

WHAT POLICIES HAVE BEEN IMPLEMENTED IN THE PROTECTION OF SIERRA LEONE'S NATURAL RESOURCES?

Abu Bakar Kamara

ABSTRACT: *Sierra Leone is one of the fastest growing economies in Africa, with mining and agriculture as the primary industries driving such economic growth. However, despite the booming economic conditions, there are various environmental issues that the country is facing that impact and hinder the economic and environmental stability of the country. The country is rich in natural resources, most particularly mineral resources. The purpose of the study is to critically analyze the various environmental policies and legislative efforts made by the government through the Sierra Leone Environmental Protection Agency. It further investigates the various environmental issues and problems addressed by these existing policies and legislations, as well as evaluate their effectiveness. Five administrators and heads of the Environmental Protection Agency were interviewed. Findings showed that there were various policies and legislative efforts instigated in order to protect and conserve their natural resources, primarily their mineral resources, water resources, land resources and coastal and marine resources. Analysis also showed that some of these policies and legislations are less effective in meeting their purpose due to various factors such as poor governance, lack of infrastructure, human resources management ineffectiveness, lack of public awareness and many others. Recommendations were provided following the analysis.*

KEYWORDS: Policies, Natural Resources, Sierra Leone, *Economic*

INTRODUCTION

Background

The environment and natural resources are essential components for the sustainability of a nation-either developed or underdeveloped. In the case of Sierra Leone, the environmental resources can serve as a major asset to develop its tourism industry (European.Union, 2014). The focus on the national environmental resources magnifies how Sierra Leone can break free from underdevelopment and its resented problems. Part of Sierra Leone's efforts to address its environmental concerns, which will also be used for its sustainability and development is the establishment of the Sierra Leone Environmental Protection Agency (SLEPA hereafter).

The said agency was established in July 2008, under the Ministry of Lands, Country Planning and Environment. SLEPA is responsible for harmonizing the legislative, institutional and policy frameworks for the management of natural resources. It also ensures that obligations "given through Sierra Leone signature to Multilateral Environmental Agreements (MEA), including the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Ramsar Convention on Wetlands of International Importance" are complied with (European.Union, 2014).

However, Sierra Leone suffers from intensive environmental problems such as deforestation, degradation and fragmentation, including the loss of soil fertility and biodiversity, air and water pollution (Dumbuya, 2009). This kind of situation further explains how Sierra Leone is regarded as one of poorest countries in the world. More so, the focus on the national environmental resources magnifies how Sierra Leone can break free from underdevelopment and its resented problems.

Sierra Leone: Country Profile and Environment

A UNICEF (2012) report positioned Sierra Leone as one of the poorest countries in the world, placing it at the 180th spot out of 187 countries in the Human Development Index of UNDP. Part of the reasons included the lack of infrastructures, human resource capacity and other resources. However, peace and democracy were recently sustained with the “free and fair presidential and parliamentary elections in November 2012” (UNICEF, 2013, p. 1). This election was the third since the war ended in Sierra Leone.

From these onwards, Sierra Leone made important improvements and developments as a nation. UNICEF highlighted the changes in child survival, along with care visits of pregnant women. Gender parity in primary schools has also reached at 1.04, although disparities remain in secondary schools. This implies how the internal efficiency in primary education enriched from 63% in 2010 to 2011. Gender-based violence was also addressed with the signing of the revised Referral Protocol by all important ministries in Sierra Leone. Apart from this, the Sexual Offence Act was also enacted, while the Alternative Care Policy was finalized. These policies were positioned for child protection.

Focusing on the environment, the UNICEF reports that environmental issues are predominant in Freetown, the capital city of Sierra Leone. As estimated, there are about 1.2 million people residing in Freetown, which comprised 20% of the whole population. Waste problem is regarded as the main environmental issue in Freetown, with 600 tons of waste generated daily or about 0.5 kg of waste per person. The Freetown City Council collects an estimated of 473.15 tons per day. This kind of scenario fosters difficulties in terms of estimating the results of scavenging activities.

More importantly, the lack of waste control from dumpsites foster risks to its neighboring cities, which includes health, pollution, hydrological and visual effects. On the other hand, another report sponsored by the African Development Bank Group prepared by Perrault et al. (2013) highlighted how crucial natural resources management and sustainability are in Sierra Leone, particularly in environmental and economic perspectives.

This again is the result of Sierra Leone’s total dependence on natural resources. Apparently, Perrault, Baldeh, Wahome and Zayid’s report included the issue of climate change, which additionally compounds the existing environmental problems. Moreover, Sierra Leone is hailed as “very vulnerable” to the adversarial effects of climate change and may even find it difficult to cope during extreme conditions.

Problem Statement

The establishment and agreements instituted for the environmental welfare of Sierra Leone represents a need to evaluate and assessed the outcomes of their efforts. One of which are the environmental policies structured and created for the sustainability and development of Sierra Leone, mainly by protecting its natural resources. With such need, only few and minimal

efforts have focused on evaluating the policies and environmental strategies established by the different environment agencies in Sierra Leone. More so, the Government of Sierra Leone as well fears the outcomes of using its natural resources, which furthers the need to assess the established environmental strategic efforts.

Research Goals

This study intends to accomplish the following research goals:

- To critically analyze the different environment policies and legislative efforts mandated or created by the SLEPA in Sierra Leone.
- To investigate the environmental problems addressed by the policies created by the environmental agencies.
- To evaluate the effectiveness of the environmental policies established for protection of Sierra Leone's environment.

Research Questions

The following are the proposed research questions aimed to be answered:

1. What are the different environmental policies and legislative efforts mandated or created by the SLEPA in Sierra Leone?
2. What environment problems are focused by these legislations? How do they protect the environment?
3. Are the environmental policies established for protection of Sierra Leone's natural resources effective? Why or why not?

Research Purpose

The proposed research is essential by its attempt to review the environmental efforts and legislations of Sierra Leone's environmental bodies. Doing so would provide a number of relevant details about the performance and effectiveness of the environmental protection strategies. In this manner, further improvements and recommendations can be devised for better implementation and application of environment protection in Sierra Leone.

Scope and Limitations

This study mainly focuses on the environmental issues of Sierra Leone, with the intention of identifying the measures that address such. The identified issues may be a universal issue, but the conditions, impacts and nature of these environmental issues are mainly in Sierra Leone. The details may suggest a resolute case, but the environmental implications it render are universally significant.

Summary of Chapters

The rest of the dissertation is structured as follows: Chapter two sets out the theoretical context of the research by reviewing the current debate on the main theoretical approaches regarding **environmental situations in Sierra Leone**. Chapter three looks at the methodology employed in this research. Chapter four is premised chiefly on the analysis and

findings of the collected data. Chapter five discusses the research findings and draw conclusions from these. Finally, Chapter six put forth recommendations.

REVIEW OF RELATED LITERATURE

Overview

This section will provide discussions about the environmental situations in Sierra Leone, which called for the development and establishment of policies. The policies and efforts suggested to address these problems are also explored. To further understand the importance of the natural resources in Sierra Leone, it is essential to look into the different terms, propaganda and efforts discussed in diverse literatures.

Natural Resources of Sierra Leone

Mineral Resources

Sierra Leone has been considered as one of the wealthiest nations when it comes to abundance of various natural resources, most particularly mineral resources. According to the CIA World Factbook, Sierra Leone has rich mineral resources such as diamonds, titanium ore, bauxite, iron ore and chromite (CIA, 2014). These mineral resources are continued to be exploited by the country, which played significant role in driving the economic stability and progress of the country.

