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Oil spill management in Sierra Leone: an assessment on the effectiveness of laws, policies and regulations

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OIL SPILL MANAGEMENT IN SIERRA LEONE: AN ASSESSMENT ON THE EFFECTIVENESS OF LAWS, POLICIES AND REGULATIONS

By

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SIERRA LEONE

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Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature):
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(Date):
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Supervised by:
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Supervisor's affiliation**.....**

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Abstract

Title of Dissertation: **Oil Spill Management in Sierra Leone: An Assessment on the Effectiveness of Laws, Policies and Regulations**

Degree: **Master of Science**

This research study presents that Sierra Leone is a party to the UNCLOS, SOLAS, STCW and MARPOL among others; and it is a member of the IMO. However, the country struggles with the evolving nature of the maritime industry, especially in dealing with oil spill and environmental pollution and the seeming non-existence of oil spill laws and regulations. Where the laws and regulations exist, implementation is mostly non-effective. This study therefore, investigate the existence of laws and their implementation in managing oil spill in Sierra Leone.

The study was carried out using the mixed method research design which allows for the inclusion of both quantitative and qualitative elements in the same study. The study targeted a total sample size of twenty (20) respondents selected from ten (10) stakeholder institutions drawn from government ministries and line agencies, oil companies and other organizations in the maritime industry. The study reported a 100% response rate.

The study reports that Sierra Leone, like Nigeria and Ghana struggles with the effective implementation of laws, policies and regulations relating to oil spill planning, preparedness and response. The laws and regulations are in existence, their implementation is not effective towards addressing events of oil spill outbreaks. Government commitment is low and this limits the availability of tools, equipment, human expertise and finance among others to enhance policy implementation and response mechanisms to oil spills. The study reports the lack of political commitment and coordination among stakeholder organisations within the maritime industry as major challenge in the industry. The majority of institutions carry out their functions in parallel with one another and separately so as to avoid institutional synergy.

The study therefore recommends among many for the reviewing of all outdated laws and policies on oil spill management, also the Marine Pollution Bill of 2016 should be enacted as soon as possible. In order to coordinate a multi-agency response in the case of an oil spill in the nation, all areas of conflict between and among laws, policies, and regulations should be harmonized with clearly defined leadership, roles, and duties. The SLMA and other pertinent support agencies should strictly implement and enforce all applicable regulations pertaining to the multi-agency response to an oil spill in the nation.

KEYWORDS: Oil Spill, Policy Implementation, Environmental Protection, Policy Enforcement, Sierra Leone

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List of Abbreviation

ADIOS: Automated Data Inquiry for Oil Spills 24

CLC: Civil Liability Convention 44

DPR: Department of Petroleum Resources 31

EEZ: Exclusive Economic Zone 12

EPA: Environmental Protection Agency 14

ESA: Environmental Sensitivity Atlas 24

FUND: International Fund for Compensation for Oil Pollution Damage 44

GI WACAF: Global Initiative for West and Central Africa 13

GNOSCP: Ghana National Oil Spill Contingency Plan 22

GSL: Government of Sierra Leone 15

IAA: Inter-Agency Agreement 22

IMO: International Maritime Organization 10

SOLAS: Safety of Life at Sea 13

MARPOL: Convention for the Prevention of Pollution 13

MFMR: Ministry of Fisheries and Marine Resources 16

MLC: Maritime Labour Convention 13

MOSES: Marine Oil Spill Equipment System 24

MOU: Memorandum of Understanding 22

MTA: Ministry of Transport and Aviation 16

NPSLL:National Petroleum Sierra Leone Limited 16

NDMA: National Disaster Management Agency 16

NEBA: Net Environmental Benefit Analysis 24

NNOSCP: Nigeria National Oil Spill Contingency Plan 24

NOSDRA: National Oil Spill Detection and Response Agency 25

OPEP: Oil Pollution Emergency Plans 20

OPRC: International Convention on Oil Pollution Preparedness Response and Co-operation 12

