the country. So are the activities of housing, which consume a lot of forest, coastal and land resources. The Government must strengthen governance, regulatory and institutional mechanisms to address this thematic area.
14. **Facing the Challenges of Climate Change** - Emerging global challenges – climate change – this focuses on the issues of climate change related to mitigation and adaptation to climate change. It is with the full supposition that Sierra Leone is the most vulnerable nation to the impact of climate change and as one of the countries to suffer most if its current economic status and preparedness remain the same. NEAP calls for the coordination of all stakeholders, building of national capacity to address climate change, implantation of the climate change policy and investment in climate change mitigation and adaptation activities.
15. **Energy Security** – the lack of sustainability of the current energy sources i.e. not-renewed biomass sources is a serious driver of environmental degradation across all thematic areas (biodiversity loss, climate change, land degradation and desertification). According to FAO (2011) Sierra Leone has lost over 65% of its forest cover at a rate of 0.6% per year most of it to wood and charcoal. This theme also covers the environmental impact of energy development. The country embarks on renewable energy such as the construction of mini-hydro; full sized hydro dams, which have serious environmental impacts even though they are priority schemes in the country’s agenda for prosperity and of the current global clean development pathway.

Amongst several actions recommended Sierra Leone must promote technologies that improve energy efficiency (efficient cook stoves), embark on renewable energy development and production and establish woodlots for commercial charcoal and wood production.

16. **Petroleum - Oil and Gas** – there are growing oil exploration activities, which indicate that Sierra Leone may become an oil producing country very soon. Creating a sustainable oil and gas industry is vital for the survival of marine ecosystems and other natural resources associated with them. The NEAP addressed this theme with recommended actions such as preparation of comprehensive oil spills prevention plans, undertaking institutional capacity building, preparing for oil spills response and coordination of relevant sectors to address the risks in oil production collectively as a nation.
17. **Tourism and aesthetics** – there is a growing awareness that Sierra Leone should be an important destination for eco-tourism because of the lush tropical vegetation and coastal mountain views in some of the coastal areas especially Freetown, beautiful beaches, clear and warm waters and its rich slavery heritage and history. The revised NEAP is expected to provide better protection and management of the coastal areas to attract tourism.
18. **Land Management** - Large proportion of the population lives in rural areas and derives their livelihoods directly from the land. Land degradation is widespread and is caused by unsustainable use of forest resources, unsustainable agricultural practices, and wildfires on wooded savannas, large scale and small-scale mining. The 1994 National Environmental Policy revised in 2013 and 2004 National Land Policy (Revised 2012 and awaiting parliamentary ratification) are key frameworks that are reinforced in the revised NEAP to ensure sustainable land use, enhance land capacity and land conservation throughout the country.
19. **Preservation of National Heritage** – during validation workshop participants identified Preserving National Heritage as one of the areas that must stand out in the NEAP. Sierra Leone pre-colonial, colonial and postcolonial history is rich and is well preserved by architectural remains. It also has a rich slavery heritage and natural history. Sierra Leone must identify and protect what it considers 'important' parts of the country by making them National Heritage Sites. Once proclaimed, these sites must be considered sacred and must be protected from the threats of social and economic development and natural decay. National Heritage Sites must be chosen and protected for their natural or cultural significance.
20. **Solid Waste Management** – participants also identified Solid Waste Management, as a serious issue in cities and big towns in the time being appealing that it deserves a national planning.
21. **Agriculture** is the principal sector and the main sources of livelihood for the rural population of Sierra Leone. There are three broad agricultural production systems: crop production in various ecologies, livestock rearing and fisheries. Each of the production system has the potential to significantly affect human and environmental health. A number of agricultural initiatives to transform and commercialize agriculture are currently underway which are bound to have effects on the environment and human health. It covers traditional farming, rangelands, bush fires and agrochemicals
22. **Mining** – Sierra Leone experience strong growth in the mining sector. Exploitation of minerals

and petroleum has the potential to generate significant revenues, but also to distort development in various ways if not properly planned. The potential for irreversible distortion of development by the negative aspects of minerals and oil and gas extraction will be reduced if the NEAP is properly implemented.

23. **Fisheries** - Fisheries is a sub-sector that provides employment and income for large number of communities, specifically coastal communities. The coast of Sierra Leone features diverse marine environments. It includes creeks, mangroves, mudflats, sandy beaches, bays and shoreline ecosystems. These ecosystems are vital for the diversity and reproduction of marine organisms. This important ecosystem faces threats from increasing human population pressure through destruction of coastal ecosystems (mangroves, beaches, coastal forests and pelagic systems) and unsustainable utilization of coastal and marine resources.
24. **Urbanization** - Creating sustainable human settlements – this thematic area focuses on housing, sanitation and waste. Human settlements generate huge amounts of waste. The issue of population including gender is also covered under this theme.

Capacity Building, Governance, Regulatory, Legislation and Institutional Mechanisms – governance and enforcement of environmental legislation have been historically weak in the country. The revised NEAP focuses on effective governance and legislation and continually responds to the environmental challenges and priority issues of the country.

Promoting sustainable growth - this focused on key economic growth sectors, namely: mining, agriculture, forestry, land, fisheries and marine resources. These sectors play a significant role in the development efforts of the country. The country is currently experiencing increased mining activities by local and foreign companies who are carrying out exploitation and exploration of minerals. While mining may lead to economic benefits it may also have adverse environmental effects - disturbance of fauna and flora and affect hydrological functions as well as negative human health impacts and destruction of property that will in the long term jeopardize sustainable development.

Promoting trade and industry – this thematic area will play a vital role especially when the country begins to experience increased momentum of growth in the mining, agriculture, and forestry and fisheries sectors. Trade and industry are vital in the growth of exports and import goods and services and in ensuring that the country benefits on its natural resources endowment. The achievement of fair trade through trade agreements and memoranda of understanding on trade activities are prioritized by the NEAP.

Implementation Strategies – this will cover stakeholders’ involvement, resource requirements, monitoring and evaluation.

The issues of education and training, advocacy, information, networking technology, science and research, and mechanism for regular reporting are fundamental and are addressed in each of the themes.

When successfully implemented the revised NEAP will lead to a clean, healthy and ecologically balanced ecosystem in the country in which every person will live and enjoy a safe, healthy and functioning environment.

Source for funding

Implementation of the NEAP requires allocation of resources (financial, human and technological). The revised NEAP will include information on the potential sources of resources; locally available as well as government budgetary allocations, support from development partners, NGOs, community based organizations, religious organizations and the private sector.

CHAPTER ONE: INTRODUCTION

Introduction

Sierra Leone's development blue print, the Poverty Reduction Paper or the Agenda for Prosperity (AfP) aims at the nation becoming a middle-income country by 2035. The blue print aims at Sierra Leone achieving socioeconomic status where it becomes an inclusive, green country. Amongst other things the blue print outlines the country's plan to achieve good environmental protection, and responsible natural resource exploitation. Rapid growth in minerals extraction and export, together with the potential for petroleum exploitation, is hoped to provide resources to help transform the country into a diversified economy. Diversified economic growth on one hand will require greatly improved infrastructure: transport, power, water, information technology, and financial services. Transformation of agriculture will be carried through smallholder commercialization with large-scale agro-based production. Exploitation of minerals and petroleum on the other has the potential not only to generate significant revenues, but also distort development in a variety of ways if not properly planned. The environment also faces challenges from on-going activities, such as land degradation resulting from subsistence agriculture, forest exploitation, and unplanned urban development. Conservation of the environment and natural resources is a high priority in the AfP

The National Environment Action Plan (NEAP) will help Sierra Leone to draw on its natural resource endowments as the motor of the economy. The Environmental Action Plan is a comprehensive, holistic and inter-sectoral approach to planning and implementing environmental actions at the national level. The decision to develop NEAP was made by Government under the coordination of the Environment Protection Agency (EPA). A national working group was established to undertake analysis of environmental situation in the country. In 2010 with the help of a consultant an analysis of environmental issues was conducted which resulted in the formulation of a "Road Map" for a participatory revision of the 1994 NEAP and the preparation of a more updated version. The analysis covered environmental issues related to mineral resources and water management, mining, land, fisheries, forestry, climate change, biofuels, transport, oil and gas and trade.

The process of the Sierra Leone NEAP ended with validation of the plan. The EU provided financial assistance for the validation of the NEAP.

Aim of the NEAP

The Government Sierra Leone recognizes that addressing environmental issues is a pre-condition for achieving goal of sustainable growth and development. Hence, environment has been identified as one of the core priority areas. Sierra Leone further recognizes that a key objective of the environment initiative is to combat poverty and contribute to socio-economic development in the country. Therefore, the overall aim of the National Environment Action Plan (NEAP) is to complement the relevant national processes, with a view to improving environmental conditions to contribute to the achievement of economic growth and poverty eradication. It will also build Sierra Leone's capacity to implement regional and international environmental agreements and to effectively address national environmental challenges within the overall context of the implementation of the NEAP

Objectives

25. To secure for all Sierra Leoneans a quality of environment adequate for their health and well-being;
26. To conserve and use the environment and natural resources for benefit of present and future generations;
27. To restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere; to preserve biological diversity, and the principle of optimum sustainable yield in the use of living natural resources and ecosystems;
28. To raise public awareness and promote understanding of the essential linkages between environment development and to encourage individual and community participation in environmental improvement efforts.

Scope of the NEAP

The development of the NEAP has been a lengthy process involving the participation of the international agencies (EU and UNEP) and the donor community, government ministries, NGOs, and individuals from 2010 to date. The preparation of the NEAP was in three phases namely:

1. Review of environmental issues and preparation of a road map.
2. A stakeholder consultation phase and.
3. A validation phase.

In 2011, a request made to UNEP by the Environment Protection Agency on need to develop a strategic and effective National Environmental Action Plan (NEAP). Following this request UNEP fielded a mission to discuss with officials of primary economic sectors and civil society. During the discussions it emerged that the implementation of the 1995 NEAP had lagged behind while at the same time the tools of environmental governance have evolved and environmental problems have become more pressing due to increasing demand for natural resources – water, biofuels, food and other materials (timber, fiber, medicines, etc.) to meet the needs of the growing population. It also emerged that there is increasing pressure from foreign fishing fleets on the marine resources, with considerable illegal, unregulated and unreported fishing. Further, there is a new interest to use Sierra Leone for the production of biofuels and exploit her numerous mineral resources in various parts of the country – iron ore, bauxite, zircon, rutile, diamonds, gold, platinum and offshore oil.

The NEAP Process/Methodology

Participatory approach

The NEAP will not be a static planning tool but an ongoing planning process capable of continual improvement. This will involve a continuous process of discussions, elaboration and revisions, building on synergy and ownership.

The NEAP process adopted the participatory approach in which various stakeholders were engaged at national and community levels to underpin their relevance in sustainable development. The stakeholders include community leaders (e.g. paramount chiefs), civil society, NGOs, Community Based Organizations (CBOs), Faith Based Organizations (FBOs), Farmers Based Organizations (FBOs), herbalists, fishermen and fishmongers, market women, wood carver, legal fraternity, medical practitioners, government administration (at city council, district, provincial and national levels and

representatives of parastatals), institutions of learning, the private sector, UN agencies and donors, the media (radio, TV and print media). Involvement of all these stakeholders was on an equal, fair and transparent basis in order to promote acceptance and ownership of the revised NEAP at all levels.

The process took place in an interactive and consultative manner and involved an audit of the previous NEAP, new programme formulation, public consultations and workshops and drafting. Series of up-country workshops were held, where district councils; paramount chiefs and local communities were asked to provide inputs to the NEAP process. Also the process was connected wherever possible with European Union and other development-partners efforts to support the revision of the NEAP.