The exploration and mining of these precious assets are subject to various debates and discussions among experts and geologists because of the several issues attached to the activities. However, the mining industry seemed to be relentless in making profits for the country. As noted by the president of Sierra Leone, Ernest Bai Koroma, the country has already made its mark as an active exporter of various minerals. He added that the country witnessed a longstanding tradition of mining since the pre-colonial eras, most particularly the exploration and mining of diamonds, rutile and iron ore. As he concluded, Sierra Leone could likely be the “new jewel in Africa’s crown”(Koroma, 2013, p. 5).

Consequently, Sierra Leone’s heavy reliance on the mining industry is likely reflected by its contribution to the country’s GDP, since the 1990s. Historically, before the turn of the century, mining and quarrying critically offered job opportunities for more than a quarter of a million people. Since then, mining is the second largest and important industry, after agriculture regarding job employment and revenue generation (World Bank, 2008).

As a matter of fact, 2013 report published by IMF, the vigorous expansion of economic activity in Sierra Leone is a significant reflection of the sharp increase in activities relating to the mining industry, accounting about 20 per cent of the country’s GDP growth in 2013 (IMF, 2013). Based on the international standards, the mining industry in Sierra Leone is relatively large. It comprises three sub-unit or sub-sectors, namely (1) large-scale exploration and mining of various minerals like diamonds, rutile and bauxite, (2) mechanized small-scale mines for diamond production, and (3) artisanal mining of diamonds and gold (World Bank, 2008, p. 4). The table 2.1 below shows the total production of key mineral commodities in Sierra Leone.

Table 2.1: Total production of mineral commodities

Commodity		2008	2009	2010	2011	2012
Bauxite ³	thousand metric tons	954	757	1,090	1,300 ^r	776
Cement		254,180	236,240	300,980	310,890	335,400 ^p
Diamond ^{4,5}	carats	371,261	400,843	437,516	357,161 ⁶	541,166 ⁶
Gold, mine output, Au content	kilograms	191	157	270	164 ⁷	141 ⁷
Iron ore:						
Gross weight	thousand metric tons	--	--	--	1,300 ⁸	6,600
Fe content (32% to 58%)	do.	--	--	--	800 ⁸	3,600 ⁹
Titanium:						
Ilmenite concentrate		17,528	15,161	18,206	15,946	22,590
Rutile concentrate		78,908	63,864	68,198	67,916	94,493
Zirconium concentrate		--	5,560	7,092	8,496	610

Adapted from Bermudez-Lugo (2014, p. 36.4)

As noted earlier, the country is rich in mineral resources, primarily diamond, iron ore, titanium ore, bauxite, gold and chromite. The largest sector of the mining industry is diamond mining. Like any other countries in the Sub-Saharan Africa, Sierra Leone has rich deposits of mineral resources, and substantial amounts of these resources are already exploited for the past decades critical to economic growth and development (Wilson, 2011).

Diamond exploitation goes back to the early 1930s, where, up until now, the net impact of such activity in the country changed drastically, making diamonds either resource curse or resource blessing (Wilson, 2013). Based on the USGS report on Sierra Leone's mineral industry, alluvial deposits of diamonds could be mined primarily in three districts – Bo, Kenema and the Kono. In 2012, total rough diamond mining and production in these districts reached to more than 541,000 carats, representing 52 per cent increase from the 2011 mining and production statistics. Apparently, these produce are exported and prices could go from US\$ 302 per carat, depending on the quality of the diamond (Bermudez-Lugo, 2014).

Other major mineral resources in Sierra Leone are titanium ores and iron ore. Sierra Rutile Mine produces huge amount of ilmenite and rutile concentrates, which are common titanium ores. Accordingly, the mine mined and generated over 94,000 tons of rutile concentrate and over 22,500 tons of ilmenite concentrates. Iron ore is also a chief mineral resource in Sierra Leone, with an approximate produce of 1.5 metric tons in 2012 by a mine company called Marampa Mine. In addition, Tonkolili Mine Company produced about 5.1 metric tons of iron ore in 2012. Gold mining also became popular in Sierra Leone, as gold production reached to 141 kilograms in 2012. Bauxite production is also a common mining activity, producing about 700,000 metric tons (Bermudez-Lugo, 2014).

Water, Coastal and Marine Resources

Besides the abundance of mineral resources, Sierra Leone also exhibits wealth when it comes to their water resources. There are nine major river channels in the country, which likely provide major source of water for the people in Sierra Leone. Within the geographical

boundaries, there are four key rivers cutting across the country including Rokel/Seli River, Pampana/Jong River, Sewa River, Waanje River and the Coastal Streams and Creeks. the Great and little Scarcies as well as the Moa Rivers runs through the country from Guinea and the Mano River running from Liberia (Resources, 2014).

Groundwater is also evident in Sierra Leone, producing about 50 cubic kilometers of water per year. However, groundwater resources are yet extensively been investigated (FAO, 2005). Sierra Leone also has one of the most clear and serene beaches along its coastline. Its territorial waters are abundant to marine animals, some of which are different species of fish, crabs, lobsters, squids and many others. As a result, marine ecology is very diverse in the country. Its coastal waters are bustling with fishing and tourism activities. Particularly, marine fisheries involve two key sectors – the artisanal and industrial fishery. The coastal resources could also comprise of mangroves, river estuaries, fresh water bodies, coastal wildlife, sand beaches (Blinker, 2006).

Land Resources and Forest

Land resources and forestry are natural resources in Sierra Leone that offers opportunities that boost industries such as tourism, agriculture and mining. The country has agro-ecological zones forests, savannah woodlands, swamps and grasslands. These agro-ecological zones could be of great importance to the agriculture industry. Vast forest ecosystems found in Sierra Leone include evergreen and semi-deciduous forests. Various species of trees could be found in these forest lands, which include iroko trees, African mahogany, scented sapele wood, rubber and many others.

There are also other crops growing in these lands such as oil palm, cocoa and rubber. One the other hand, savannah woodlands are primarily located in the northern part of the country, covering Koinadugu, Kono and Bomabli districts. There are also strip of savannah in Bonthe and Pujehun coastal areas. Inland valley swamps are primarily found in the southern province of the country, parallel to its coastline. Based on a conference report published by the Sierra Leone Department of Agriculture and Forestry, these agro-ecological zones are natural resources with great use, including sources of timber and wood, tree and arable crops, paddy rice farming and grazing uses (Larbi, 2012).

Oil and Natural Gas

Diamonds and other mineral resources are not just the precious and significant assets that could be mined in Sierra Leone. The county is also endowed with oil reserves that could contribute to the country's economy. Crude oil production is still in its infancy stage in the country, with its first discovery in 2010 by Anadarko Petroleum Corporation. This milestone in energy exploration sparked a new wave of energy-related activities which could provide additional prospects in attracting investments and therefore generate revenues for the country (United Nations, 2010). In particular, Sierra Leone would generate about \$100 million per year if production of oil would continue (AFP News, 2011). Just recently, a Russian company called Lukoil had found high-quality oil just off the coast of Sierra Leone (Cham, 2013).

Environmental Situations in Sierra Leone

To better understand the development and requisition of environmental policies in Sierra Leone, a discussion on the conditions of its environment will be provided. For instance, one of the oldest details pertaining to the environmental conditions of Sierra Leone was from

Church et al. (1963), stating that agriculture has been one of the main activities and has been dominant in West Africa; but not in Sierra Leone, along with Mauritania and Liberia. Apparently, soil in Sierra Leone is naturally middling due to severe leaching during heavy rainfall. Later on, Sierra Leone was transformed through mineral developments. In fact, Sierra Leone was hailed as the world's fourth largest diamond producer in 1960, until diamonds account for half of Sierra Leone's overseas trade.