OSTM: Oil Spill Trajectory Modelling 24

REC: Research Ethics Committee 18
SLMA: Sierra Leone Maritime Administration 13
SLNOSCP: Sierra Leone National Oil Spill Contingency Plan 19
SLPA: Sierra Leone Port Authority 15
SLUBOA: Sierra Leone United Boat Owners Association 16
STCW: Standard for Training Certificate and Watch keeping 13
UNCLOS: United Nations Convention on Law of the Sea 12
UNCTAD: United Nations Conference on Trade and Development 10
WMU: World Maritime University 18

Chapter 1 Introduction

1.1 Background to the Study

Maritime activities are a critical component to the day-to-day human life; with the passage of time, these activities have evolved into an enormous economic sector which connect the world's economies through trade. This continuous growth has resulted in 90% of the global trade by volume being transported by ships (Xiao, et al 2021). The world's shipping fleet has increase to 99,800 ships of which 29% are oil tankers (United Nations Conference on Trade and Development [UNCTAD] 2021). Yearly, oil tankers transport an estimated two million nine hundred thousand tons of crude oil and oil products right across the world by sea (International Maritime Organization [IMO] 2021).

Despite its huge economic benefits and its being the most environmentally sustainable means of carrying world trade (Mejia 2020), shipping is fraught with environmental challenges which are pollution from ballast water, sewage, solid waste, under water noise, oil discharge and air emission (Singh & Mee, 2008). According to research, there are about 360,000 tons of oil spilled into the sea from shipping incidents during the past twenty years (Hebbar & Dharmasiri, 2022). Also, Vanem, et al (2007), mentioned that there had been a notable number of devastating ship accidents that have caused large amount of oil spill into the marine environment. Some of the well-known oil spill accidents in the past are *Exxon Valdez (Alaska, 1989), Nakhodia (Japan, 1997), Erika (France, 1999), Prestige (Spain, 2002), MV Hebei Spirit (Republic of Korea, 2007) and the Deep-Water Horizon in the Gulf of Mexico in 2010* (Kanso, et al 2020). The most recent well-known accident that caused massive oil spill in the marine environment was the one that occurred off Mauritius located in the Indian Ocean, known as the *Wakashio oil spill* which occurred on August 6, 2020 (Rejendran, et al 2021).

On the other hand, land source pollution which include municipal waste, refinery and river-run off are another contributing factor in polluting the marine environment (Vanem, et al 2007).

Major oil spill accidents have caused widespread environmental damage which have killed and rendered thousands of miles of coastline uninhabitable for native species. It has also posed health risk concerns for local residents in each and every area where these spills occurred, while disrupting the socio-economic activities of affected communities. For example, Marsa, (2016) as cited in Kanso, et al (2020), stated that, six years after the *Deep-Water Horizon* oil spill incident, residents of the Gulf of Mexico were still suffering from migraines, skin rashes, bloody diarrhoea, profound depression and anxiety. Another instance was that the single-hull tanker *Erika* which sank near the coast of France and spilled more than *10,000 (ten thousand*) tons of oil, killing *120,000-300,000 (One hundred and twenty thousand to three hundred thousand)* birds, similarly, the single-hull tanker *Prestige* sank off the coast of Spain and spilled *77,000 (Seventy-Seven Thousand)* tons of oil and killed *65,000-130,000 (Sixty-Five Thousand to One Hundred Thirty Thousand)* birds (Van Leeuwen & Kern, 2013). Also, the 1978 *Amoco Cadiz* accident resulted in the death of over *20,000 (Twenty Thousand) birds, millions of molluscs, sea urchins, benthic species, other shell and fin fisheries* (Maritime Connectors, 2013 as cited in Singh, et al. 2015). The acute toxic effects from oil ingestion, inhalation, smothering, drowning and hypothermia from the *Exxon Valdez* oil spill resulted to the death of *250,000 seabirds, 2,800 sea otters, 300 harbour seals, 250 bald eagles, up to 22 killer whales and billions of salmon herring eggs.* In a similar incident, the *Hebei Spirit* oil spill culminated in an area-wide impact to fisheries, marine aquaculture and beaches on the west coast of the Republic of Korea with the possibility of a large-scale impact on the marine ecosystem (Barron, et al 2020). Further, the oil slick from the *Wakashio* oil spill impacted 125 km of Mauritius waterfront and covered waters coming towards the shores, spreading on beaches, estuaries and mangrove swamps. This affected the biodiversity and the socio-economic activities of the said areas (Sunkur & Bokhoree, n.d)