Establishment of steering committee and working groups

A steering committee was established to oversee the process leading to the production of the NEAP and specific working groups to deal with each of the themes. An editorial taskforce was also established to edit papers prepared by the working groups and the draft NEAP document.

Each of the themes were structured to provide brief analysis of problems, clear presentation of solutions and action plans presented in a logical framework with clear objectives, outputs, description of activities, objectively verifiable indicators, means of verification, lead and delegated responsibility, time frames and assumptions. The objectively verifiable indicators were used to define the specific objectives and activities described.

NEAP sensitization campaign

The NEAP campaign involves radio and TV information and discussions as well the print media. The sensitization campaigns are also conducted in workshop forms in all the provincial and western regions from Sierra Leone.

Organization of district/provincial workshops and a national workshop

The main objective of these workshops was to review and validate the draft and build consensus on the document. Discussions at the workshops were interactive and consultative. The draft document was further revised and edited by the editorial task force to incorporate the outcomes from the workshop.

Intended role of the revised NEAP:

1. Provide a basis for coordination of environmental activities by all actors (private sector CSOs and government)
2. Integrate and coordinate policy towards poverty eradication and economic growth through sustainable development,
3. Strengthen existing planning frameworks,
4. Identify synergies, tensions and contradictions at the interface between efforts aimed at achieving economic growth, social equity and integrity of the natural resources base,
5. Provide a basis not only for achieving sustainable development in Sierra Leone but also a basis for fulfilling international and regional environmental responsibilities.

CHAPTER TWO: ECONOMIC DEVELOPMENT AND ENVIRONMENT IN SIERRA LEONE

Current State of Sierra Leone Economy

Since coming out of the ten year civil in 2002, Sierra Leone is making economic recovery with average annual gross domestic product (GDP) growth rate of 5-6 per cent. The country's GDP per capita in 2010 was \$340 and expected to triple in 25 years to \$1000. National revenue is expected to grow significantly over the next five years as exports mainly iron ore is projected to increase by nearly 70% in 2013. Diversified growth will require improved infrastructure: transport, energy, water, information technology and financial services. The economy is natural resource dependent with agriculture accounting for 33% GDP, fisheries 9% and forestry 3%. The country is also rich in minerals-diamonds, iron ore, rutile, bauxite, gold, platinum, tantalite, zircon, ilmenite, chromite and colombite. The control of these resources was one of the contributory factors of the civil war. Mining GDP could grow to 8% per year between 2012 and 2037. Non-mining activity, agriculture, manufacturing, tourism and fisheries could grow up to 6% per annum from 2012-2037. Agriculture will be transformed through a combination of smallholder commercialization and large-scale agro-based production. Agriculture contributes 40-50% GDP but faces challenges especially poor quality land. Sierra Leone's population is currently estimated at 6 million and growing at 3.3%. 21% of the people live in Freetown the capital. The Human Development Index (HDI) for the country was 0.33 in 2010, which is below the average for low HDI countries of 0.45. The Sierra Leone Integrated Household Survey of 2001 estimated that 52.95 of the population is poor compared to 66.4% in 2003. The decline in poverty was pronounced in the urban areas outside Freetown, with a reduction from 70.9% in 2003 to 39.5% in 2001. Poverty in Freetown increased from 13.6% to 20.7% in 2011. Urban poverty as a whole decreased from 46.9% in 2003 to 31.2% in 2011. Rural poverty also declined from 78.7% to 66.1% but relatively high compared to urban poverty over the same period. Poverty remains pervasive in rural areas. The survey also revealed that consumption levels were below the minimum. In rural areas it fell short by 21% of basic needs while the urban poor could afford 92% of basic needs in 2011 compared to 84% in 2003.

Economic Development and Environmentally Sustainable Growth

The environment of Sierra Leone is rich and diverse fertile lands and topography. Low and mountain forests, savannah woodlands, freshwater resources and wetlands, coastal and marine ecosystems characterize the vegetation. Precipitation varies geographically with an annual average of 3000 mm.

Despite this rich resource endowment, Sierra Leone is one of the poorest countries in the world, ranked 209 globally. Most settlements lack basic services like water and sanitation. The country has an infrastructure in terms of energy and transport. In addition Sierra Leone's social indicators are weak; she has an under-five child mortality rate of 217 per 1000 and high youth unemployment.

For Sierra Leone to move on the path of sustainable growth she has launched a number of strategies since 2008. The first is the second Poverty Reduction Strategy Project termed "Agenda for Change" implemented from 2008-2012. It is followed by "Agenda for Prosperity" (AfP), which defines the development path for the country for the period 2013-2017. The main pillars of the strategies are economic diversification, human development, labour and employment, governance, management of

natural resources, international competitiveness, social protection and gender and women empowerment.

Economic Justification for NEAP

Sierra Leone's vision is to have an inclusive, green middle-income economy by 2035. To achieve this goal she will rely heavily on her natural resources. Priority areas are mineral resources, fisheries and marine resources, water resources, land management, forest management and oil and gas development. This will put great pressure on the environment and thus the need for framework like the NEAP to address existing and potential problems

The rate at which Sierra Leone's natural resources are being depleted and increasing rate of water and air pollution means the real growth rate is lower if losses due to environmental degradation are taken into account. This is because in the absence of environmental controls, environmental problems are externalized.

Economic growth is critical in the reduction of poverty but at the same time it should be environmentally, socially and economically sustainable. It is recognized that for the AfP to be successful. It will depend on how the country's natural resources are managed. This requires integrated cross-sectoral solutions, which promote sustainable development (economic, environmental and social) by:

1. Ensuring near-term local benefits
2. Avoiding costly lock-in

A Remedial Incentive Framework

A World Bank Survey on the Wealth of Nations (2005 based on 2000 data), Sierra Leone had gross savings of 2.7% and accumulation of fixed capital at the rate of 6.7% which were shown to become a net loss of -7.1% genuine savings when the effect of forest depletion and air pollution were accommodated for. These figures did not include the impacts of water pollution, soil loss, reduction in mineral capital or the negative influence of climate change. They also did not include increasing demands for resources from high levels of population growth (in excess of 2% per annum). This situation has not changed and may be worse after the civil war.

The Government of Sierra Leone (GoSL) recognizes the need to achieve Green Inclusive Growth if economic growth is to be sustainable so she requested for the assistance from the African Development Bank (AfDB). The AfP covers the three main areas of green growth managing natural resources; sustainable energy and infrastructure; and building resilience)

The transformation towards prosperity requires an understanding of both the opportunities and risks associated with natural resource-dependent growth. The key objective is to achieve economic growth and prosperity through the adoption and implementation of sustainable exploitation and management of natural resources. Effective management of natural resources generates benefits for green growth and ensures sustainable growth:

1. Sustainable livelihoods for present and future generations
2. Minimal depletion and generation of local environments which promotes social stability and

regional inclusive growth

The approach is to focus on creation of jobs, sustaining livelihoods, and contributing towards inclusive and green economic growth. Green growth can provide a pathway for better management of natural resources while increasing economic growth.

Role of Ownership

For the goals of the NEAP to be achieved, Sierra Leoneans have to own it and be in the driving seat in its implementation. Relevant agencies will assign responsibilities for the identified actions.

Externalities

There are negative impacts and risks in poorly managing non-renewable natural resources. Currently 70% of Sierra Leone's land surface is under mineral exploration. Large-scale industrial mining and unregulated artisanal mining cause environmental damage. Uncontrolled and unregulated land use result in long-term damages to land and create social problems in terms of access for the poor.

There are potential risks in the attainment of green growth due to the following reasons:

1. Lack of integrated water management system which hinders the allocation of water to most beneficial uses
2. Unregulated exploitation of forests and use of wood-fuel and charcoal resulting in deforestation, resource depletion and biodiversity loss
3. Extensive illegal and unregulated fishing, as well as limited facilities for value addition

Priorities of Investments

Priority areas include mineral resources, fisheries and marine resources, water resources, land management, forestry and oil and gas development.

Requirements for Natural Resources

1. Prepare a comprehensive inventory of natural resources to determine the optimal and sustainable levels of exploitation;
2. Undertake a continuous assessment of changes in the value of natural resource capital;
3. Set up a fund: a sizable portion (75%) of resource revenues should be assigned to a special fund to promote economic development
4. Adopt international best practice in the management of natural resource

CHAPTER THREE: NATIONAL ENVIRONMENTAL POLICY

Preamble

Over the number of years attempts have been made to address environmental problems in Sierra Leone, which was largely cosmetic, or at best sector oriented and hence limited in scope. The existing policies and legislations are not in harmony with one another nor do they have bearing on present realities of the environment. Thus, there is clearly the need for a new direction and thrust in national development efforts to ensure that plans targeted at improving the economic standards and quality of life take into consideration of the environment.

Accordingly, Sierra Leone is committed to the pursuance of social and economic development without undermining the integrity of the environment. Further, Sierra Leone is committed to the goals of sustainable social and economic development. Also, Sierra Leone recognized and acknowledges the vital role that women and children play in conservation and the sustainable management of the environment and ensures their participation in decision making on the implementation of environmental policies. Finally, Sierra Leone is mindful that regional and international cooperation is essential in attaining global environmental protection and management and thus commits itself to continued participation in global arrangements to protect the environment. It is based on these commitments and acknowledgements that the National Environmental Action Plan of Sierra Leone is formulated.

The management of the environment and natural resources is vital to the development of Sierra Leone as stated in the 1991 Constitution of Sierra Leone under Chapter Two, Fundamental Principles of State Policy, Section 7, Economic Objectives states that, the State shall:

1. Harness all the natural resources of the nation to promote prosperity and an efficient, dynamic and self-reliant economy.
2. Manage and control the national economy in such a manner as to secure the maximum welfare and freedom of every citizen on the basis of social justice and equality of opportunity. To attain these objectives, a number of initiatives were taken but were derailed by the eleven year civil war.

This National Environmental Policy is being revised and also integrated into the NEAP to take account of the new realities to ensure that the country is back on track on the road to achieve sustainable development.

Objectives

The overall goal of the National Environmental Policy is the attainment of sustainable development in Sierra Leone through sound environmental management.

Specifically it will seek to:

1. Secure for all Sierra Leoneans a quality of the environment adequate for their health and well-being of the citizenry;
2. Protect, conserve and use of the environment and natural resources for the benefit of present and future generations;
3. Maintain, enhance and restore, ecosystems and ecological processes essential for the functioning

of the biosphere; preserve biological diversity,

4. Raise public awareness and promote understanding of the essential linkages between the environment and sustainable development and to encourage individual and community participation in environmental protection and improvement efforts
5. Ensure the effective implementation of all multilateral environmental agreements the country is signatory to.

Principles

The National Environmental Policy is guided by the following principles:

1. The health and well-being of citizens is dependent on the quality of the environment
2. All environmental policies, plans and programmes will be guided by intra- and inter-generational equity
3. Ensuring the application optimum sustainable yield in the use of resources and ecosystems
4. Ecological processes are essential for the functioning of life support systems
5. International cooperation in the management of environmental problems
6. Information and knowledge on the environment is critical for the protection of the environment
7. Participation of citizens is crucial in solution of environmental problems
8. Pursuit of a pollution prevention pays approach to environmental challenges
9. The application of polluter pays principle for environmental damages
10. The application of the precautionary principle in the handling of environmental issues and use of incentive instruments to address environmental problems

Policy Statement

The Government of Sierra Leone in order to achieve the policy goals and objectives will:

1. Establish and strengthen environmental protection standards, monitor changes in, and publish relevant data on; environmental quality and resource use;
2. Ensure that environmental impact assessment (EIA) is applied to all developments with potential impacts on the environment;
3. Provide adequate financial support to environmental programmes and activities of relevant agencies;
4. Co-ordinate and collaborate with countries at sub-regional and regional levels in the management of trans-boundary environmental issues.