In addition, there have been major discussions on the environmental effects of mining activities in the country. For example, Akiwumi and Butler (2008) studied the drastic environmental change brought by the mining activities in Sierra Leone. Their findings noted that one of the impacts that mining activities in the country poses to the environment is the critical modification of the country's hydrological system, concluding that there has been change in the natural water flow system's storage. In addition, Akiwumi and Butler (2008) stressed out one important mining development that also caused series of damages and changes in both hydrological and biophysical levels. For instance, the construction of the reservoir for mining has likely caused flooding in lowlands, deforestation as well as formation of stockpiles and tailings in the land within the mining area.

Another study that assesses the environmental impacts of mining activity is that of Lubovich and Suther's (2007) investigation presented in the Foundation for Environmental Security and Sustainability. According to them, the physical environment is in continuous stage of degradation as result to mining. Moreover, because Sierra Leone is rich in alluvial or shallow mineral deposits like diamond and gold, it could easily be accessible. This in turn results to topsoil being stripped off and churned up. Burrowed or mined lands are then abandoned without considering refilling the holes and rendering the land for other purposes. More so, water resources, plants and animals are exposed to the hazardous and contaminants left by mining activities (Lubovich & Suthers, 2007).

On the other hand, deforestation is noted as another environmental issue affecting Sierra Leone which is common in Africa caused by a number of factors such as land clearing to give way for agriculture and cutting of trees for fuel wood and other uses (Chasek, 2000). Other social forces are also noted to contribute to degradation such as the numerous pre- and post-Cold War conflicts, which contribute to environmental damage even much than natural disasters.

Over the years, conflicts have been taking place in most countries in Africa, with Sierra Leone no exemption. Apparently, wars have been responsible for destroying fragile ecosystems, forests, wildlife populations, and even farmlands. Wars as well destroy the African economies and infrastructures, and displace populations.

Meanwhile, Ferguson (1977) claimed that the problems in Sierra Leone are interconnected, such that incessant utilization of the natural resources resulted to several human and social problems. The ways natural resources are explored, interfered and destructed have reached to an already unacceptable state. Ferguson concluded that this kind of life is a form of negation on what a satisfying life should be.

But then again, most countries are dependent on the natural resources. However, Cooper and Palmer (1995) insinuated that the total dependence of some populations in their local resources and environment, to the point of relying almost exclusively upon external resources. Such reliance sometimes leads to local environmental degradation, while some

cause degradation everywhere. Apparently, Sierra Leone's interrelationships in the national population-environment are "not very meaningful" (Cooper & Palmer, 1995, p. 38).

Suggestions of Improving the Environment in Sierra Leone

In a book by Paracka (2003), a number of suggestions raised by scholars and experts have been presented and are found noteworthy. One of these is from a 1976 Review commentary of Porter, stating importance of "cheap and reliable energy resources, development of high yield crop varieties, omission of illiteracy and infectious diseases, improving the quality of indigenous building materials and other manufactured products, the development of natural resources and the evolution of a sound system of economy which will ensure steady growth in all sectors" (Porter, 1976, p. 49).

Too often, the responsibility for addressing the problems in Sierra Leone was placed in the shoulders of multinational companies (Paracka, 2003). But Carney suggested that the national policies of developing countries hold responsible in addressing these problems. As cited, the national government should take action in "establishing just economic order, which is regarded as code of behavior for national companies and more egalitarian society in terms of income distribution" (Carney, 1976, p. 46). Meanwhile, Lubovich and Suthers (2007), underscored an environment security perspective that acknowledges the connection between improper mining, environmental damage, food insecurity, and conflict that are unique to Sierra Leone. By doing so, the region will be able to establish and implement policies that seek the aversion of these threats. Lubovich and Suthers (2007) underlined that structural changes should be a top priority, particularly in the structure of incentives, considering how such favors land degradation through encouraging digging in already degraded areas. To add, the Sierra Leone government should indicate its commitment towards the development and security of adopting land reclamation for the people. The local government must also ensure with commitment that the land reclamation program is part of the sustainable management of natural resources and the environment. Apparently, the land reclamation program will support and aid the food security problems in Sierra Leone, which has been one of the region's major problems since the civil war.

Laws Underpinning Environmental Governance in Sierra Leone

Talking about the policies and legislative measures for protecting Sierra Leone's environment makes United Nations Environment Programme (2010) report a very good material. As stated, these laws are based on the regulatory framework that strengthens that "environmental governance, regulations, concessions contracts, and ad hoc policies of the government based in the Office of the President" (UNEP, 2010, p. 35). These laws are submitted by the Parliament as empowered by the Constitution of Sierra Leone, with the role of managing and regulating natural resources on behalf of the country. As enumerated by UNEP, these laws as follows:

- Environment Protection Agency Act – The act aided the establishment of a new institutional framework as initiated by the Parliament in 2008. The framework focuses on the natural resources and the environment management issues, which led to the creation of SLEPA.

- Mines and Minerals Act – This was originally written in 1994, revised in 2004 and in 2009 by the Parliament. The act emphasizes the legal framework in mining in Sierra Leone.
- Anti-Corruption Act – This law was submitted in 2008 and served as an important campaign for President Koroma in order to stop the so-called “culture of corruption.” Hence, the natural resources sector is heavily affected by poor governance and management due to corruption and inefficient leadership.

Besides on the three key policies presented above, there are also other policies that are of great importance when it comes to protecting and conserving the natural resources of Sierra Leone. These are the National Environmental Policy of 1990, the New Forestry Act of June 1988, the National Land Policy and Land Commission Act of 2004, and the Wildlife Conservation Act of 1972 (Blinker, 2006).

The National Environmental Policy – this particular document was originally proposed and approved by the Sierra Leonean cabinet during 1990 and was then amended in 1994. The policy’s objective is obtain and achieve sustainable development in the country through the means of logical and effective environmental and natural resources control and management. There are three objectives set forth by the National Environmental Policy:

Secure for all Sierra Leoneans a quality of environment adequate for their health and well-being;

1. Conserve and use the environment and natural resources for the benefit of present and future generation; restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere; to preserve biological diversity, and uphold the principle of optimum sustainable yield in the use of living natural resources and ecosystems;
2. Raise public awareness and promote understanding of the essential linkages between the environment and development and to encourage individual and community participation in environmental improvement efforts (Blinker, 2006, p. 27).

On the other hand, the New Forestry Act of June 1988 also provides significant effort of protecting the natural resources of Sierra Leone, in particular the forest resources and its subsequent ecosystems. In view of that, provisions presented in the Act provided power and authority to the Agriculture, Forestry and Food Security Minister in declaring protected areas throughout the country in order to achieve conservation of its ecosystem. More so, the provisions also stipulated that no one should cut down, burn and destroy trees found in these protected areas (Blinker, 2006).

Besides protection of forests, the National Land Policy and Land Commission Act of 2004 serves as the primary policy for the country’s land resources. This piece of legislation authorizes the people in the Ministry of Lands and other government agencies in relation to land tenure to administer the objective of providing and ensuring equal opportunity to land access and tenure security that ultimately maintain a secure environment for various developments across the country. Lastly, the Wildlife Conservation Act of 1972 provides guidelines in regulating the use and protection of the country’s wildlife resources. Although this particular Act was envisioned to be an important policy for protecting wildlife, it is unfortunately outdated (Blinker, 2006).