Therefore, the above mentioned environmental and socio-economic damage are a clear indication that if oil pollution is not adequately managed, the effect will be prolonged and devastating on the marine environment as well as on human beings. It was against

this back drop that the International Maritime Organization (IMO) adopted the International Convention for the Prevention of Pollution from Ships-MARPOL 1973/78 (IMO nd). Also, the United Nations Convention on Law of the Sea (UNCLOS 1982) outlines in the most comprehensive way marine environmental regulations. Although, the said regulations are not prescriptive in nature in terms of standard best practice, however, they serve as a reference point in the development of international maritime laws (Sabela-Rikhotso, et al 2021).

With all the preventive measures put in place, it is rather difficult if not impossible to prevent oil spill in totality; hence, effective preparedness should be in place to manage oil spill incidences when they do occur. It is within the IMO framework that the International Convention on Oil Pollution Preparedness Response and Co-operation (OPRC 90) was promulgated which is the international instrument that provides for coordination and international cooperation and mutual assistance in preparing and responding to major oil spill accidents (IMO n.d).

Sierra Lone is a country situated on the West Coast of Africa with approximately 28,000 square miles and with a population of 8,141,343 (Statistics Sierra Leone [Stats SL] 2021; Kaifala, 2017). The country is divided into sixteen districts and four physical regions: the coastal swamp, the Sierra Leone Peninsula, the interior plain and the interior plateau and mountain region. It has a tropical climate characterize by the alternating rainy and dry season. The country is bounded on the north and east by Guinea, on the south by Liberia and on the west by the Atlantic Ocean. It covers a total area of about 71,740km2 with a coast line of about 510km and the continental shelf of about 100km wide in the north and tapers to about 13km in the south towards Liberia. Sierra Leone claimed its 200-mile exclusive economic zone (EEZ) in 1994 with a total area of about 157,000km2. The continental shelf area covers about 30,000km2. The coastline is characterized by extensive flora of mangrove plants, mainly the Rhizosphere spp, a number of estuaries and rivers that are navigable (Sesay, S.M., et al 2021).

The country has three ports: Queen Elizabeth II Quay, Port of Pepel and Port of Sherbo Island. The number of oil tankers calling to and out of the ports in Sierra Leone are

relatively small as compared to other countries in the sub region; nevertheless, Sierra Leone is a coastal state and therefore it faces the potential threat of a major oil spill from tankers traversing through it coast from Europe, North America and the Middle East. In an event of a collision, it could have a devastating impact on the environment and the livelihood of the residents of that area (Global Initiative for West and Central Africa [GI WACAF] 2016). Momoh & Bassey, (2021), argued that, though at the early stage of exploration, the positive signs from the drills between 2007-2012 are reassuring that petroleum and hydrocarbon discovery are just in sight. This has the potential to stimulate economic upscale and sustainable development in the country. However, just like most oil producing countries in the world, oil discovery and exploitation are likely to increase the risk of oil spill occurrence either during the production stage or on the transportation stage of the oil. Also, Sierra Leone being a country that is heavily dependent on farming, tourism and biodiversity, and considering how wide spread and environmentally destructive oil spill incidences can be, it is important to simulate and analyse potential oil spill incidences and trajectories in order to aid the development for preparedness and responses through laws, policies, regulations and strategies.

1.2 Statement of the Research Problem

Sierra Leone is a party to the United Nations Conventions on the Law of the Sea (UNCLOS) and the country also became a member of the International Maritime Organization in 1973 (IMO, nd.), and has been an active player in the implementation and enforcement of IMO Conventions such as the International Convention for the Safety of Life at Sea (SOLAS), Standard for Training Certificate and Watch keeping (STCW), Maritime Labour Convention 2006 (MLC) and International Convention for the Prevention of Pollution (MARPOL). In this regard, the Sierra Leone Maritime Administration and its stakeholder institutions have attempted to formulate laws, policies and regulations on oil spill management in the country. However, due to the evolving nature of the maritime industry and by extension oil spill and environmental pollution, the non-existence of a national legislation on marine environmental

pollution coupled with the fact that the existing policies and regulations may not be adequate in optimizing the current regulation of oil spill management.