Issue- Specific Policy Orientations -Management of Natural Resources

Land Management

Use land and in such a way that its quality is conserved so as to enhance its potential for continuous productivity and to prevent degradation

Water Resources Management

Ensure adequate quantity and acceptable water quality to meet domestic, industrial, transportation, agricultural and fisheries, recreational and touristic needs

Forest Conservation and Wildlife

Make sustainable use of forest resources with regard to their benefits for soil and water conservation, biodiversity, economic development, wildlife habitats, and aesthetic and recreational purposes:

- (a) Reduce the rate of deforestation to levels where a balanced ecosystem capacity can be maintained.
- (b) Increase the area of forest cover to ensure maintenance of environmental stability.

Biodiversity and Cultural Heritage

Ensure the conservation of biological diversity and cultural through the development of long-term strategies for sustainable utilization to promote economic, social and cultural development.

Coastal and Marine Resources

Maintain and improve the environmental quality of coastal and marine resources and ensure their conservation and development

Non Renewable Resources

Ensure that prospecting, exploration and processing of mineral and hydrocarbon resources on land and sea proceed in an environmentally sound and sustainable manner

Air Quality and Noise

Prevent and minimize air pollution and emissions and noise through the setting of standards acceptable levels for human health and the environment.

Sanitation and Waste Management

Adopt programmes for proper management of waste acceptable for the environment, human health and wellbeing

Hazardous Substances

Prevent and minimize the adverse impacts of any and hazardous substances on human health and the environment,

Work Environment (Occupational Health and Safety)

Ensure that the working environment is conducive for the health and safety of workers.

Energy Production and Use

Minimize and reduce the adverse impacts of existing and new sources of energy.

Climate Change

Integrate and mainstream climate change issues/considerations into national, provincial and district governance systems to ensure that the country pursues a low carbon, climate resilient development pathway to achieve sustainable development and poverty targets.

Human Settlements

Ensure the planned and rational use of space in the development of human settlement.

Public Participation

Educate raise public awareness and promote understanding of the essential linkages between environment, population and development and to encourage individual and community participation in environmental efforts to improve the quality of life.

Gender

Ensure that all environmental policies take into consideration the role of gender and the potential of women.

Tourism and Culture

Ensure a viable and sustainable tourist industry that makes a significant contribution to the country's revenue and preserves, promotes its environmental and cultural heritage for the benefit of current and future generations.

Legal, Institutional and Governance Issues

Establish institutional mechanisms for co-operation, co-ordination and consultation and enact legislation to ensure compliance and enforcement on environmental issues at different levels of governance.

Capacity Building, Education and Research

Ensure the training and education of a cadre of professionals to handle and research into pressing environmental problems.

Monitoring and Information Management

Develop a system for monitoring and data infrastructure for the efficient management of the environment.

CHAPTER FOUR: NATURAL RESOURCES MANAGEMENT ISSUES

Water Resources Management - Problem Analysis

Sierra Leone has abundant water resources mainly due to rainfall (2000-4000mm per annum) and nine major river systems. The total river catchment area varies from 720 to 14,140 km². Surface water therefore appears not to be in short supply at the national level. River discharges are high and the run-off coefficient is estimated between 20% and 40% on average. Some earlier estimates suggest that Sierra Leone's global renewable water resources (surface + ground + atmospheric) could amount to about 160 km³/yr. Average run-off was computed for each basin based on some selected rainfall stations, totalling about 74 km³/yr. Of the total water potential, only about 0.37 km³/year is used, mainly in agriculture, for irrigating a total water-managed area of 155360 ha, comprising 1,000 ha of surface-irrigated sugar cane, 28,000 ha of equipped wetlands and inland valley bottoms and 126000 ha of other cultivated wetland and inland valley bottoms (MAFFS-MFMR, 2004). This level of utilisation is very low (i.e. less than 0.5 %) in relation to the available potential. There is as yet no national strategy to utilise the surplus annual rainfall for extending the growing season into the six-month dry season. Most Sierra Leoneans have limited access to safe drinking water, 49% of the population has access to improved water supply. There is general lack of reliable water data. The ineffective water resources planning and lack of integrated water management system hinders the allocation of water for beneficial use. Rural population, which does not have access to improved water sources, relies on surface water, unprotected wells and unprotected streams/springs.

Climate change impacts water supply in rural areas. Many communities in Sierra Leone, especially the rural poor, depend on streams and swamps, which dry up during severe droughts. Floods overwhelm existing systems, contaminating drinking water and creating sewerage overflows. The likelihood and intensity of extreme weather events will increase with the smallest change in temperatures.

Required Action

1. Develop comprehensive and integrated water resources management plans for efficient and sustainable use of water resources in the face of changing climate undertake the following:
 1. Increase the role of the private sector
 2. Build the capacity of water management institutions
 3. Preserve/protect ecological resources (catchment areas, forests, streams)
 4. Include the insight of important stakeholders (state and-non stake actors) by bringing together all relevant sectors
 5. Develop appropriate legal, regulatory and institutional frameworks for water management for human needs, ecosystem maintenance and conservation
 6. Ensure adequate quantity and acceptable water quality to meet domestic, industrial,

transportation, agricultural and fisheries, recreational and touristic needs.

Forest Cover-Forestry - Problem Analysis

Sierra Leone's predominant natural vegetation is the western extremity of the Upper Guinean Forest formation, which hosts rich indigenous flora and fauna, important endemic species, and internationally rare and threatened species. Approximately 70% of the country was formerly covered by forest, but less than 5% of original forest remains. Much of that forest cover has been converted to agricultural lands (at a rate of 0.6% per year), savannas and other secondary vegetation. Decreases in forest cover are the result of multiple factors or drivers including clearing for agriculture, logging (both legal and illegal), mining (both legal and illegal), construction, fuel wood harvest, and charcoal production. Along the coastal areas, mangrove forests cover approximately 286,000 hectares but these forests are also threatened by unregulated use of wood for construction and fuel wood. Forest Reserves are under the management control of the Forestry Division of the Ministry of Agriculture, Forestry and Food Security and comprises forty-eight forest reserves and conservation areas totalling 284, 591 ha, with an additional 36,360 ha proposed and already pronounced. Community forests located on community lands are leased to the Forestry Division for management total 11,800 ha. Information from the 2003 Biodiversity Strategic Action Plan identifies approximately 300,000 hectares of mainly mangrove forest within wetland and marine ecosystem protected areas.

In the revised NEAP improved management of forests, woodlands, and trees focus and their role as provider of goods for employment and livelihoods, as well as on their ecosystem services function will be advocate.

Required Actions

7. Harmonize legal and institutional framework for trans-boundary forest management and development of convergence plan for national forests
8. Adopt multi-purpose approach to the management of forests to include biodiversity conservation, sustainable timber production, sustainable energy and watershed management
9. Protect natural ecosystems and threatened biodiversity including the establishment and maintenance of representative and sustainable samples
10. Collaborate with other stakeholders in developing a national REDD⁺ strategy and promoting REDD⁺ projects as a source of sustainable financing for Protected Area Management
11. Formulate and implement awareness activities for local communities, schools, and local administration to promote knowledge and participation in programs and services, relating to socio-economic and environmental issues including fisheries, agricultural and forest management, land, soil and water conservation in Protected Areas and buffer zones.
12. Establish a detailed biodiversity-monitoring programme that would store and disseminate data on the status of biodiversity in Sierra Leone.
13. Implement Legal Empowerment around legal logging (FLEGT) - review the forestry act and ensure that logging is done in a legal manner.

Marine and Coastal Ecosystems – Problem Analysis

Sierra Leone has 456 kilometers of coastline. Fisheries contribute 10% of GDP and employ 500,000 people. Sand mining and removal of mangroves from coastal areas are the main ecological problems of the Sierra Leone coastal line. Recently, activists and local villagers have protested against sand mining

on Sierra Leone's Western Area Peninsular. The activity is providing informal work for people who would otherwise be unemployed, but is also destroying the natural beauty of the area, driving away tourists, business owners and residents, and contributing to Sierra Leone's coastal erosion, which is proceeding at up to 6 meters a year. Sand mining is a practice that is used to extract sand, mainly through an open pit. However, sand is also mined from beaches inland dunes and dredged from ocean beds and riverbeds. It is used in manufacturing of blocks and to make concrete. As communities grow, construction requires less wood and more concrete, leading to a demand for low-cost sand. Sand is also used to replace eroded coastline.

Another reason for sand mining in Sierra Leone is for the extraction of minerals such as rutile, ilmenite and zircon, which contain the industrially useful elements titanium and zirconium. These minerals typically occur combined with ordinary sand, which is dug up, the valuable minerals being separated in water by virtue of their different densities, and the remaining ordinary sand re-deposited.

Sand mining is a direct cause of erosion, and also impacts the local wildlife. For example, sea turtles depend on sandy beaches for their nesting, and sand mining has led to the destruction of coastal properties. Disturbance of underwater and coastal sand causes turbidity in the water, which is harmful for such organisms as juvenile organisms that need sunlight. It also destroys fisheries, causing problems for people who rely on fishing for their livelihoods. Removal of physical coastal barriers such as dunes leads to flooding of beachside communities, and the destruction of picturesque beaches causes tourism to dissipate. Sand mining is regulated by law in many places, but is still often done illegally.

High population pressure in coastal areas has led to the conversion of many mangrove areas to other uses. However, information on status and trends at the national level is scarce. The rich mangrove forests of Sierra Leone have been heavily exploited due to rapid population increase and high pressure on the ecosystem for the local livelihood. Some mangrove lands have also been cleared to provide new areas for rice production, while several trees have been cut to provide cheap fuel for fish smoking, a major way of preserving food and for salt production.

Required Actions

1. Implement integrated coastal zone management projects using the LDCF
2. Regulate sand mining
3. Raise awareness on sand mining and introduce livelihood programmes for sand mining communities
4. Promote energy efficient fish smoking and drying stoves and alternative technology
5. Introduce livelihood programmes for mangrove dwelling communities and users
6. Promote REDD⁺ to support livelihood activities
7. Raise education and awareness about the functions of mangroves in mangrove areas

Biodiversity Loss - Problem Analysis

The natural landscape of Sierra Leone comprises diverse ecosystems including lowland rainforest, mountain forest, freshwater swamps, mangrove/coastal and marine ecosystems. The level of species richness and endemism within these ecosystem types is incomplete for all ecosystem types in the country, but available data points to the lowland rainforest ecosystem as being biologically diverse in terms of species richness and endemism than all other ecosystems. Sierra Leone has a very rich

biodiversity but over the years, overexploitation of the nation's terrestrial and marine biodiversity has intensified. There are a total of 48 forest reserves and conservation areas in Sierra Leone, representing about 4% of the land area (180,250 ha). Most of them are inadequately protected and managed.

The major threats to biodiversity include the indiscriminate farming practices, wanton exploitation of forest resources, over-fishing, domestic energy production, mining and logging. Also as a result, the utilization of biodiversity has important implications for both food security and poverty reduction in Sierra Leone. The loss of biodiversity is one of the major problems facing the country.