Among the efforts and plans devised and relayed by the government of Sierra Leone includes its Vision 2013 to 2025. In a strategy paper supported by the Government of Sierra Leone (2013), the agenda for prosperity includes 8 pillars that are strengthened under the vision: “to be an inclusive, green, middle-income country by year 2035.” Together with the pillars of diversified economic growth, accelerating human development, international competitiveness, labor and employment, social protection, governance and public sector reform, and gender and women’s empowerment is the management of natural resources. The management of natural resources included different strategy issues that are highlighted to be specific to individual sectors: mineral resources, marine resources, water resource management, land management, forests, oil and gas, and electromagnetic spectrum. These strategies are all part of Sierra Leone’s vision, which is profoundly dependent on the utilization of the country’s natural resources.

The natural resources include both renewable and non-renewable energy sources, which are used as the initial driver for rapid growth. These natural resources can foster revenues that are needed by the economy, which as well support the development of Sierra Leone. For instance, exploiting the natural resources could produce petroleum, oil and minerals. The government as well recognized the challenges faced by Sierra Leone in implementing these plans (GOSL, 2013). EPA holds the responsibility of overseeing the different efforts created by every sector.

METHODOLOGY

To answer the research questions and accomplish the research goals, qualitative research methods was used.

Ethical considerations and Limitations

Ethical considerations play an important part in not only assessing, collecting and analysing information but also towards understanding the nature of the research environment. The review of the related literature shows that the situation in Sierra Leone in recent months and times (outbreak of Ebola) has developed and progressed. However, risk of Ebola and violence still exists due to the process of development.

In this sense, the nature of the research environment is still risky due to the nature of the endemic outbreak of Ebola and order is still fragile in the country. Because of such kind of environmental factor, the researcher presents vital ethical considerations that shows the need to limit the research study based on the availability of information and adjusting towards the essence of personal safety.

Based on the information obtained, the researcher made sure that the process of data collection, proper applications and procedures are observed especially in terms of collection of data and interviews done by the researcher.

In this research the data was collected primarily using qualitative method. Therefore. five administrators and heads of EPA were interviewed.

Research Design

The qualitative research was based on the constructivist claims. According to Creswell (2010), the qualitative approach brings the inquirer to look into the multiple meanings of individual experiences. These meanings are said to be based on the social and historical structures of man, wherein the researcher can develop a pattern or theory. The qualitative research approach as well allows the researcher to explore issue- or change-oriented topics and collaborative issues, which are under the advocacy or participatory perspectives.

Meanwhile, Marvasti (2004, p.7) defines the qualitative research as an approach that fosters “detailed description and analysis of the substance or quality of the human experience.” To acquire this, the researcher will collect open-ended data with the main intention of developing themes through strategies like narratives, ethnographies, grounded theory, phenomenologies or case studies (Creswell, 2010). With the qualitative research design, the researcher was able to gather the necessary information and details about the initiatives devised for the protection of the natural resources in Sierra Leone.

Data Collection Methods: Semi-Structured Interview

The semi-structured interview was used to collect the primary data from the identified set of research participants. Harrell and Bradley (2009) underscored that semi-structured interview is accompanied with a guide, which contains the questions and topics to be covered. The questions are already standardized, despite the researcher’s discretion on the order of questions to be asked. Probes can also be added to make sure that researchers are covering the right material. The semi-structured interview has longed been acknowledged as conversational in collecting detailed information from the research participants. Often, the semi-structured interview is used when the researcher seeks to deeply dive into the issue and understand the answers provided.

In this research, the semi-structured interview aided the researcher in exploring the different problems of Sierra Leone in terms of its natural resources. By doing this, the researcher was able to fully grasp the different interventions, efforts and policies made by those charged with the responsibility to protect and monitor Sierra Leone’s natural resources. In addition, the issue was deeply explored through semi-structured interview as further interrogations are initiated.

Research Participants and Instruments

The semi-structured interview was conducted with the help of 5 administrators and heads of EPA in Sierra Leone using face to face interviews. EPA was actually established in 2008 under the EPA Act in 2008 (REDD Desk, 2014). This agency is under the Office of the President that functions to address all issues regarding the environment and climate change, prior to its operations in 2009. The administrators were informed about the scheduled interview, prior to the invitations sent and their approval. These actions are all part of the ethical considerations of research.

Data Analysis

The interview data was collated and extracted and the codes, symbols and themes gathered. The themes were used to represent the answers to the research questions.

FINDINGS AND ANALYSIS

Policies Implemented for the Protection of Natural Resources

The responses made by the participants are in agreement when it comes to the protection of natural resources. Table 4.1 below shows the identified policies and other legislative efforts made by SLEPA and other environment-related government agencies. The table also includes the domain or areas of natural resources as to which the identified policies cover. These policies are described and explained by the participants in the following section.

Table 4.1: Natural Resources Area, Policies and Legislative Efforts

Natural Resources Area	Policies and Legislative Efforts
Mineral resources (diamond, bauxite, rutile, chromite, gold, iron ore, etc)	<ul style="list-style-type: none"> • Mine and Minerals Act 2009 • National Minerals Agency Act, 2012
Water Resources	<ul style="list-style-type: none"> • National Water and Sanitation Policy • National Environmental Policy • Local policies and ordinances for water sanitation
Land Resources	<ul style="list-style-type: none"> • 2005 Land Policy • National Environmental Policy • Forestry Act 1988
Coastal and Marine Resources	<ul style="list-style-type: none"> • Environment Protection Act

Mineral Resources

It has been widely noted in existing literature that Sierra Leone is well-known for its rich mineral resources such as diamonds, bauxite, iron ore, gold and titanium ore. Based on the responses made by the participants during the interview, all of them agreed to the fact that members of the SLEPA has been very keen and strict on protecting the natural resources of the country, most particularly on the country's rich natural resources. As according to one participant,

“The Government through the SLEPA is doing its best to protect and conserve our country's natural resources, most likely our diamond resources and other minerals like gold, iron, titanium and bauxite.”

Environmental policies about mining are key priorities of the government in relation to protection of countries mineral resources. One of these policies, which are a strict and important environmental policy for protecting natural resources, particularly its mineral resources is the Mines and Minerals Act of 2009. All of the participants highly emphasized that this particular law is considered as the backbone of all existing and future policies in relation to mining activities in Sierra Leone. As one participant stressed out,

“The 2009 Mines and Minerals Act serve as the primary resource for those who wish to get part of the country's mining industry.”

Accordingly, participants noted that this particular document encapsulates various policies and regulations that should be taken into consideration by key stakeholders of the mining industry. Stipulations from the said law could range from policies regarding ownership of minerals to policies about exploration and mining licenses. Participant's validated that the Mines and Minerals Act critically fosters protection of natural resources because of the fact that it governs the 'what', 'where', 'when', and 'how' in mining activities. In other words, the Act contributes to protection of mineral resources through policies on effective exploration and production of mineral-related products. One participant added,

“Our economy is driven hugely by the investments made and income created by the mining sector. In order for this to continue, we need to take care of our mineral resources through protecting it from unethical and unregulated mining practices and activities. This is what the Mines and Minerals Act focuses on – to set ground rules that benefit the economy and the environment and our mineral resources.”

The Mine and Minerals Act of 2009 have policies and stipulations encouraging government officials to act in a way that mining activities in Sierra Leone minimize environmental hazards that result to damages of various plant and wildlife habitats and general public health and social problems.