The overall population of Sierra Leone's coastal regions is thought to be around 1,347,000 people, according to the Environmental Protection Agency (EPA), 2015 report. This population is not spread equally. The population is believed to be 80,000 in the Scarcies River and Lungi regions of the North, 1,250,000 in the peninsula regions of Freetown, and 8,000 along the Sherbro River in the South. Since the population is expected to increase by around 2.5 percent yearly, the government and its stakeholder institutions must act quickly to adopt appropriate policy measures especially on oil spill management in an event an incidence of oil spill occurs in order to advance the coastal environment and its resources in the interest of the nation's growth (Sesay, 2020).

This research reviews the existing legal and regulatory framework on oil spill management and on the other hand, it seeks to assess its compatibility in relation to the evolving maritime industry through a comparative analysis with other countries in the sub region whose laws, policies and regulations on oil spill have been tested over time with major oil spill incidents to ascertain whether Sierra Leone’s oil spill laws, policies and regulations will stand the test of time in case similar incidents occur.

1.3 Research Aims and Objectives

The following are the aims and objectives of this research:

- Assess the effectiveness of the existing laws, policies and regulations on oil spill management based on their objectives.
- Assess how the laws, policies and regulations on oil spill management in Sierra Lone are compatible to international best practices.
- Highlight the lapses in the current laws, policies and regulations on oil spill management.
- Provide recommends for the review and update on the lapses in the current laws, policies and regulations on oil spill management.

1.4 Research Questions

In order to achieve the aims and objectives of this research, the following research questions will be pursued:

- How do stakeholders in the Sierra Leone Maritime Industry view the country's oil spill preparedness?
- How can the Government of Sierra Leone address weaknesses in the existing legal and regulatory framework for oil spill management?
- What are the challenges in the current laws, policies and regulations on oil spill management when compared against international best practices?

1.5 Research Methods

The approach that is employed in the study is presented in this section. It explains the research strategy, study location, and population, as well as sample selection and data collection procedures. It also goes through data analysis techniques used in the study.

1.5.1 Research Design

The mixed methods research design is used in this study. This method is chosen because it allows for the inclusion of both quantitative and qualitative elements in the same study. It also frequently uses visual aids such as tables and charts to simplify data understanding and presentation. Finally, it enables for the study of many variables (Kitada, M. 2021).

1.5.2 Population of the Study

The term research population can be referred to a clearly defined group of people or things that are known to share common traits. Typically, every person or thing within a population shares a single, unifying property (Kitada, M. 2021). The following people/institutions make up the study's research population:

- Sierra Leone Maritime Administration
- Sierra Leone Port Authority
- Environmental Protection Agency

- National Petroleum Sierra Leone Limited
- Ministry of Transport and Aviation
- Ministry of Fisheries and Marine Resources
- Ministry of Tourism
- Ministry of Justice (Law Officers Department)
- National Disaster Management Agency
- Sierra Leone United Boat Owners Association

This combination of respondents will help to give relevant information needed for the study. This is so because, the selected institutions are key stakeholders in the Sierra Leone maritime domain and they have obligations on the national oil spill contingency plan. However, there are other stakeholder institutions like the Republic of Sierra Leone Armed Forces, Maritime Wing, Sierra Leone Police, Maritime Wing, Joint Maritime Committee, Meteorological Department, Institute of Marine Biology and Oceanography, Ministry of Health, Ministry of Finance, Ministry of Local Government and Rural Development and Ministry of Foreign Affairs and International Cooperation that are not selected due to the fact that the selected institutions in a broader framework have a correlation in their functions with the institutions that are not selected for the research population. Also, the researcher wants to limit the scope of the research population in order to enable the researcher collect cogent data and not to prolong the data collection.