Required Action

The Sierra Leone government has to demonstrate a stronger commitment to fulfilling the pledge for biodiversity conservation and sustainable use in ways that are compatible with national development goals, and to finding a diverse range of funding sources for biodiversity management. NEAP recommends:

1. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
2. Reduce the direct pressures on biodiversity and promote sustainable use
3. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
4. Enhance the benefits to all from biodiversity and ecosystem services
5. Enhance implementation through participatory planning, knowledge management and capacity building
6. Undertake a transformation in the way that biodiversity finance is planned and managed, in order to unlock resources to meet the Aichi Targets defined in the Convention on Biodiversity's (CDB) Strategic Plan (2011-20) in a manner that promotes sustainable development and the eradication of poverty.
7. Continued adoption of Biodiversity Strategy and Action Plan (NBSAP) of the United Nations Convention on Biodiversity (UNCBD) ensuring that actions to achieve the Aichi Targets through above goals are taken
8. Development of national biodiversity and conservation policies in line with international best practice
9. Preparation of national strategic action plans for the conservation of key biodiversity species
10. Undertake national capacity building initiatives for biodiversity conservation
11. Supervise the management of wildlife outside Protected Areas

Bioenergy (Bioethanol and Biodiesel) – Problem Analysis

The production of Bioenergy and its use is a controversial and current topic. Bioenergy development is an important issue on the agenda of Sierra Leone today in order to improve effort to energy access, energy security and in the context of concerted global efforts towards lowering greenhouse gas

emission.

However, the production of bioenergy is receiving strong criticism having already divided public opinion. While environmental institutions are concerned and cautious about the widespread use of biofuels mainly because of widespread deforestation, biodiversity loss and potential for land and water pollution, conflict with food security, water use and management, the private sector is working to highlight their potential benefits. Caught in the middle are the policy makers whose focus is minimizing the negative impacts and supporting the sustainable production of biofuels. The discussion is ongoing.

Required Action

1. Develop a policy which will strive towards the production of Bioenergy in a sustainable way,
2. Minimizing possible negative environmental impacts whilst acquiring food security.
3. Implement the 2013 Guidelines for Sustainable Agricultural and Bioenergy investment (GoSL and FAO, 2013)
4. Implement Biodiversity Offsetting by proponents through the Environmental Impact Assessment Process

Resource efficient infrastructure –Problem Analysis

The basic physical and organizational structures and facilities such buildings, roads, power and water supplies needed for the operation of a society or enterprise are in short supply and are not climate smart and therefore not sustainable. Governance, regulatory, legislation and institutional mechanisms in these areas have been historically weak in the country. For roads drainages are blocked with solid wastes and sediments causing flooding and damages to infrastructure. For housing development a lot of sand mining, stone mining and logging occur which is drivers of deforestation, beach erosion/coastal erosion and land degradation. In the area of water supply, there is a lot of water wastage, which leads to the spread of water borne diseases such as malaria and typhoid fever. Water wasted in Freetown because of ageing water infrastructure and use of shallow buried PVC pipes is estimated at 45% of the total water supplied. In the area of electricity supply overhead electrical cables have often fallen causing urban fires and human deaths as well as disruption of supplies. Because of the inadequate electricity supply urban inhabitants have often turned to polluting generators.

Required Action

1. Promote the private sector in the development of infrastructure
2. Strengthen institutional capacities of relevant providers, municipal councils and introduce use of contracts in the work force
3. Strengthen governance, regulatory, legislation and institutional mechanisms
4. Introduce taxes to pay for the development of urban infrastructure
5. Increase institutional coordination and collaboration

Facing the Challenges of Climate Change – Problem Analysis

In 2007 the Intergovernmental Panel on Climate Change concluded that man-made emissions of greenhouse gases (from activities such as burning fossil fuels for energy, transport and heating) are

driving climate change and the negative impacts are felt throughout the world. Sierra Leone being a Least Developed Country is predicted as one of the countries to suffer the most if climate change impacts are left unchecked. Sierra Leone could face severe fluctuations in temperatures and rainfall, together with more extreme and unpredictable monsoon weather events and rising sea levels. All of this could have a significant impact not only on Sierra Leone's environment but also on our economic development and quality of life.

Required Action

1. For the future sustainability of the Sierra Leone society, it is vital that all stakeholders are coordinated to adopt measures to mitigate and adapt to the challenges of climate change.
2. Build the Capacity of the Climate Change Secretariat as the institution to coordinate all stakeholders in climate change issues
3. Implement the Climate Change Policy of Sierra Leone to coordinate implementation of 'low carbon development strategy' with the participation of various industry stakeholders, in particular energy, agriculture, mining, transport and manufacturing industry.
1. Undertake inventory of natural resources
2. Land and water is a core pillar in the Agriculture Action Plan which includes investing in land administration and property rights, irrigation, sustainable land management and climate-smart agriculture
1. Develop regulatory regime accompanied by standards and guidelines
1. Support the development of collaborative partnerships with rural communities and other stakeholders for sustainable management of natural resources.
2. Institute bush fire prevention and management measures (revise Bush fire Prevention Act 1920)
3. Develop management plans for protected areas including critical and sensitive ecosystems
4. Conduct inventories and assessment of key natural resources
5. Develop watershed protection management plans
6. Develop climate proof strategies and plan for vulnerable and critical resources
7. Comprehensive national land use planning and mapping system based on agro-ecological, economic and social requirements
8. Introduce incentive systems in the management of forest resources and fix realistic silvi-cultural and royalty fees.
9. Establish a National Early Warning System to ensure adaptation to climate change
10. Initiate action for carbon trading
11. Mainstream climate change issues into policies and programmes of priority vulnerable and
12. Develop adaptation strategy for tourism, coastal zone, agriculture and fisheries and water

resources

13. Conduct a study on the cost of environmental degradation to the economy of Sierra Leone
14. For the future sustainability of the Sierra Leone, it is vital that all stakeholders are coordinated to adopt measures to mitigate and adapt to the challenges of climate change.
15. Build the capacity of the Climate Change Secretariat and all climate related stakeholders to address climate change issues
16. Implement the Climate Change Policy of Sierra Leone to coordinate implementation of ‘low carbon development strategy’ with the participation of various industry stakeholders, in particular energy, agriculture, mining, transport and manufacturing industry.

Energy Security - Problem Analysis

The environmental impact of unsustainable energy production in Sierra Leone is diverse. Unsustainable firewood harvesting is leading to loss of biodiversity and loss of forest cover. According to FAO reports Sierra Leone has lost more than 65% of its forest cover (FAO 2011)(most of it to wood and charcoal) and is losing forest twice as fast as the rest of the world. Loss of forest cover is affecting the resilience of human settlements, water resources, and food security and is increasing the burden of diseases on the population. On the other hand energy development such as the construct of mini and full-scale hydro dam also has serious environmental impacts even though they are part of the clean global development pathways.

Required Action

1. Embark on the provision of hydroelectricity, solar energy, and bioenergy that will meet the needs of the present without compromising the ability of future generations to meet their needs.
2. Enforce environmental impact assessment and enforce implementation of environmental management plans
3. Promote technologies that improve energy efficiency (efficient cook stoves, low energy equipment).
4. Remove tariffs on renewable energy and energy efficient equipment
5. Enforce quality standards on renewable energy equipment
6. Establish woodlots for commercial charcoal and wood production and give concession to domestic commercial woodlot growers
7. Ensure institutional coordination/collaboration

Petroleum - Problem Analysis

Sierra Leone is very close to becoming an oil producing country. However, there is a major concern about oil production – oil spills, Dutch disease and impacts on environmentally sensitive ecosystems. Where oil spills occur crude oil is discharged on the surface of land, water and trees. Crude oil is a mixture of many different kinds of organic compounds, many of which are highly toxic and cancer

causing (carcinogenic). Oil is "acutely lethal" to fish, that is it kills fish quickly, at very low concentrations.

Required Action

1. Implement comprehensive oil spills prevention plans and policies
2. Regulate the oil and gas industry(too general)
3. Undertake extensive institutional capacity building
4. Prepare for oil spills response
5. Coordinate the relevant institutions

Tourism and Culture– Problem Analysis

Tourism in Sierra Leone is an important growing national service industry. According to the International Labour Organization, approximately 8,000 Sierra Leoneans are employed in the tourism industry. With this outlook a growing number of jobs are expected to be created in the future. The quality of the environment, both natural and man-made, is essential to tourism. However, tourism's relationship with the environment is complex. It involves many activities that can have adverse environmental effects. Many of these impacts are linked with the construction of general infrastructure such as roads and airports, and of tourism facilities, including resorts, hotels, restaurants, shops, golf courses and marinas. The negative impacts of tourism development can gradually destroy the environmental resources on which it depends. On the other hand, tourism has the potential to create beneficial effects on the environment by contributing to environmental protection and conservation. It is a way to raise awareness of environmental values and it can serve as a tool to finance protection of natural areas and increase their economic importance.

Negative impacts from tourism occur when the level of visitor use is greater than the environment's ability to cope with this use within the acceptable limits of change. It can put enormous pressure on an area and lead to impacts such as soil erosion, increased pollution, discharges into the sea, natural habitat loss, increased pressure on endangered species and heightened vulnerability to forest fires. It often puts a strain on water resources, and it can force local populations to compete for the use of critical resources

Tourism development can put pressure on natural resources when it increases consumption in areas where resources are already scarce. Water, and especially fresh water, is one of the most critical natural resources. The tourism industry generally overuses water resources for hotels, swimming pools, golf courses and personal use of water by tourists. This can result in water shortages and degradation of water supplies, as well as generating a greater volume of wastewater. Tourism can cause the same forms of pollution as any other industry: air emissions, noise, solid waste and littering, releases of sewage, oil and chemicals, even architectural/visual pollution.

Required Action

1. To ensure a viable and sustainable tourism that preserves, promotes its environmental and cultural heritage for the benefit of current and future generations.
2. The environment must become a very strong marketing tool for the tourism

sector.

3. Therefore, the design of all new buildings should be carefully considered and mandatory environmental/industrial guidelines or code reflected in their construction.
4. Reduce consumption of water and energy, waste and pollution, low energy technologies appropriate to the location, recycling and careful selection of transportation used in the placement of the product. The authorities should implement these.
5. Establish institutional mechanisms for co-operation, co-ordination and consultation and enact legislation to ensure compliance and enforcement on environmental issues at different levels of governance.

Land Management – Problem Analysis

The country covers a total land area of 72 325 km². Nearly 75% of the total land area is arable. Approximately 56% of the land is below 150 m. above sea level. Upland and lowland ecologies make up 78% and 22% respectively of the arable land area. The uplands are composed of forest, savannah woodlands and grasslands while the lowlands comprise 690,000 hectares (ha.) of inland valley swamps, 145,000 ha. of ‘boli-lands’ (or large, saucer-shaped basins), 130 000 ha. of riverine grasslands; and 200, 000 ha. of mangrove swamps.

Poverty is the underlying cause of land degradation. Majority of the population rely on access to and use of land for their livelihood mostly through the conversion of forest for agriculture. Forests are also converted to grazing lands through tree clearing and burning. Fire causes damage to vegetation, wildlife and their habitats. Priority degraded areas include Koinadugu and Kabala Districts

Land Ownership and Tenure

Land is central to political and socio-economic development. The country has different land tenure systems, for example in the Western Area; most of the land is freehold through title deeds. However in the provinces, land tenure is based the 1925 Provincial Land Act which dictates provincial land administration on customary law with multiple rights and claimants. Paramount Chiefs have jurisdiction over land (as custodians) in their chiefdoms but recognize and acknowledge community and individual claims within the chiefdom. The current land tenure system is fraught with problems of inequitable access, insecure rights and titles resulting encroachment on public and community lands (land grabbing). Tenure security is therefore the single most powerful incentive to prudent management of land resources. Insecurity of land results in misuse and abuse of land. This calls for an effective, transparent and fair tenure system. A proposal is under consideration to establish a Lands Commission to manage State lands and reduce mismanagement.