As one participant noted, *“this Act has policies for members of the administration involved in the mining industry to follow that ensure effective management of mineral resources”*. One participant further added through an example. *“For example, before granting mineral rights to investors and companies, the Minister should consider on the conservation of the mineral resources and other natural resources.”*

There are two primary themes that could be drawn upon from the responses made by the participants in relation to protecting mineral resources under the Mines and Minerals Act of 2009. The first theme is licensing agreements. According to one participant, the licensing agreement could serve as a stepping stone for Sierra Leone's fight against over-exploitation of their mineral resources. This is because policies in acquiring licenses not only take note on the potential economic-related benefits of mining and exploration, but also on the environmental protection. A participant further added that *‘regulating mining licenses could avoid illegal mining activities, and only take provide licensing to those companies that could be good for the economy and the environment.’*

Another theme is environmental impact assessment. Three of the participants mentioned that the Mines and Minerals Act of 2009 covers environmental impact assessment. They all agreed that the Act's stipulation on obliging companies to conduct environmental impact assessment enables the government to monitor the different environmental issues and consequences that may result to mining activities, and therefore protects the country's natural resources.

Water Resources

There are also various policies and national laws that the Government of Sierra Leone implemented in order to conserve and protect its water resources. According to the participants, there are various national and local policies that are concerned with the conservation and protection of water resources, as well as water access and sanitation. Based on the statements made by the research participants the key policy, when it comes to protecting water resources while providing clean drinking water across the country, is the

National Water and Sanitation Policy. According to one participant, this particular policy *“is about the government’s responsibility to provide water access to Sierra Leone’s population while taking into account conservation through water sanitation”*.

More so, one major emphasis that the participants stressed out is proper management of water resources. In particular, one participant who works proactively in the agriculture sectors noted that the national water and sanitation policy also covers proper water management in agriculture, adding that *“agriculture is one of the primary industries in Sierra Leone, following the mining industry”*.

Besides agriculture, conservation and management of water resources are implemented through effective urban development. According to one participant, *“Sierra Leone has more or less 6 million people and urbanization is rapid in various districts and cities, for example, Freetown”* He added that urban centers such as Freetown face water pollution as there is no proper solid waste management policy that could protect water systems. This is a fact that the SLEPA, in coordination with local governments, work on as of today. According to another participant, *“we are currently working with the local governments in every city and urban areas in the country to come up a national policy for waste management that focuses on waste disposal and collection and environmental risk management”*.

Land Resources and Biodiversity

Despite being located in the African continent, Sierra Leone is rather rich in ecosystems that include forests, wetlands, savannah, and marine. There numerous policies and laws that the GOSL designed and implemented throughout the past decades in order to manage and preserve the natural cycle of these ecosystems. For example, Sierra Leone has diverse forests spread across the country.

But one participant noted that the country is facing serious problems of deforestation. *“Here, some of our forests are deforested to pave way for other economic activities like mining, agriculture and many others”*. Yet, the Government is keeping its stride to preserve these forests against illegal deforestation activities and land acquisitions through various policies. For instance, one participant identified that the Land Policy of 2005 is a primary written document for preservation of land resources including forests. However, the Government is still facing some serious challenges in relation to the implementation of the said policy. This is proven by the statement made by one participant,

“The 2005 Land Policy is a good policy for protecting our land resources, but we are also struggling to address challenges about land tenure and management. For example, I could say that there are some instances of illegal acquisition of lands. This shows that there is a clear ineffective land management happening, but we are slowly taking actions about it. We still have a long way to go for these kinds of problems”.

Environmental Problems

The participants identified various environmental problems and issues currently faced by the countries that various policies are addressing. Apparently, these issues had also been the ones faced by most countries where urbanization and mining are two key trends. Some of the issues identified by the participants include:

- Land degradation due to mining activities.

- Deforestation due to mining activities and other development efforts.
- Illegal logging.
- Water pollution.
- Lack of water supply.
- Poor sanitation in urban areas.
- Lack of proper solid waste management.
- Illegal fishing.
- Forest degradation.
- Sand mining.

Effectiveness of Existing Policies in Protecting Natural Resources

Based on a 5 point Likert scale system, the participants were asked to rate the effectiveness of these policies in relation to protecting various natural resources. Table 4.2 below shows the average rating point perceived by the participants.

Table 4.2: Average Rating Point Perceived by the Participants

Natural Resources Area	Policies and Legislative Efforts	Average Rating Point (1 – Not Effective; 5 - Effective)
Mineral resources (diamond, bauxite, rutile, chromite, gold, iron ore, etc)	Mine and Minerals Act 2009	5
	National Minerals Agency Act, 2012	4.8
Water Resources	National Water and Sanitation Policy	3.8
	National Environmental Policy	4.4
	Local policies and ordinances for water management and sanitation	3
Land Resources (Forest, Land Use, Savannah, grasslands, etc)	2005 Land Policy	4.6
	National Environmental Policy	4.3
	Forestry Act 1988	4.4
Coastal and Marine resources	Environmental Protection Act	4
	Local policies and ordinances for Coastal Sanitation	3

Based on the rating, the Mines and Minerals Act of 2009 is very effective when it comes to protecting mineral resources. There are various reasons behind such rating, as perceived by the participants. According to one participant, “I rated this [Mines and Minerals Act, 2009] because it has already provided us the framework in managing properly our mineral resource.”

Another participant added that this also served as guidelines for people in the government to be responsible and be compliant with the responsibilities and obligations stipulated by this Act. One participant noted that this Act is effective “*simply because of mining exploration*”

policies especially licensing regulations for exploring our mineral resources.” Such statement regarding licensing regulations could aid in regulating exploitation of mineral resources.

One the other end, environmental policies and ordinances at local levels are considered to be less effective, mainly because of various issues. One of the issue is lack of limited infrastructure and governance for its implementation. According to one participant, *‘although local government is doing its best, but the main problem experiencing local communities when it comes to sanitation is the lack of infrastructures and effective management and governance critical to implementing the policies for obtaining certain goals.’*

DISCUSSIONS AND CONCLUSIONS

It is considerable that Sierra Leone is one of the crowning jewels of Africa due to its abundance of natural resources which positively impacts the economic stability and growth of the country. It is, therefore, imperative that protection of such natural resources is of great importance and should be considered seriously by the Sierra Leonean Government, including environment-related government agencies, and the people as well.

Findings noted that there are various policies designed and implemented by the government through SLEPA. These policies are currently imposed and observed by all key stakeholders in various industries such as mining, agriculture, public sector and service, and fishing. According to the participants, mineral resources are protected under the Mines and Minerals Act. This Act presents notable stipulations, policies and regulations that govern major mining activities such as exploration, licensing and many others.

The Mines and Protection Act was also noted to be effective, supporting findings by past literatures such as the study conducted by Mason (2014). The evidence presented with regards to mineral resources protection in Sierra Leone simply reflects the continuous drive of the EPA and the Government of Sierra Leone as a whole while maintaining positive growth to the economy.

There are two recurring themes that the Mines and Minerals Act encapsulates in relation to protecting mineral resources and other natural resources of the country. The first derived theme is the licensing stipulations of the Mines and Minerals Act. Drawing upon the licensing stipulations under the Act, mining companies should acquire first necessary permits and licenses depending on their type and scale of their operation. For example, companies should apply for exploration license before commencing and conducting any exploration of possible mineral deposits.

Basically, there are various policies regarding acquiring licenses and permits for mining activities in Sierra Leone, such as exploration licenses, small-scale mining licenses, large-scale mining licenses, artisanal mining license and many others (Mine and Minerals Act, 2009, 2009). Such licensing policies, which evidences presented on this current research, could be considered to be a starting point for protecting the environment. This is because holding a mining license enables companies to conduct their operation while adhering to the environmental obligations stated under the license terms. For example, the provisions on large-scale mining license restrict and regulate the use of illegal and unethical mining

practices and thus the Director of Mines must take action when such instances occur. As noted on the Act, “wasteful mining and treatment practices are contrary to the approved programme of mining operations” and therefore violations to the Acts’ perception of good mining practice (Mine and Minerals Act, 2009, 2009, p. 93).