1.5.3 Sample Size and Technique

The research study aimed for a total sample size of 20 respondents (i.e., two respondents from each of the 10 selected institutions indicated under the population of the study above). These respondents were carefully selected from among the organization's top and middle management using the purposive sampling technique. This was done to guarantee accuracy and reliability in data collection as these top and middle management respondents are professionals and expert on the subject being researched.

1.5.4 Instrumentation

The methods employed in this study entailed having all of the necessary information contained throughout the research study. The findings, results, conclusion, and recommendations are based on the information collected from the different sources.

The most relevant and convenient data collection procedures were utilized at each stage of the research to guarantee that good quality data was acquired from these numerous sources. It is worth emphasizing at this point that no single strategy will suffice to complete any comprehensive study. As a result, the procedure is mix methods. The study adopted the use of questionnaires and desktop documentary reviews and analysis.

A total of 20 questionnaires were administered to obtain information from professionals on the effectiveness of laws, policies and regulations on oil spill management in Sierra Leone. The questionnaires are designed in a word document form with open-ended questions and they were sent via email to the respondents upon their consent. The questionnaire was divided into four sections. Section 1 - collects data on the respondent being interviewed, Section 2 – collects data on the situation of oil spill regulation and management in Sierra Leone, Section 3 – collects data on the challenges of the current laws, policies and regulations on oil spill management in Sierra Leone and Section 4 collects data on recommendations.

The desktop review examined text books, national oil spill contingency plans of both Sierra Leone, Nigeria and Ghana, annual report publications, periodicals, journals, and lecture notes, the internet materials, and other sources were used to compile a vast amount of information/data for this project.

1.5.5 Data Analysis

All questionnaires completed during the course of this research process would be subjected to the editing process in order to ensure that the data collection procedure would be performed properly and questionnaires that do not comply with the criteria would be eliminated. In this process, each completed questionnaire turns in by respondent would be inspected to determine whether it can be used, in essence, it is a way to ascertain the credibility of the data collected. In this regard, Microsoft Office

Excel spread sheet would be used to process the data for the analysis. Data analysis was done through preparing and organizing the data which were categorized into themes and sub-themes through coding and finally representing the data in figures and tables for further discussions.

1.5.6 Ethical Consideration

Prior to the commencement of the research, a research questionnaire was submitted, reviewed by the research supervisor and approved by the World Maritime University Research Ethics Committee (REC) before they were administered.

Research respondents were informed by the researcher about the purpose and reason for selecting their respective institutions for this study.

Participation in the research study was voluntary and confidential. Information disclosed by respondents was not made known to another respondent. In ensuring this, personal or demographic data such as names, genders and addresses of respondents were made anonymous.

All participants were informed about the objectives of the research together with the implications attached to participating in the study. The respondents were informed that they can willingly participate or decline and they were under no pressure to do so.

1.6 Significance and Expected Result of the Study

This research will be instrumental on whether there are laws, policies and regulations on oil spill management in Sierra Leone and how these laws and policy regulations cope with the evolving trends on oil spill management on the international framework of IMO vis-à-vis the national oil spill contingency plan.

It is expected that this study will achieve its aims and objectives while answering the stated research questions.

1.7 Organization of the Work

Chapter one consists the introduction which mainly focuses on the background to the study, statement of the research problem, aims and objectives of the study, the research questions, significance of the study and research methods.

Chapter two will review in a comparative analysis of the International Convention on Oil Spill Preparedness Response and Co-operation, 1990 (OPRC), the Sierra Leone National Oil Spill Contingency Plan (NOSCP); the Sierra Leone draft Marine Pollution Bill 2016, the Nigeria and Ghana's NOSCP.

Chapter three will present the findings from the review and the data collection for this research, while chapter four will discuss and analyse the findings from the review and data collected for an interpretation on how effective are laws, policies and regulations on oil spill management in Sierra Leone.

Chapter five will contain the conclusion of the findings and observations on the bases of the objectives of the study and the data analysis, and proffer recommendations and suggestions for further study.