Some of the most common problems relating to land highlighted by the inter-sectoral committee are as follows:

1. Lack of clear and consistent policy for sustainable land use
2. Inadequate coordination and conflicting institutional mandates have resulted in conflicting land uses
3. Failure to address the legitimate goals of land users and to involve them in the planning process
4. Failure to address all issues relevant to the problem
5. Failure to integrate all the necessary disciplines and activities

6. Undue emphasis on technical solutions
7. Institutional problems including centralization of processes
8. Inadequate or ineffective regulation of land use
9. Lack of well targeted incentives, or inappropriate incentives
10. Lack of funds (good planning is expensive)
11. Lack of access to information, tools or training to make informed decisions

Required Actions

In order for Sierra Leone to meet the targets specified by Agenda 21 it needs to take the following actions:

General Actions

1. Development of policies which will result in the best use and sustainable management of land
2. Improvement and strengthening of planning, management, monitoring and evaluation systems
3. Strengthening of institutions and coordinating mechanisms
4. Creation of mechanisms to facilitate the active involvement and participation of communities and people at local level

Land Use Planning

1. National and regional land use planning system
2. Rural and agricultural land use planning
3. Urban and peri-urban land use planning
4. Planning for informal sector and informal settlement activities

Environmental Management

1. Environmental Management
2. Restoration and conservation of land quality
3. Urban environmental management principles
4. Environmental assessment and audit as land management tools
5. Sustainable Land Management

Preservation of National Heritage – (Added by participants during validation)

Problem Analysis

Anything that has survived from the past forms part of the collective heritage of our society, from history, buildings, archaeological sites or the none spoilt natural environment to stories and music that have been handed down through oral tradition. It is our heritage that makes us different from other peoples in the world and gives us a sense of identity and belonging. Sierra Leone's rich and diverse forms of heritage have made its people unique in the world. However, the country is not conserving this heritage and is losing a lot of places of historical and ecological importance very fast. Buildings of historical importance are left to dilapidate (e.g. Fourah Bay College, the slave facilities in Freetown, Bonthe and other places) and some (e.g. amongst the oldest police stations in West Africa in the peninsular) are destroyed during development activities. The nation must protect and conserve heritage

resources because:

- They are naturally or culturally significant
- They help build and strengthen personal and community identity
- We want to pass them on to future generations
- There are social, spiritual and ethical obligations to respect the place or the object.

Actions Required

1. Sierra Leone must identify and protect what it considers 'important' parts of the country by making them National Heritage Sites. Once proclaimed, these sites must be considered sacred and must be protected from the threats of social and economic development and natural decay. National Heritage Sites must be chosen for their natural or cultural significance.
2. Make laws and regulations for the protection of national heritage
3. Setup a special commission for the protection national heritage
4. Restrict works that affect listed buildings and sites of historical heritage

Solid Waste Management in Sierra Leone – added by participants

Problem Analysis

Waste Management

Infrastructure for waste management is poor resulting in insanitary conditions in all settlements including Freetown, the capital. The existing legislative framework is outdated and institutional responsibility is unclear. Freetown has two main dumpsites at King Tom and Granville Brooks, which are properly managed. A solid waste management study in 1994 (GOPA 1994) identified two sites at Hamilton and Lower Allen Town. Open defecation is common, for example in Freetown 7 % of the population practice but in slums, 29 %. The 2004 Population and Housing Census indicate that only 13% of the Freetown population has toilets in their homes while 75% use pit latrines. This exposes the population to risks of infectious diseases.

The existing sewerage network was built in 1960 and extended in 2001 to four kilometers. It covers only the central business district (Wilbur Smith et al 1996). Three independent units were reported to be in good condition as far as 1996. The waste is untreated as raw sewage is discharged directly into the sea through outfalls at King Jimmy and Government Wharf. Maintenance is a problem.

The solid waste management system in Sierra Leone displays an array of problems, categorized into technical, financial, institutional, economic, and social constraints. Each of these constraints has relationship with the sustainability of solid waste management system.

Required Actions

1. Package external support which is often given in short term basis
2. Coordinate and define clear roles of relevant agencies
3. Develop human resources in waste management
4. Support strategic planning and follow up planning
5. Develop self financing

6. Raise awareness of public and decision makers

Agriculture - Traditional Farming - Problem Analysis

The urgency to restore soil fertility in most parts of Sierra Leone stems from the fact that most of the farmland has been so depleted of the basic nutrients that crops need to survive, leading to reduced crop yields. The soils are also low in organic matter and have poor water holding capacity. Until these conditions are reversed, food production in Sierra Leone will remain depressed. Unsustainable land practices are contributing to massive erosion and deforestation. Much of Sierra Leone's soils are ancient, derived from granite weathered over millennia. But soil conditions have worsened in recent decades. Driven to meet the food demands of a growing population, subsistent farmers have steadily abandoned traditional practices that restore soil nutrients. Today, there are vast areas of degraded land in Sierra Leone, leading to greatly reduced farmland productivity. In the past, traditional farming practices maintained soil fertility by allowing fields to lie fallow for a few years. But population growth and pressure on land have led to a sharp decline in fallowing. Today, fallowing is practiced on less than 25 per cent of land in the 12 districts and is expected to disappear entirely in the near future. On the other hand, few small-scale farmers in Sierra Leone are able to use fertilizers to restore soil health — because they either cannot get or afford it. Reduced fallow period is resulting in encroachment on protected lands. There is scanty use of inland valley swamps because they do not support multiple crops and wood or production, which are often the main motivation for upland farming.

Traditional Farming

Severe land degradation, caused by the unsustainable use of forest resources, slash-and-burn farming methods and wildfires that destroy crops has resulted in the loss of productive agricultural areas, low productivity of agricultural land, diminishing food security, the deterioration of water and natural resources, reduced output from forest resources and increased vulnerability to disasters in Sierra Leone. This has negatively impacted on the livelihoods of communities and has also had serious implications for health and nutrition status. In the drier regions of Sierra Leone, dry season bush fires have long been an integral part of the grazing, farming systems and ecology of the savannas. However, the intensity and frequency of fires today is a cause for concern. Due to the extensive distances covered by these fires and the time lapse in detection they are sometimes very difficult to bring under control. Local rules developed by rural communities to control the use of fire in the past have becoming less effective as the power of the traditional rulers is being eroded. Shifting cultivation is the agricultural technique employed by the majority of farmers in Sierra Leone. The dominant narrative recited by policy experts, non-governmental organizations and many scientists is that this practice is a principal cause of deforestation in Sierra Leone. The traditional system of shifting cultivation in the humid zone was successful as long as there was sufficient land for farmers to leave the soil to rest under naturally regenerating forest for periods in excess of a decade. . . . As demographic pressure has increased and more and more people have been forced to seek land in the forested areas, traditional systems have been replaced by crude slash-and-burn, in which the cultivation period is prolonged and the forest regeneration is endangered and is inadequate to maintain fertility.

Rangelands (overgrazing)

In adapting to a harsh and variable physical environment, the Sierra Leone pastoralist has developed principles and strategies for managing natural resources. Recently the pastoralist has had to face new external pressures, such as crop expansion into high quality rangelands, leasing of large concessions of their pasture, population increase, forceful sedentarisation, and indiscriminate water development. These problems have been compounded by a relentless series of droughts. These external pressures have contributed to pasture shortages, land degradation, and socio-economic disintegration. Although many pastoralists are changing their ways (for example diversifying into crop cultivation, sending relatives off for urban wages, or engaging in commerce and trade) many continue to manage their livestock in the old way. But in many areas their traditional system of management is no longer able to cope with the shortage of pasture and instead is adding to the problem of land degradation. In addition, traditional management knowledge is gradually being lost as more of the younger generation of pastoralists are attracted to urban areas. Yet the traditional system had developed an intimate knowledge of the environment and many successful techniques that could still be of use today

Pastoralists maintain a diverse portfolio of livestock designed to meet their needs and to fit the environment. Each type of animal fills a specific objective of the pastoral family. Large animals (cattle) are raised not so much for their meat as for their milk, but they are also the 'bank account' and 'security deposit' of the pastoralist. Sierra Leone sheep and goats are not kept primarily for their milk but for their meat and for traditional rites. Other animal products are certainly valued (such as manure and hides) but do not seem to factor in pastoral decisions on the composition of their herds.

Bushfires

Wild bush fires are thought to be one of the major forces of Savannah degradation in Africa in general, and in Sierra Leone in particular. In Sierra Leone it was observed in the last decade that there is

1. An increase in wild bush fire
2. a change in the season of fires where wildfires occur more during mid to late dry season; and
3. There is a sharp decrease in woody species, mainly tree cover and often the canopy cover is only 10-15%.

All these phenomena were never quantified or scientifically monitored as well as statistically analysed. Moreover, the lack of concrete observations that produce data and information hinders developing a proper fire and savannah management programs for Sierra Leone.

Currently, very few management actions are implemented for fire prevention. Most of the activities are related to response after fire eruption. The Forest department uses fire belts to prevent fire spread into plantations and conduct prescribed fires along roads to reduce vegetation fuel load. These fire belts are ineffective

Agro-chemical Residues

There is no data on agro-chemicals pollution in Sierra Leone. However several incidents reported to the Environment Protection as latter as 2013 indicate that:

Traditional farmers do not generally use insecticides and fertilizers to control insect pests and stimulate crop growth respectively. However, increased mechanization of farming system as a government policy is threatening the quality soils, streams, rivers and estuaries. In bioenergy enterprises intensive method of production depends on the application of high doses of chemical fertilizer and pesticides which

infiltrate through the soil layers to the groundwater system and flow with streams and rivers to pollute water sources and estuaries. Commercial farming has led to the exposure of large surface areas of land and water sources. Pesticides and their residues are washed into the streams resulting in pollution of drinking waters. Intensive use of fertilizer (NPK) in oil palm growing regions has led to the nitrification of water resources in many parts of the country especially Potassium and Phosphorus build-up in the soil. Currently watermelon seeds and derived products from Sierra Leone are subject to reinforced border checks in EU territories because of concerns over their food safety due to indiscriminate use of fertilizers and insecticides by growers in Sierra Leone.

Required Actions

1. Develop a National Sustainable Development Strategy (NSDS) in Agriculture
2. Formulating desirable strategies for sustainable agricultural development
3. Revise the Bush Fire Act (1920)
4. Develop sustainable regulations for sustainable arable and cash crops production as well as animal husbandry
5. Community involvement in planning

Mineral Resources and Mining – Problem Analysis

Diamond, gold, Rutile, bauxite and iron ore have been mined on the commercial level for more than 40 years in at least 7 of the 12 districts in the country. Mining activities undertaken by large mining companies to exploit the country's minerals are a major cause of deforestation and land degradation through loss of forest cover of large areas, soil erosion, siltation and contamination of river systems and tidal creeks and displacements of villages. Heavy siltation of riverbeds and tidal creeks reduce coastal coral and fish populations that feed and breed in it. Small scale or artisanal mining of diamonds and gold in the east and northern parts of the country is also a major cause of loss of forest cover of large areas and land degradation. In both large and small scale mining the topsoil is generally lost. The extent to which the land and forest cover has been damaged and what is required to rehabilitate and restore mined out areas to support agriculture or forest cover is still unknown.

Required Action

There is urgent need to undertake an assessment for the development of a comprehensive rehabilitation programme for mined out areas, and in particular the small scale mining areas.