The natural resources protection in the Mines and Minerals Act is reflected on the environmental assessment protocols instituted by the said Act. This has been widely evidenced by the responses made by the participants. Drawing out from the said Act, providing licenses and mineral rights to companies take consider on the “need to conserve the natural resources”, which could be done by conducting environmental impact assessments. Although such policy poses significant impact as to how companies could minimize hazards and impacts towards the environment during the operation, it is not clear though on the detailed process of conducting such environmental impact assessment.

The participants did not consider on talking about how the assessment should be made. In other words, there is this lack of adequate resources that companies could turn to in relation to conducting impact assessments, which could propose another significant issue governing protection of environment and natural resources of the country. This vague and the lack of succinct direction of conducting the environmental impact assessment is somewhat similar to the findings and analysis presented by the Network Movement for Justice and Development with regards to their review on the Protection of the Environment Section of the Mines and Minerals Act, 2009 (NMJD, 2014).

In addition, findings also noted that Sierra Leone is facing serious challenges about water resources management which likely includes water supply and sanitation. This supports major findings of past research studies regarding the continuing issues of water resource management in Sierra Leone (Kallon, 2006; Jimmy et al., 2013). The research findings noted that two primary and nationwide policies regarding water resources management are effective to protect water resources, with high emphasis on water sanitation and waste management. These are the National Water and Sanitation Policy and National Environmental Policy. Despite the nationwide-scale of these policies, local governments also provide ways for protecting water resources, through water recycling and water sanitation.

These are stipulated by policies and ordinances implemented in a local context, meaning city-wide or community-wide implementation efforts. However, results showed that these local-based policies and ordinances are not that effective due to various reasons such as lack of infrastructure, public awareness, governance and financial support.

More so, it has also been revealed that there are policies that are outdated and needs to revised and amended. For example, the Wildlife Conservation Act, which protects biodiversity (e.g. plants and animals), needs to be revisited due to outdated policies and stipulations which are no longer applicable to the current situation in the country. Besides the outdated policies, findings noted that there is absence of policies or legislative efforts in certain issues facing country in relation to its natural resources protection. For example, sand mining is prevalent in coastal areas that continue to degrade the quality of coastal resources, and therefore creating problems for the tourism industry. This has also been highlighted on some past literature regarding the massive sand mining activities in Sierra Leone (Tourism: Sierra Leone, 2013; Kanu, 2013).

In a nutshell, Sierra Leone is protecting its natural resources in a gradual manner, where Government officials and agencies, including the SLEPA are extending their efforts more into implementing effective management protocols and strategies and risk assessment strategies that focuses on various environmental issues. More so, it is considerable to conclude that the Government of Sierra Leone is taking seriously environmental issues while taking into account sustainable development and economic growth initiatives.

RECOMMENDATIONS

Based on the findings, there are various recommendations that could be reasonably be emphasized in relation to protecting Sierra Leone's natural resources. The following numbered points correspond to some of the recommendations proposed by the research study based on the study's findings as well as knowledge from the literature review. It also includes the potential benefits that could be achieved when proposed recommendations are taken into action and addressed.

1. The Government of Sierra Leone should improve their natural resource management capabilities through developing SLEPA's capabilities in carrying out their responsibilities. This could be through providing the institution with the right technologies and infrastructure to assess and monitor the diverse environmental issues resulting from various activities in major industries such as mining, agriculture, fishing and industrial-related sectors. Such recommendation is drawn upon from the knowledge acquired from the analysis made by a research study. This is important to note since this has not been tackled by the participants during the interview, but should be given high priority.

Environmental governance is critical to the effectiveness of a policy when it comes to its implementation. This is because good governance results to positive results and consequences to the implementation of the policies that a government agency should carry out. However, based on the literature review, there is poor governance on the part of SLEPA where there are perceived issues that somewhat hinders implementation of various policies regarding environmental protection, including natural resources protection. For example, Mason's study (2014) found out that the agency lacks human and technological resources to carry out policy implementation and monitoring.

Perhaps, SLEPA might undergo some critical organizational restructuring and additional professional development trainings and seminars for their employees in order to make sure that every employee are competent enough to carry out their responsibilities. In addition to an organizational restructuring and proposed human resources development initiatives, SLEPA might consider restructuring their core mission and responsibilities, most especially when it comes to autonomy. This is likely based on the findings presented by Mason's study (2014). The Government, SLEPA, and other key stakeholders should discuss on enhancing SLEPA's scope of responsibilities which could include the authority to impede and stop any operations of companies, most particularly mining companies, when negative practices and law breaches occurred. Simply, SLEPA must not only go within their scope of duties like the mere issuance of fines when non-compliance happens (Mason, 2014). As noted, one of the amendments that is feasible for implementation in relation to SLEPA's core responsibility is to provide authority for SLEPA in broadening their responsibility of not just providing issuance of fines, but also includes immediate response through impeding any operations of

companies due to non-compliance to mining policies. Here, SLEPA could create an immediate investigation response team that would conduct detailed investigation on-site in order to assess whether or not the company did violate any policies, most particularly violations on the Mines and Minerals Act. Findings from this immediate investigation and response team would serve as inputs for conducting appropriate actions against violators.

The amendment for establishing a governing unit within SLEPA that carries out the supplemental responsibility of first-hand action in stopping operations of violating companies will need further improvements on the technical and managerial capabilities of SLEPA. There were past programs that SLEPA, alongside the government and international organizations, had underwent in order to tackle this broadening of responsibilities through improving the technical and managerial capabilities of the organization which could be done for the purpose of the proposed or recommended additional responsibility. For instance, the government and UNEP had worked with SLEPA in order to support SLEPA's capabilities in addressing issues regarding climate change (Brown, 2010). Therefore, it is essential to take action and consider these recommendations. Benefits could include improvement of SLEPA's efficiency in carrying out their responsibilities given that they have the necessary tools and resources to make things done in relation to environmental protection and conservation. .

Since there are outdated policies such as the Wildlife Conservation Act, these should be reviewed and amended based on the current environmental and legal settings of the country. Outdated policies and legislation are important to be taken into high priority and to be reviewed and amended, most especially when the goal of such policies are critical. Benefits of reviewing and amending outdated policies could provide various benefits and advantages. For example, a newly amended Wildlife Conservation Act could stipulate new responsibilities of governing agencies to protect key ecosystems in accordance to the current environmental and legal settings in the country. It could also present new ways of conserving wildlife through various initiatives such as community involvement and international agreements. There could be various amendments that could be considered for the new Wildlife Conservation Act. One supplement amendment is that there should be section in the policy that focuses on research and monitoring. This section might consider creating a research and monitoring organization or agency, which could be a sub-unit of SLEPA, that carry out research-based responsibilities on wildlife protection and monitoring duties on the diverse biodiversity and ecology in Sierra Leone's national parks, sanctuaries and natural reserves. Likewise, there could be a section of the policy that centralizes on the public awareness and education in relation to protection which presents on the basic guidelines on implementation of awareness-related initiatives that are to be designed and implemented for the conservation and protection of wildlife as well as their habitat.

2. Since there are absence of policies and legislative efforts in addressing certain issues such as the continuous sand mining in coastal areas of the country, the government, in participation with local governments should design and implement nationwide policies and management initiatives to protect 'unprotected' natural resources. These policies and initiative could bring forward benefits that go beyond on just protecting the environment. For instance, the analysis spurted out issue of massive sand mining activities in coastal areas of Sierra Leone which likely impacted various sectors. **Thus, designing and instigating perhaps a Sand Mining Act could regulate and minimize drastic sand mining activities**

to only about 10 to 20 per cent. Such restriction and mining agreements could save coastal areas, which, further, boost tourism in the country.