Chapter 2 Literature Review

2.1 Introduction

The International Convention on Oil Pollution Preparedness, Response, and Cooperation (OPRC) (1990) was developed with the goal of encouraging states to build and maintain adequate competence to handle oil pollution emergencies. The objective is to promote internal collaboration and mutual help in preparing for and responding to a significant oil pollution incident. To minimize environmental harm in the event of an oil spill, rapid and efficient intervention is needed. According to the OPRC Convention, the best approach is for states to place high priority on being effectively prepared to handle oil pollution accidents, acknowledging the significance of the oil and shipping industry in this regard (United Nations, 1990).

Effective oil pollution preparedness requires worldwide collaboration and reciprocal assistance. The preparation of oil spill contingency plans, the sharing of national reports of significant incidents, the exchange of information between states about different response capabilities, and cooperative research and development on various methods to combat oil pollution in the marine environment are all examples of areas for international cooperation (Government of Canada, 2020).

The OPRC Convention's major objectives are to encourage nations to build and maintain appropriate competence to deal credibly with oil pollution emergencies as well as to promote international collaboration and mutual help in preparing for responding to a marine pollution crisis.

It necessitates the establishment of a national mechanism for fast and efficient response to cases of oil pollution. As a starting point, a national contingency plan should be developed. Furthermore, if there is a risk of oil pollution, seaports and oil handling facilities must maintain Oil Pollution Emergency Plans (OPEPs). Shipmasters must report any observed event involving an oil discharge at sea or the presence of oil in the sea (United Nations, 1990).

2.2 A Review on Oil Spill Contingency Plans

Contingency Plans according to (International Tanker Owners Pollution Federation [ITOPF]) “provide the structure for the management of response operations”. The overall aim of contingency plans is generic; however, they are designed to reflect the working cultures of a country in which the plan is to be implemented, the plan should be a practical working document that is concise, accessible and updated easily as well (ITOPF, 2022). An effective contingency plan assists response personnel in controlling, containing, and cleaning up oil spill by providing the information that the team will need prior to, during, and on the following spills, as well as information on what might go wrong and plans on how to minimize any detrimental environmental effect (Lopez, J.B., et al 2006). Although contingency plans differ in many ways, they share two key characteristics: risk assessment and response action. Planners use the risk assessment section of the contingency plan to develop specific response actions during an oil spill attack (Kingston & Nweke, 2019).

2.2.1 Components of Contingency Plan

According to ITOPF compiling a contingency plan is typically a four-stage process, as evidenced by the plan's components:

1. Risk assessment entails determining the likelihood of spills and the expected consequences.
2. Strategic policy - defining roles and responsibilities and providing a summary of the operational rationale;
3. Operational procedures - establishing procedures in the event of a spill;
4. Information directory - gathering supporting information

According to Uba, (2017), in the case of a spill, a well-thought-out contingency plan will outline the key steps that must be taken. Such actions should be taken right away after a spill. The following response measure should be part of the contingency plan: a list of all companies or government agencies responsible for the clean-up effort, bringing trained personnel and equipment to the site as soon as possible, defining the size, position, and content of the spill; its direction and speed of movement; and its

likelihood of affecting sensitive habitats, ensuring the safety of all response personnel and the public, and stopping the flow of oil from the slick.

2.3 Review of National Oil Spill Contingency Plans of Ghana, Nigeria & Sierra Leone

2.3.1 Review of the Ghana National Oil Spill Contingency Plan (NOSCP)

The NOSCP of Ghana has been in existence since 1986. The plan was developed bringing together the nation's resources, stakeholders in the oil, shipping, oil exploration and production companies in preparedness of an event of oil spill threat in the country (Government of Ghana, 2020). The NOSCP of Ghana was last amended in December 2020 and released by the Country's Environmental Protection Agency (EPA) in October, 2021. The aim of the NOSCP is to outline the national arrangements for responding to oil spills in the environment, with the aim of either protecting or mitigating it from oil pollution. The plan is divided into four sections covering and introduction, preparedness, response and response support sections.

The introductory section provides a general background to the situation of oil spill contingency planning in Ghana, the threats, aim and objectives of the plan, the scope, geographical areas covered and legislations. The plan clearly stipulates the responsibilities of the government and those in the industries. This arrangement takes into consideration further divisions of responsibilities regarding contingency planning, access to in-country equipment as well as the management and control of financial matters as provided for the Inter-Agency Agreement (IAA) or a Memorandum of Understanding (MOU).