1. There is urgent need to undertake an assessment for the development of a comprehensive rehabilitation programme for mined out areas, and in particular the small scale mining areas.
1. Establish natural resource revenue fund to ensure prudent use of mineral resources
2. Regulate large scale and artisanal mining (ensuring new mined outlands are not established)
3. Assess and establish the amount of land degraded by mining
4. There is also a requirement for environmental impact assessment and mine rehabilitation plan - rehabilitate 50% of mined out lands

Fisheries - Problem Analysis

The industrial sector is made of local shrimpers and trawlers, which provide shrimp, cuttlefish, tuna, spiny lobster, and some finfish for the local market. Foreign trawlers (shrimp and demersal), shrimpers, long liners, purse seine, and carrier vessels exploit pelagic and demersal stocks.

The main issues are:

1. Illegal and unregulated fishing as well as limited facilities for value addition
2. Pollution from land-based sources
3. Depletion of fish stock due to overfishing and harvesting fry and juvenile
4. Fishing with explosives and chemicals

The sector is mainly artisanal which produces 120,000 tons, which is 70% of local fish consumption. There are about 7,000 canoes fishing in the inshore exclusive zone. This sector employs some 20,000 to 30,000 fishermen. Both enhancing value-added chains and aquaculture need more focus. The underlying resource and coastal zones need to be sustainably managed to maintain resource resilience. Common themes for coastal and marine fisheries include simple, consistent regulatory frameworks, assigning access rights to fisheries, basic management tools including co-management by fishermen's associations, closed seasons, agreement on fishing gear, protected areas for juveniles, surveillance and transparency initiatives, stock assessment, improved landing facilities, and fish product information systems. The West Africa Regional Fisheries Program supports national efforts within a common regional framework. Government's program, supported by the Bank with a US\$50 million IDA credit, is to improve fisheries management, protect the environment, promote value-added and encourage sustainable aquaculture.

The opportunities for fisheries development, represented especially by the valuable and probably underexploited fish resources, are constrained by weaknesses in the policy and fisheries management framework which unless addressed in the near future, will inevitably lead to over exploitation and continued theft of the fisheries wealth through illegal, unregulated and unreported (IUU) fishing.

Required Actions

1. Institute monitoring, control and surveillance system to ensure sustainable exploitation of fisheries and prevent illegal fishing
2. Build institutional capacity in fisheries.
3. The Competent Authority, which certifies safety and quality of exported marine products, must be brought up to standard while the Monitoring, Control and Surveillance (MCS) systems are put in place. The GoSL recently established the Joint Marine Committee to undertake improvements in MCS.
4. Development of Integrated Coastal Zone Management Plan
5. Establish a Coastal Zone Management Board to coordinate developments in the coastal zone.
6. Improvement of small-scale fishing
7. Development of Integrated Coastal Zone Management Plan

8. Establish a Coastal Zone Management Board to coordinate developments in the coastal zone.
9. Improvement of the policy and regulatory framework and sector planning for both fisheries and aquaculture, fisheries information, and monitoring systems;
10. Introduction of fishing rights systems among fisheries' communities, licensing systems, adjustment of fishing effort, vessel decommissioning and alternative livelihoods, and marine resources management, along with monitoring, control and surveillance systems;
11. Support to value chain development, landing site improvement, trade infrastructure and information systems, fish product certification, and support to marine and inland aquaculture including development of a regulatory framework for fish farm spacing, and improving policies for genetic material.

Capacity Building, Education and Research

Sierra Leone is characterized by low literacy rate, Sierra Leone scores low on both the Human and Economic Development Indices despite its rich natural resources. Formal education plays a critical role in the economy of a country. Recently initiatives identified in Sierra Leone that integrates environment education (EE) at the primary and secondary education levels include a study, which indicates that EE has not been adequately addressed in lower education systems. A joint assessment by EPA and EFA identified many gaps in current structure.

Required Action for schools

1. EE policy, design, and delivery be integrated in children's' educational systems and this to be achieved through partnerships among government, parents, industry, teachers institutions, and society.
2. A better understanding of environmental issues must be promoted through appropriate curriculum modifications and networking.
3. Government streamlines its institutional frameworks to coordinate national efforts.
4. A better understanding of environment and sustainable development issues be promoted discussed in trade- relevant curriculum.
5. A standardized core curriculum may also be adopted to ensure appreciation of all aspects of environment in a cross-sectoral and holistic mode. Further, there is a need to ensure continuous review of curricula to keep them relevant to societal needs.
6. An EE information network for secondary schools is set up. Education bases and training centers for EE should be established with national and international linkages.
7. Teaching plans and curricula include issues like environmental conservation, entrepreneurship, and development of environment- friendly attitudes.
8. Ensure the training and education of a cadre of professionals to handle and research into pressing environmental problems.

Required Actions for the workforce

1. Relate EE issues to the work environment with emphasis on developing problem- solving skills. This can be best achieved by incorporating case studies in the curriculum.
2. Promote the use of non-formal EE and school-based projects to institutions.
3. Promote industry- institutional partnerships. Make employers aware of the benefits of hiring

environmentally skilled manpower. Ask industry to invest in EE training.

4. Establish environmental desks in institutions

Required Actions for National Capacity Building

1. Capacity assessment should be undertaken as a first step to identify the constraints and opportunities that apply to EIA training strategy.
2. Undertake sector specific EIA Training

Public Participation - Problem Analysis

Public participation in environmental management has been very low in Sierra Leone. The situation has improved with the establishment of the EPA in 2008. To adjust to today's environment of quick social and ecological changes, Sierra Leone has to begin to implement various new tools and concepts to encourage public participation. Environmental management has been very traditional, sticking to hierarchical or top bottom approaches by implementing ministries. The outcomes of such decision-making have experienced difficulties in dealing with the demand for lateral decision-making support for effective participation. Public participation includes the participation of the national public sectors, the private sectors, civil society and the public, which comprise of the general population including rural communities. In Sierra Leone environmental resource management the public sector is responsible for administering natural resource management and implementing the Environmental Protection related Acts or legislations. The traditional role of the public sector is to provide professional judgment through skilled technicians on behalf of the public. However, because of lack of institutional capacities the public sectors have been weak in delivering their mandates. On the other hand the private sector's traditional role in environmental resource management is that of the recovery of natural resources. Such private sector recovery groups include mining, forestry, agriculture and fishery organizations. Environmental resource management undertaken by the private sectors depends on the enforcement provided by the public sector, which is weak because of lack of the required capacity. The private sector also needs skills to manage collaboration within a dynamic social and political environment.

Required Action

1. Educate raise public awareness and promote understanding of the essential linkages between environment, population and development and to encourage individual and community participation in environmental efforts to improve the quality of life.
2. Implement participatory planning and implementation of environmental resource management
3. Effective management tools, standards and systems are required for public compliance.
4. Build the institutional capacities environment related public sectors to be able to deliver their mandates.

Gender Problem Analysis

Recent changes in environmental policy have not produced real benefits for women. Many projects - in water and sanitation and social forestry, for example - fail to promote women's interests. The same is true of responses to environmental disasters such as the sporadic floods, which resulted to a nationwide cholera outbreak; women's needs were neglected leading to higher mortality among women than men. Women play an essential role in the management of natural resources, including soil, water, forests and

energy...and often have a profound traditional and contemporary knowledge of the natural world around them (World Bank 1991). The exclusion of women from environmental projects - through outright neglect or belief in the gender neutrality of projects - has thus been a recipe for project failure.

Required Actions

1. Increase women's participation in decision making on environmental matters
2. Increase women's participation in environmental programmes and projects
3. Make a national gender policy that ensures the participation of women in all environmental matters

Monitoring and Information Management - Problem Analysis

Sierra Leone lacks a sustainable modern information management infrastructure (IMI) that enables its natural resources monitoring program objectives. Activities are not guided by the "truth-on-the-ground" and development projects often rely on out dated environmental data. An integrated and properly functioning environmental information system (EIS) is a prerequisite for sound decision making and planning through the provision of timely, reliable and relevant information. Access to environmental information is essential for effective public participation in decision making and monitoring of activities that impact on the environment. However there is a serious deficit of information on utilization of Sierra Leone's natural resources. The conduct of inventories and assessment of natural resources are limited or unavailable. Environmental related institutions lack training and tools to undertake such activities.

Required Actions

1. Develop a system for monitoring and data infrastructure for the efficient management of the environment.
2. Develop an Information Management Plan (IMAP), which must describe how the Environmental Monitoring and Assessment Program (EMAP) manage data and information to support national research and development policy objectives.
3. Collect environmental information prior to commencement of all development projects (private or public)
4. Establish a national GIS system with capability to collect data for all users and development objectives
5. Prepare state of the environment as national baseline data

Population Pressure on Natural Resources – Problem Analysis

The population of Sierra Leone was estimated to be about 6 million in 2012 occupying an area of 71,740 square kilometers. This means a population density of 83 persons per square kilometer. 75% of the total land area is arable and approximately 56% is below 150 meters above sea level.

Every additional person need food, water, shelter and energy, and produces more waste and pollution, so increases up our total impact on the environment, and reduces everyone else's share. Sierra Leone population growth has been largely funded by rapidly depleting natural capital (minerals, groundwater,

soil fertility, forests, fisheries and biodiversity) rather than sustainable natural income.

Required Actions

1. Control population growth
2. Conservation of natural resources (PAs, MPAs etc.)

CHAPTER FIVE: PROMOTING TRADE AND INDUSTRY – REQUIRED ACTIONS

The Ministry of Trade and Industry (MTI) must make new policies to advance a sustainable environment, a stronger response to the challenge of climate change and more sustainable natural resources and energy supplies. The Environment Protection Agency and the Ministry of Trade and Industry must work to make trade a part of the tool kit of solutions for addressing a number of international environmental challenges.

Marine Fisheries

The Ministry of Trade and Industry must participate in Sierra Leone policymaking regarding trade-related aspects of the compliance regimes of Regional Fisheries Management Organizations, MTI must also participate in the negotiation of a new agreement in the [United Nations \(UN\) Food and Agriculture Organization \(FAO\)](#) on Measures to address Illegal, Unreported and Unregulated (IUU) fishing.

Forests

Sierra Leone has not promoted sustainable forest management and is drawing international attention to the economic and environmental consequences of illegal logging and associated trade.

MTI must lead Sierra Leone efforts to address this issue through trade-related agreements: a bilateral agreement with China, the EU and other countries with trade links with Sierra Leone, negotiated under such instruments as Trade and Investment Framework Agreement; a bilateral agreement with China, must be negotiated under a Strategic Economic Dialogue; and an Annex on Forest Sector Governance of a Sierra Leone-China and a Sierra Leone-EU Trade Promotion Agreement.

Elements in these efforts must include consultation, especially among relevant ministries, transparency including improved information about markets and trade, capacity building, partnerships between governments and the private sector, including both commercial interests and NGOs, and enforcing obligations.

Illegal Logging Memorandum of Understanding with China and the EU

Sierra Leone and her big trade partners must initiate a [Memorandum of Understanding \(MOU\)](#) on combating illegal logging in the context of a Trade and Investment Framework Agreement. The MOU must establish a working group under the MTI and Sierra Leone Timbers Association (SLTA) to share information on timber trade, including information on illegally produced timber products, and cooperation in law enforcement activities.

EU, China and Sierra Leone must commit funds to support projects, such as training for customs and law enforcement officials, technical assistance for Sierra Leone's to develop a legality standard and to

enhance partnerships with non-governmental organizations (NGOs) and the private sector. The agreement must be designed to promote forest conservation by combating illegal logging and associated trade, and to help ensure that Sierra Leone's legally produced timber and wood products continue to have access to markets in the EU and elsewhere.