The proposed Sand Mining Act could present sections of policies and regulations with regards to coastal protection, in particular, sand mining activities. The first section of the policy might be administrative section which focuses on the specific agency or government official to administer coastal protection and sand mining. It should also include the specification of responsibilities of the governing agency or official. The second section of the proposed Act focuses on sand mining licensing. Because there is massive sand mining operations which are unregulated in Sierra Leone, therefore, the issuance of licenses for sand mining operations could be of great help. The third section could stipulate the responsibilities of licensed companies in relation to social responsibility and sustainability. This section could also include policies and guidelines for non-compliance and revocation and renewal of licenses.

3. Enhance further local policies concerning water sanitation through integrating an effective management and assessment strategies and infrastructure. Considering the evidences pointing to lack of infrastructure, awareness and governance on urban water sanitation in most urban cities of Sierra Leone, recommendations for effective management and assessment strategies for water management and sanitation could be of great importance. It could yield benefits such as reducing water pollution level up to 80 per cent, reduce occurrences of water-related diseases due to water pollution and poor sanitation, improved water supply, and many others. This creation of new legal document of policies for water sanitation include sections on effective management policies and guidelines, water sanitation assessment guidelines, administrative and autonomy policies and many others that should be implemented and observed strictly nationwide. Recommended actions could include the following:

- Create implementation plans which include financial plans for nationwide solid waste management.
- Create new water and sanitation infrastructures and facilities in order to meet growing demand for water and at the same time meeting sustainability and environmental protection.
- Improvement of local government capacities and governance for water and sanitation programs and initiatives.
- Creation of effective monitoring and assessment mechanisms for water and sanitation across urban and rural areas in Sierra Leone.

4. There should be policies and regulations made for implementing sustainable practices for mining activities. Benefits for designing a framework for sustainable mining could be manifold. Benefits could include: (1) there could be perceived reduction on health issues amongst mining workers, (2) land degradation and pollution could be minimized up to 50 to 60 per cent, (3) reduced deforestation levels due to mining explorations, (4) reduced air and water contaminants and many others.

New policies for sustainable mining activities could be supplemental to the current Mines and Minerals Act. The policies presented here could outline integrated management practices with high focus on sustainability. It might cover various guidelines such as obligation of

companies to provide a long-term outlook of mining, mining waste disposal management, integrated and universal code of mining ethics, human resources management, and many others.

The table 6.1 below shows the relative costs that might incur during implementation of the recommendations and actions proposed by the current research. The table also includes estimated timeframe per action per recommendation.

Table 6.1: Recommendation/Action/Purpose, Cost (Leone/SLL), Time frame

NO.	Recommendation/Action/Purpose	Cost (Leone/SLL)	Time frame
1	Broadening SLEPA's core mission and responsibilities		
	<ul style="list-style-type: none"> Meeting with key stakeholders for the purpose of drafting and reviewing new core mission and responsibilities of SLEPA as integrated environmental protection body governing all environmental-related issues 	Estimated cost for meeting (including food and travel) is around 10,000 SLL	1 week
	HR initiatives for implementing new core mission and responsibilities		
	<ul style="list-style-type: none"> Meeting with SLEPA's HR unit or department to review human resources performance 	Roughly about 10,000 SLL for food and travel.	1 week
	<ul style="list-style-type: none"> Hiring and training new staff employees for the expanded scope of responsibilities 	Roughly 1,700,000 Leone. This will include recruiting, hiring and training costs.	2 months
2	Reviewing and Amending Wildlife Conservation Act		
	<ul style="list-style-type: none"> Reviewing Wildlife Conservation Act 	No incurred cost	1 week
	<ul style="list-style-type: none"> Establishment of research and monitoring department within SLEPA (including building establishment, hiring and training new employees, and related materials and infrastructure (e.g. computers, lab and research equipments)). This is in part of the new amendment of the Act for the research and monitoring policies 	Roughly 4 million SLL	1 to 2 years completion
3	Creation of new Sand Mining Act		
	<ul style="list-style-type: none"> Reviewing and Creating new Sand Mining Act 	No cost for creating new Act.	6 months
	<ul style="list-style-type: none"> Public awareness campaign for the new Sand Mining Act 	Roughly 500,000 only for advertising and public awareness purposes	1 to 2 months
4	Improvement of Water Sanitation and Conservation		
	<ul style="list-style-type: none"> Reviewing current urban and local water sanitation and conservation issues 	Roughly 500,000 SLL for research	1 month

	<ul style="list-style-type: none"> Creating universal and integrated water sanitation and conservation policies that will be implemented throughout the country, based on findings of research 	No incurred cost	4 months
	<ul style="list-style-type: none"> Provision of proper water sanitation and conservation resources and services. This will include providing home-based water sanitation equipments, water purifiers, etc. 	Estimated cost: 4,000,000 SLL.	5 to 8 months
	Creating new Sustainable Mining Practices Guidelines and its Implementation		
	<ul style="list-style-type: none"> Meeting with key stakeholders for reviewing current mining practices 	No incurred cost	2 weeks
5	<ul style="list-style-type: none"> Researching and creating sustainable mining practices guidelines to be implemented. This include research new trends in mining practices, sustainability as well as possible impact and risk assessment initiatives 	Roughly 100,000 SLL for researching	2 months
	<ul style="list-style-type: none"> Implementing new guideline (includes general public awareness campaign for the new guideline) 	Roughly 500,000 SLL for the PR campaigns.	2 months

REFERENCES

- "Tourism: Sierra Leone". (2013). *Africa Research Bulletin: Economic, Financial and Technical Series* , 50 (1), 19860B - 19861C.
- AFP News. (2011, August 22). *S. Leone could earn \$100 mn a year from oil: report*. Retrieved from Modern Ghana Website: <http://www.modernghana.com/news/346493/1/sleone-could-earn-100-mn-a-year-from-oil-report.html>
- Akiwumi, F., & Butler, D. (2008). Mining and Mining and environmental change in Sierra Leone, West Africa: a remote sensing and hydrogeomorphological study. *Environmental Monitoring and Assessment* , 142 (1), 309–318.
- Bermudez-Lugo, O. (2014). *2012 Minerals Yearbook*. USGS.
- Blinker, L. (2006). *Country Environment Profile: Sierra Leone*. Cardiff: Consortium Parsons Brinckerhoff.
- Carney, D. (1976). The Development of the Social Sciences-The Next Hundred Years. *One Hundred Years of University Education in Sierra Leone, 1876-1976* , pp. 43-47.
- Cham, K. (2013, October 22). *Russia's Lukoil discovers oil in Sierra Leone*. Retrieved from Africa Review Website: <http://www.africareview.com/Business---Finance/Russia-firm-Lukoil-discovers-oil-in-Sierra-Leone/-/979184/2042414/-/cwb7tn/-/index.html>
- Chasek, P. S. (2000). *The Global Environment in the Twenty-First Century: Prospects for International Cooperation*. New York: United Nations University Press.
- Church, R. H., Hoffman, G. W., & Percy, G. E. (1963). *Environment and Policies in West Africa*. Princeton, NJ: Van Nostrand.
- CIA. (2014). *The World Fact Book: Sierra Leone*. Retrieved from CIA Website: <https://www.cia.gov/library/publications/the-world-factbook/geos/sl.html>