The country's EPA performs the lead role of the national oil spill preparedness in coordinating and providing technical advice relating to logistics, maintenance, materials, equipment and training among others, while those in the industry of shipping and oil are responsible for the development of a tactical oil spill contingency plans at their respective operational facilities (Government of Ghana, 2020). It is therefore expected that, the country's environmental protection agency and those in

the shipping and oil industry should establish and maintain a mutual relationship in order to provide assistance and access to in-country and international equipment stockpiles.

The NOSCP of Ghana is comprised of three hierarchical structures with the highest being the National Oil Spill Contingency Plan, down to the Area Contingency Plans and the Local/Port/Facility Contingency Plans. These structures respond to oil spills from marine pollution, stranding, blowouts and other accidents which are a result of the types of oil, bunkers, navigational hazards, weather conditions and shipping density amongst many. The plan's scope integrates the work of stakeholders, the government and international organizations to work cooperatively in responding to oil spills risks. The scope of the NOSCP however does not include hazardous and noxious substances (NHS). The geographical areas covered by the NOSCP includes: the responsibility area which covers all offshore areas with the 200 nautical miles exclusive economic zone (EEZ), the coastal and inland areas of Ghana and the interest area which covers other areas outside of the responsibility area (Government of Ghana, 2020).

The NOSCP preparedness section is organized in three stages to address all aspects of oil spill preparedness and response in accordance with established international practice and standards. Local/Industry is on Tier 1, with the regional statutory agency directing area response efforts and the EPA directing National (Tier 2) response efforts (Environmental Protection Agency, 2010). The three-tiered response is based on the following spill scenarios, according to the plan:

Tier 1 – up to 10 tons – a minor spill requiring a local response: In most cases, the combat agency (oil industry), that is to say the relevant oil company or terminal operators utilizing terminal arrangement in their contingency plan will be able to respond to and clean up a spill using its own resources.

Tier 2 – a medium spill requiring regional and/or national assistance: The combat agency's (EPA) resources will need to be supplemented by other resources from the adjacent region, or from adjacent industry operators under mutual aid agreements.

Tier 3 – a large spill requiring national assistance (over 1000 tons): The combat agency will require assistance from local, regional, national, and possibly international sources. The EPA will make it easier to access national and international resources.

The NOSCP response section deals with spills in accordance with the Net Environmental Benefit Analysis (NEBA). This analysis weighs the benefits and drawbacks of a particular course of action (such as dispersant spraying), as well as the likely outcomes if the course of action is not taken (as against the impact of doing nothing). The outcome will determine whether the action will be net (overall) beneficial or detrimental. The response plan overall protection priorities are done in the following order: human health and safety first, followed by habitat and cultural resources; rare and/or endangered flora and fauna; then commercial resources and finally amenities. Oil spill response incident reporting involves the following stages: initial report (i.e., reporting on the position/location, time and size); notification (i.e., statutory/combat agency EPA), assessment (i.e., winds, currents, tides, oil properties, quality & location), response decision (i.e., availability and location of equipment & personnel) and response (i.e., support tools and protection priorities).

In responding to oil spill, the NOSCP provides for the following response options: surveillance, control and recovery, application of dispersant, in-situ burning, shoreline clean-up and bioremediation (Government of Ghana, 2020).

The final section of the NOSCP of Ghana deals with response support. This section covers Environmental Sensitivity Atlas (ESA), Oil Spill Trajectory Modelling (OSTM), Automated Data Inquiry for Oil Spills (ADIOS), Marine Oil Spill Equipment System (MOSES), Charter and Hire Arrangements, Armed Forces Assistance, Salvage arrangements and Updating the Plan which is done every two (2) years by the EPA.