Trade Regulations

The MTI must make wildlife protection and anti-trafficking statutes. As required it must make it unlawful to import, export, transport, sell, receive, acquire, or purchase in inter Districts or foreign commerce any plant, with some limited exceptions, taken or traded in violation of the laws or provisions of CITES and those local statutes that need to be created, or a foreign country.

Sierra Leone must make it unlawful to import, export, transport, sell, receive, acquire, or purchase locally or foreign commerce any plant, with some limited exceptions, taken or traded in violation of the laws of Sierra Leone.

Invasive Species

Invasive species are plants, animals or pathogens that are non-native and that cause harm to the economy, environment or human health. Because the international movement of people and goods can facilitate the transport of invasive species to new regions, the Sierra Leone must recognise the need to cooperate and coordinate to address this problem. MTI must work with other departments and agencies to enhance Sierra Leone's efforts to address threats posed by invasive species.

Illegal exportation of earth materials with unknown mineralogy

Despite the national ban slammed on the illicit mining of Coltan, Blackstone and Zircon by the Government of Sierra Leone (GoSL), illegal mining of these minerals and others unknown minerals to the Ministry of Mines and Mineral Resources continue to be undertaken by foreign nationals in collaboration with local land owners who export their proceeds to China. MTI must make exportation of illegally mined minerals and earth materials with undefined mineralogy unlawful. (Sierra Leone must make it unlawful to import, export, transport, sell, receive, acquire, or purchase locally or foreign commerce any earth, with some limited exceptions, taken or traded in violation of the laws of Sierra Leone). Trade MOUs between EU, China and Sierra Leone must also prohibit the processing of earth materials for the purpose of extraction of undeclared minerals at the point of export in their territories. The Ministry of Mines and Mineral Resources must strengthen the capacity of the Geology Department.

CHAPTER SIX: MANAGING THE BUILT ENVIRONMENT AND OTHER NON-NATURAL RESOURCE ISSUES

Neighborhood-levels have changed to the built environment. Some of these changes have negative impacts to the health of community residents, especially in low-income communities.

Hazardous Substances

There is little or no information on hazardous wastes, for example there are no regulations on the management of medical wastes in Sierra Leone. Hazardous medical wastes are handled together with normal wastes in all existing health facilities. The main health facility in Freetown had waste

incinerators but they are not functioning at the moment.

Manufacturing Industries

Industrial waste generation is estimated at about 20 tons/day mainly in the Freetown industrial zone.

Human Settlements

Most Sierra Leone settlements are unplanned and infrastructure is inadequate to meet growing needs of the population. There is housing deficit of 250,000 units for Freetown to cope with migration inflow. Residential areas are overcrowded and characterized by derelict urban slums and squatters with high occupancy ratio across the landscape of most towns and cities. Freetown is said to have about 30 slums.

The civil war contributed to the current situation as many rural residents were forced to flee their areas to safe urban areas. According to the 2004 Census Freetown's population increased from 13.36% of the national population to 15.5% in 2004.

Drainage system is inadequate and experience flooding blocking drainage channel during the rainy season. This is made worse by building on steep slopes without regard to erosion control. Most flooding is caused by waste

Uncontrolled rural-urban migration due to imbalance development

Poor planning create urban sprawl and inadequate provision of infrastructure

There is 100 hectares of urban land designated for cemeteries in Freetown. They form the largest green area in the city. They require landscaping to beautify the city landscape. Slaughter house operate under unhygienic conditions

Required Actions

1. Develop legislative framework for the management of waste to deal with generation, collection, transport, treatment and disposal of wastes.
2. Develop a Chemical Management Strategy for Sierra Leone
3. Develop national land use policy and plan
4. Develop national spatial framework for the orderly development of human settlements
5. Identification and development of landfill sites in major cities and towns of Sierra Leone
6. Revise Town and Country Planning Act to reflect modern and current realities
7. Develop a regulatory framework for the management of human settlements including management of waste.
8. Develop national and regional physical development plans as basis for investment and sustainable development initiatives
9. Provide infrastructure for cluster of settlements
10. Establish an effective coordinating mechanism for preparation and implementation of plans and

development control

11. Develop rural settlement planning as a tool for resource management
12. Develop framework for protection and management of beach front lands
13. Prepare Oil Spill Contingency Plan and Coastal Sensitivity Map
14. Domesticating international conventions Sierra Leone is signatory into national legislation
15. Introduce vehicle emission standards
16. Update 1982 Tourism Development Master Plan
17. Formulate Eco-tourism Policy and Action Plan

Transportation – Problem Analysis

Sierra Leone's transportation activities support increasing mobility demands for passengers and freight, notably in urban areas. But transport activities are gradually resulting in growing levels of motorization and congestion. As a result, the transportation sector is becoming increasingly linked to environmental problems. The most important impacts of transport on the environment relate to climate change, air quality, noise, water quality, soil quality, biodiversity and land take:

Required Action

1. Assess Environmental Externalities of transportation
2. The costs of environmental externalities must be considered from **economic, social** and environmental dimensions. The basic types of transportation externalities attributed to the environment namely air pollution, water pollution, noise, and hazardous materials must be addressed.
3. The nature and extent of the relationships between transport and the environment has to be considered this should include direct, indirect and cumulative effects. Relationships have to be quantified and also a value to environmental externalities should be appraised.
4. Regulations/Policymaking. The level and extent of corrective actions that can be taken to alleviate and mitigate environmental externalities linked to transportation in a way where those contributing bear the consequences of their activities. In view of the two above points must attempt at regulation, particularly involving a comprehensive framework.

Urbanization-Problem Analysis

Close to 50% of the population of Sierra Leone live in urban areas. However, at the present moment there is no effective land use plan or other means to guide and control urban developments. The absence of this has already led to the haphazard expansion of the cities— location of settlements is determined where households, residential areas, enterprises and public sector activities locate, legally and illegally. Already, uncontrolled physical growth has impacted on the immediate districts around the cities of Freetown, Bo, Makeni and Kenema much of the districts surrounding these cities cannot be described as urban and yet are no longer rural. Within these areas agriculture has completely disappeared as people or companies in anticipation of the increases in land value accompanying changes from agricultural to urban use buy up land from communities. People construct houses in places where water and sanitation

and electricity are difficult to access making sanitation and waste management very problematic.

Solution:

1. Enforce physical and land use planning
2. Strengthen the capacities of Ministry of Lands, Country Planning and the Environment, City Councils, Ministry of Local Government, Ministry of Works, Housing and Infrastructure to deliver their mandates in urban areas
3. Strengthen the legal framework for the delivery of physical planning, job creation, water supply, health facilities, waste management, building permissions, traffic control, crime control
4. Increase public education and awareness
5. Enforce housing, traffic and waste management codes
6. Formulate and enforce urban greening codes

Role of Ownership

Externalities

There are negative impacts and risks in poorly managing non-renewable natural resources. Currently 70% of Sierra Leone is under exploration. Large-scale industrial mining and unregulated artisanal mining cause environmental damage. Uncontrolled and unregulated land use result in long-term damages to land and create social problems in terms of access for the poor.

There are potential risks in the attainment of green growth due to the following reasons:

7. Lack of integrated water management system which hinders the allocation of water to most beneficial uses
8. Unregulated exploitation of forests and use of wood-fuel and charcoal resulting in deforestation, resource depletion and biodiversity loss
9. Extensive illegal and unregulated fishing, as well as limited facilities for value addition

Priorities of Investments in the NEAP

Priority areas include mineral resources, fisheries and marine resources, water resources, land management, forestry and oil and gas development.

Natural Resources

10. Prepare a comprehensive inventory of natural resources to determine the optimal and sustainable levels of exploitation;
11. Undertake a continuous assessment of changes in the value of natural resource capital;
12. Set up a fund: a sizable portion (75%) of resource revenues should be assigned to a special fund to promote economic development
13. Adopt international best practice in the management of natural resource

CHAPTER SEVEN: LEGAL AND INSTITUTIONAL ISSUES

National Environmental Policy

A National Environmental Policy (NEP) was prepared and approved by cabinet in 1990. It was subsequently revised in 1994 (GoSL, 1994). The NEP is currently under revision as part of the update of the NEAP. The NEP seeks to promote sustainable development through environmental and natural resources management.

Current Legal and Institutional Framework

There is generally paucity in environmental legislation in Sierra Leone. Over the years, development activities have been carried out without due consideration for the environment. The effects of environmental destruction are widespread and manifested in increased loss of biodiversity, deforestation, flooding, poor water quality etc. Environmental degradation in Sierra Leone is attributed to the combination of poverty, rapid population growth, increasing land-based activities and pollution from industrial, commercial and agricultural activities. In addition environmental awareness among the population is low. There are no comprehensive natural resource management plans or national land use plan. Existing policies and legislation governing environmental and natural resources management are fragmented. Existing environmental regulations, standards and guidelines are inadequate and unsatisfactorily enforced. There are inadequate monitoring and implementation capacities of established institutions.

Other challenges are:

1. Ineffective land administration system
2. Weak regulatory framework
3. Weak implementation capacity
4. Insufficient inter-ministerial collaboration and coordination
5. Weak compliance and enforcement capacity
6. Absence of strong institutional framework for environmental management
7. Absence of coordination mechanism and potential conflicts of interest within sectors

The Environmental Protection Act of 2000 created the National Environment Protection Board and charged it with coordination of all environmental programming between ministries, agencies and local authorities. The Act also identified the need for environmental impact assessment (EIA) for certain projects and provided guidelines for scoping of EIA for projects. However in 2008 the National Environmental Protection Act was passed and amended in 2010. The 2008 Act created the Environmental Protection Agency, which was handed over the overall responsibility for environmental management in Sierra Leone.

A Mines and Minerals Act was enacted in 2009 and came into operation on April 2010 which addresses mining leases and licenses for mining activities.

Other existing legislations are;

1. Forestry Act of June 1988

2. Wildlife Conservation Act, 1972

The Forestry Act is the primary basic law that guides forest management. In 2008 reforms were introduced to standardize the processes and guidelines for leasing community and forest reserves, issuing logging permits, use of stumpage fees, benefit sharing from forest exploitation, transportation of forest products, urban tree management services, export permits, import of chain saws and sawmills, registration of timber and wood products enterprises and the establishment of a Conservation Trust Fund.

Proposed Policy Agenda

In view of the inadequacy of policies and legislation to address pressing environmental problems and the need to seek the path of sustainable development, there is the urgent need to reverse the current situation by developing the necessary policies, legislation and associated enforcement capacity. Some policies under consideration;

1. Standards for air quality, water quality and noise levels in urban areas
2. Need to prepare and implement environmental regulations for environmental assessment, waste management, pesticides and hazardous substances etc.
3. New policies on forestry and wildlife covering REDD and REDD+
4. Climate change policy
5. National Land Policy

Managing Environment through Stakeholder Partnerships

Environmental issues are best handled with the participation of all concerned citizens. Different stakeholders (state and non state actors as well as the ordinary citizen) have roles to play.

Role of Sector Agencies

Environmental issues are crosscutting and are the result of sector activities therefore requires the involvement of all sectors in addressing them. Sector agencies at national, provincial level can play important roles in solution of environmental problems.

Role of City and District Councils

Environmental problems are manifested on the ground at local level through the activities of local land users. Due the local dimension of environmental problems local and traditional authorities should play a prominent role through the mobilization of the citizenry to prevent and implementation of environmental programmes.

Role of NGOs and Community Groups

Civil society organizations can play critical role addressing problems as result of their ability to act fast, limited bureaucracy, operational autonomy and independence. They are good in community engagement and advocacy and can be useful in creating awareness, dissemination of information and sensitization and mobilization of communities for action. They can help improve institutional coordination, accountability and transparency and serve as an excellent medium of spreading the environment message.