- Cooper, D. E., & Palmer, J. A. (1995). *Just Environments: Intergenerational, International, and Interspecies Issues*. New York: Routledge.
- Creswell, J. (2010). *Research Design: Qualitative, Quantitative, and Mixed Methods*. Thousand Oaks: Sage.
- Dumbuya, I. K. (2009, August 23). *Environmental Problems Affecting Sierra Leone....Time To Act*. Retrieved September 3, 2014, from Standard Times Press: http://www.standardtimespress.org/artman/publish/article_4148.shtml
- European Union. (2014). *Environment and climate change*. Retrieved July 23, 2014, from http://eeas.europa.eu/delegations/sierra_leone/eu_sierra_leone/tech_financial_cooperation/rural_development/environment_and_climate_change/index_en.htm
- FAO. (2005). *Sierra Leone*. Food and Agriculture Organization of the United Nations.
- Ferguson, C. J. (1977). The Development of the Humanities: Philosophy in Africa. *One Hundred Years of University Education in Sierra Leone 1876-1976*, pp. 8-11.
- Government of Sierra Leone. (2013). *The Agenda for Prosperity*. Sierra Leone.
- Harrell, M. C., & Bradley, M. A. (2009). *Data Collection Methods: Semi-Structured Interviews and Focus Groups*. Pittsburgh, PA: RAND Corporation.
- International Monetary Fund. (2013). *Sierra Leone*. Washington: IMF.
- Jimmy, D., Sundufu, A., Malonoski, A., Jacobsen, K., Ansuman, R., Leski, T., et al. (2013). Water quality associated public health risk in Bo, Sierra Leone. *Environmental Monitoring and Assessment*, 185, 241-251.
- Kallon, S. B. (2006). Pollution and Sanitation Problems as setbacks to sustainable water resource management in Freetown. *Journal of Environmental Health*, 71 (5), 34-36.
- Kanu, R. (2013). *How illegal sand mining in Sierra Leone is destroying the local beaches*. Retrieved from The Ecologist Organization Website: http://www.theecologist.org/News/news_analysis/1872134/how_illegal_sand_mining_in_sierra_leone_is_destroying_the_local_beaches.html
- Korama, E. (2013). Sierra Leone could be the new jewel in Africa's crown. *The Mining Journal*, 1 (1), 1-20.
- Larbi, A. (2012). *Country pasture / Forest Resources Profil*. Retrieved from Forest and Agriculture Organization of the United Nations Website: <http://www.fao.org/ag/agp/AGPC/doc/Counprof/Sierraleone/Sierraleone.htm>
- Lubovich, K., & Suthers, E. (2007). *Improving Environmental Security in Sierra Leone: The Importance of Land Reclamation*. Falls Church, VA : Foundation for Environmental Security and Sustainability (FESS) Issue Brief.
- Lubovich, K., & Suthers, E. (2007). *Improving Environmental Security in Sierra Leone: The Importance of Land Reclamation*. Foundation for Environmental Security and Sustainability\.
- Marvasti, A. B. (2004). *Qualitative Research in Sociology*. London: Sage.
- Mason, N. (2014). Environmental governance in Sierra Leone's mining sector: A critical analysis. *Resources Policy*, 41, 152-159.
- Mine and Minerals Act, 2009. (2009). Mines and Minerals Act, 2009. Retrieved from <http://www.sierra-leone.org/Laws/2009-12.pdf>
- NMJD. (2014). *Cost-benefit review of African Minerals Limited Mining lease Agreement*. Retrieved from <http://www.nmjd.org/home/images/document/Cost%20Benefit%20-%20African%20Minerals.pdf>
- Paracka, D. J. (2003). *The Athens of West Africa: A History of International Education at Fourah Bay College, Freetown, Sierra Leone*. New York: Routledge.
- Porter, A. T. (1976). Sierra Leone Education Review: All Our Future. *Freetown University of Sierra Leone*, p. 49.

- REDD.Desk. (2014). *Environmental Protection Agency (Sierra Leone)*. Retrieved July 23, 2014, from <http://theredddesk.org/countries/actors/environmental-protection-agency-sierra-leone>
- Resources, M. o. (2014). *Feasibility study for manual drilling: Mapping of favourable zones*. Ministry of energy and water Resources.
- UNICEF. (2013). *Annual Report 2012 for Sierra Leone, WCARO*. New York.
- United Nations. (2010). Investment Policy Review: Sierra Leone. *United Nations Conference on Trade and Development*. Geneva: United Nations.
- United.Nations.Environment.Programme. (2010). *Sierra Leone: Environment, Conflict and Peacebuilding Assessment*. Châtelaine, Geneva: United Nations Environment Programme.
- Wilson, S. A. (2011). Sierra Leone's illicit diamonds: the challenges and the way forward. *GeoJournal* , 76, 191-212.
- Wilson, S. (2013). Diamond exploitation in Sierra Leone 1930 to 2010: a resource curse? *GeoJournal* , 78, 997–1012.
- World Bank. (2008). *Sierra Leone Mining Sector Reform: A strategic environmental and social assessment*. World Bank Sustainable Development Unit.

APPENDIX

Appendix 1: Reflection about the Programme

Besides my passion in the field of oil and gas management, I was able to learn a lot from the Bsc Oil and Gas Management programme I enrolled at Greenwich School of Management. First of all, the dissertation study required by the programme had been a milestone achievement for me as a student. It is a manifestation of my hard work and a reflection of the things I learned from class.

As noted, my dissertation study entitled “What policies have been implemented in the protection of Sierra Leone’s natural resources” is a simple and important evidence of putting what I have learned from the programme into practice. For example, as part of the programme curriculum, we were taught about the basics and principles of dissertation planning and research.

We were educated about important aspects, guidelines and standards in writing our own research and dissertation studies, from establishing a literature review to presenting secondary and primary resources and contents with proper referencing methods. This particular module had helped me a lot throughout the course of conducting and finishing my dissertation study. There were various research skills that I learned and acquired in this module as well as in the course of doing my actual dissertation study. One example is the ability to gather data and design data collection instruments and tools.

I learned about various data gathering tool and techniques which are crucially important knowledge to developing my research skills in addition to the completion of my dissertation. Moreover, interpersonal communication also a skill I noted to have developed. Personally, I often restrain myself in talking to people I do not know. However, during the interview process for my dissertation, it went well. This communication skill is important not just for the sake of conducting a research, but it is also important in our social lives.

I will use what I have learned from this module throughout my life, most particularly in my future endeavor of working in an energy company. More so, several modules in the programme gave me extensive knowledge about how organizations work, either in general or in the energy industry in specific. For instance, the programme covered business environment and strategic management which essentially taught me how dynamic the business environment is and how such companies could strategically place themselves on top in order to meet the demands and expectations of the volatile business environment. In relation to business environment, we were also taught of how to assess or evaluate the impacts of business and industry environmental factors.

Though I have learned a few theories, tools and concepts of assessing macro and micro environmental factors in my marketing class, the module broadened my understanding on not just about what these concepts, tools and theories are, but also how we could use these as an input for managing different activities related to managing the business in a volatile and ever-changing market dynamics. The knowledge I acquired from understanding how business works and how environmental factors could impact business operations in general could be of great importance in my future work in an energy-related company.

Besides strategic and project management concepts in the energy industry, energy economics was an important module in the programme which I find useful. Historically, I am not fond of

economics as an area of knowledge and practice, mainly because of the various economic terms and jargons that I initially find difficult to understand. However, completing the module changed the way I perceive economics, and I am now eager to learn more about how economics could help me understand more of how the energy industry works and thrive from an economic perspective.

In a nutshell, completing the programme did more than just augmenting my interest and passion in oil and gas management, but it prepared me for what would happen in the future when I engage in the energy industry. It molded me with proper skills-set and knowledge to pursue my dreams and passion, which will likely help me improve and excel personally and professionally.