Private Sector

The activities of the private sector impact on the environment to a greater or lesser extent; they can therefore play a role in partnership with government agencies to address environmental problems as individual entities or through associations or chambers.

CHAPTER EIGHT: ENVIRONMENTAL EDUCATION

Problem Analysis

Environmental education has a central role to play in raising awareness of environmental issues, informing people about them and motivating and empowering people to act to address them. Consequently, promoting and facilitating environmental education is an important priority for the NEAP.

The establishment of an Environmental Protection Agency (EPA-SL) is a major step by the GoSL, to ensure progressive leadership in the governance of natural resources and sound environmental management in the country. At the same time, the high levels of poverty and illiteracy, coupled with high urban and rural unemployment, a growing population and increased degradation of Sierra Leone's forest and land estates, represent fundamental problem areas, which if not adequately addressed in a timely manner, could potentially undermine many aspects of the national development processes, not least the productive abilities and capacities, of the rural populations.

Environmental education must be more than just learning about plants, animals, landscapes and natural phenomena. It must specifically be directed towards the improvement of livelihood needs of the country, in a social, economic and ecological sense, for the long term. The project NEAP is intended therefore, to advocate and pave strongly a roadmap to '*environmental education for sustainable development*'. Currently there is lack of general awareness and appreciation on environmental issues among large sections of the population. There is no Environmental Education Policy/Strategy

The key partners in this effort must be: Ministry of Education, Environmental Protection Agency for Sierra Leone, United Nations Education Programme, Environmental Foundation for Africa – an IUCN member / partner in Sierra Leone, civil society groups, national universities, development organizations, donors, other related governmental agencies, and teacher training colleges. The primary target groups of the project include teachers, pupils and students, the local communities.

Safeguarding the environment will require widespread changes in knowledge, attitudes and behavior and balancing of different interest against that of the public. This will require creating public awareness and empowering the public, especially women, youth and children towards safeguarding the environment. Environmental education would aim for an effective, environmentally literate citizenry able to participate with creativity and responsibility.

Required Actions for Formal Education

1. Develop a national environmental education policy and strategy with public participation as a

focus

2. Integrating Environmental Education in the primary and secondary School Curriculum first by bringing together all key stakeholders under the technical coordination of the Ministry of Education, to develop strategies for integrating environmental education in the national school curriculum.
3. Incorporate environment into the curricula of basic, secondary and teacher education institutions; Cooperation with teacher training colleges in writing a general curriculum for environmental education, handbooks for teachers and textbooks for pupils and students
4. Introduce environmental courses in all tertiary institutions at undergraduate and post-graduate levels
5. Establish a centre to develop teaching and learning materials on the environment and also train personnel on methods of disseminating environmental information.
6. Incorporate environmental components into the curricula of primary and secondary schools, technical and vocational institutes and teacher training colleges
7. Institute environmental campaigns and competitions among school children at all levels.
8. Develop environmental education packages for schools, media and communities to create awareness on environmental issues
9. Develop the capacity of personnel of critical institutions for the management of the environment
10. Develop Environmental Management Manual for District Environmental Officers
11. Institute environmental awards for individuals and organisations to motivate others to do the same.
12. Build the capacity of the national institutions, environmental NGOs and other actors to enable the delivery of educational programmes underpinned by environmental, social and economic livelihood issues
13. Identify the strategic national and international partners and appropriate financial sources and technical competences, to implement a national school curriculum with a component of environmental education for sustainable development in Sierra Leone.
14. Against the above background, the proposed curriculum must bring together the issues of environment, poverty and development, through a focus on learning processes.

Non-formal Environmental Education

Non-formal environmental education programs can be extremely diverse in their settings and in their target audiences.

Required Actions for Non-Formal Environmental Education

1. Every project must have a community environmental education component; Agricultural Extension workers must include EE as part of their extension work and so is for foresters
2. Implement village campaigns
3. Development and application of national, methodology for non-formal environmental education;
4. Educate communities on environmental problems they face
5. Build capacity of media institutions to enable them to sensitise the public on pressing environmental issues
6. Hold workshops for NGOs to build capacity for delivery environmental education
7. Institute environmental days in communities

CHAPTER NINE: ENVIRONMENTAL INFORMATION AND MONITORING

An integrated and properly functioning environmental information system (EIS) is a prerequisite for sound decision making and planning through the provision of timely, reliable and relevant information. Access to environmental information is essential effective public participation in decision making and monitoring of activities that impact on the environment. However there is a serious deficit of information on utilization of Sierra Leone's natural resources. The conduct of inventories and assessment of natural resources are limit or unavailable. Staff lack training and tools to undertake such activities.

ISSUES

Data Availability

Relevant data on key environmental areas are unavailable or where they exist there are gaps and data is dispersed making use for decision making difficult.

Data Gathering

Routine data collection is non-existent and methods of collection vary according to the needs of the producer and users.

There is no monitoring mechanism in place.

Data collecting agencies are ill-equipped and under –funded and staffed

Recommended Actions

Health-related Monitoring Programme

Indicators of Environmental Change

Land Use Land Cover

Wildlife Populations and Habitats

CHAPTER TEN: IMPLEMENTATION STRATEGY

Role of EPA

Environmental issues are cross-cutting and require coordination of efforts. Sector agencies have a critical role in dealing with environmental problems in their respective sectors. EPA by its mandate is the main coordinator of all environmental activities in Sierra Leone. EPA will be the lead institution to ensure environmental problems are addressed.

EPA should create inter-sectoral mechanism to bring together sector agencies whose programmes impact on the environment.

Role of Sectoral Agencies/Institutions

The activities of the various sectors have an impact on the environment. The sectors can therefore play a part in the solution of environmental problems by mainstreaming environment in their programmes by establishing environmental units/desks in ministries, departments and agencies who will work in liaison with EPA. The units will be responsible for coordinating environmental activities.

Establish coordination mechanisms for addressing environmental issues

Role of City and District Councils

Implement national environmental programmes at district level

Develop outreach and create environmental awareness

Control local environmental problems

Incorporate environmental and land use concerns into development plans

Role of Community Groups

Mobilize community to protect environment

Organize education awareness

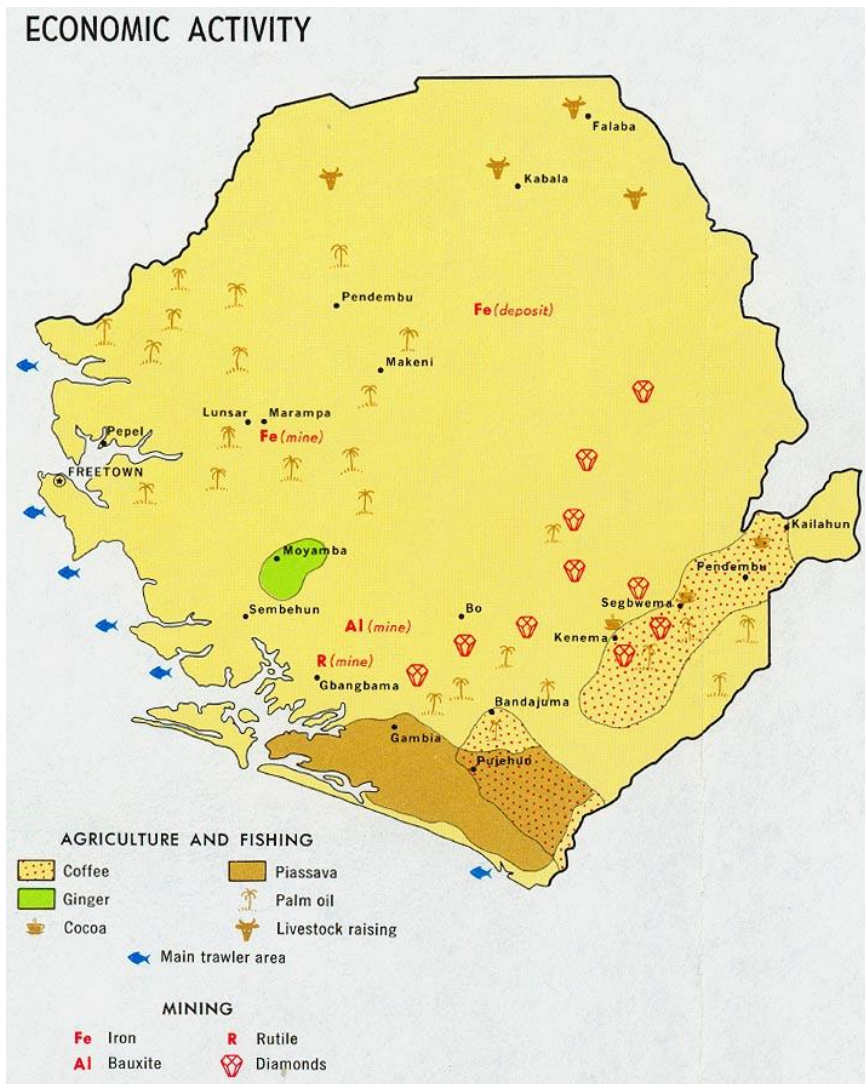
Regulate local environmental problems

FIGURES

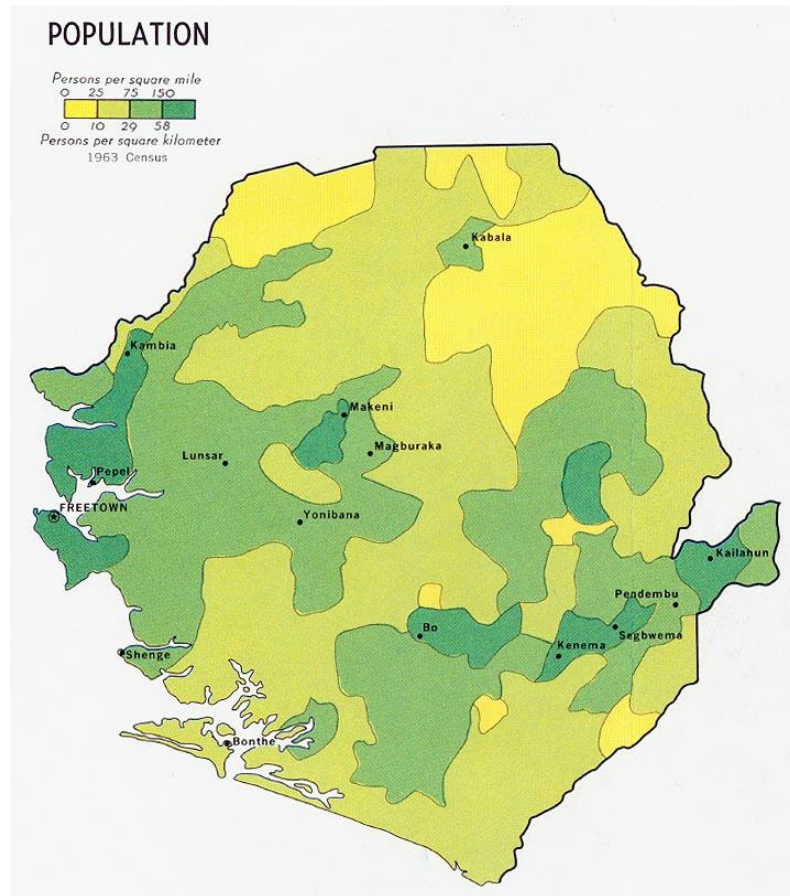
Map of Sierra Leone-



1.
Administrative Regions



1. Population Density of Sierra Leone



2. Protected Areas

REFERENCE

The World Bank, 2005 “Where is the Wealth of Nations? Measuring Capital for the 21st Century”