2.3.2 Review of the Nigeria National Oil Spill Contingency Plan (NOSCP)

The compilation of the NOSCP of Nigeria dates as far back as 1993 (Government of Nigeria, 2010). The document was developed in compliance with the International Standards of the OPRC 90 which Nigeria has ratified. The NOSCP of Nigeria is divided into 28 sections covering a wide range of issues relating to Oil spillages in the country. Some of the major sections includes but not limited to: the threat of oil spill

risk, the role of government and its key departments and organizations, the tiered response system, reporting and communication, alerting system and activation, response options, resource availability, disposal of recovered oil and oily waste, restoration and post spill monitoring, the media, compensation, funding training and exercises, records and review and revision.

The plan clearly indicates the role of the Nigeria Government in responding and preventing all spillages of oil, whether accidental or deliberate, in whatever size and source that threaten the country's environment. Considering the level of oil activities carried out in Nigeria; oil pollution can occur from exploration, production, refining and transportation including marine vessel, pipelines and petroleum handling facilities such as: depots, pump stations, terminals, ports and jetties. This specifically performs the following roles: ensuring the best appropriate action is always taken to protect against any form of environmental damages. It must be aware of all accidents and spillages across the country in order to monitor clean up exercises and ensuring that a proper plan is developed, the right equipment's and personnel readily available to individual or as a part of a co-operative response. In the event of a major oil spill the government must take full charge by bring in additional equipment (Government of Nigeria, 2010).

Specifically, paragraph 8.0 of the NOSCP of Nigeria highlights key government ministries and agencies and their roles and responsibilities in managing events of oil spills. The policy establishes the National Oil Spill Detection and Response Agency (NOSDRA), which is the lead institution for the management of oil spill in Nigeria. NOSDRA liaises with the Ministry of Petroleum Resources and the National Emergency Movement Agency in coordinating oil spill emergencies (Government of Nigeria, 2010).

The tiered response system of the Nigerian NOSCP is divided into three tiers.

Tier 1 deals with operational type spills relating to an organization's operations within and around its own facilities. These spills ranges between 0-25 barrels to inland waters or 0-250 barrels to land or coastal/ offshore waters. Tier 1 response requires an

individual company to provide the required resources in responding to this type size of spill.

Tier 2 response deals with larger volumes of oil spill between 25-250 barrels to inland waters or 250-2500 barrels to land or coastal/ offshore waters within a company's environment. This Tier makes use of resources from another company, industry or government in responding to oil spill on a mutual basis.

Tier 3 deals with oil spills greater than 250 barrels to inland waters or above 2500 barrels to land or coastal/ offshore waters. This level of spill requires significant level of support and cooperation at national and international levels. This type of spill is mostly under the control and direction of the government.

In responding to oil spill, the NOSCP primary objective is to prevent/or minimize the adverse health and safety, environmental, commercial, or social impacts of an oil spill. The policy provides the following options to oil spill response:

Option 1 Monitoring: ensuring effective surveillance by aircraft or satellite facilities if available

Option 2 Use of Chemical Dispersants

Option 3 Offshore and Coastal Waters

Option 4 Swamp

Option 5 Inland Areas-Land

Option 6 Inland Areas-Fresh-Water

Option 7 Other Situations which includes Distressed Cargo Ship and Large-Scale Underground Seepage of Oil and In Situ Burning

The NOSCP of Nigeria prioritizes resource availability, communication, disposal of recovered oil and oily wastes, restoration and post-spill monitoring, media, compensation, funding, training and exercises, records and review and revision of the policy appropriately.

2.3.4 Review of the Sierra Leone National Oil Spill Contingency Plan (SLNOSCP)

The Sierra Leone National Oil Spill Contingency Plan (SLNOSCP) was developed in 1994 to address oil spill damages to the country's beaches and shoreline ecosystems. Being that Sierra Leone Maritime Administration is the institution that has the sole

responsibility to interpret and implement the IMO's legal instruments such as the OPRC convention, the Administration was desirous to broaden the scope of the 1994 Freetown Oil Spill Contingency Plan which led to the promulgation of the Sierra Leone National Oil Spill Contingency Plan (SLNOSCP). This plan is a policy document that carves out how to prepare, respond and deal with an oil spill incident in different levels. Two working committees were established to ensure the development of the SLNOSCP: these were the Freetown Oil Spill Contingency Planning Committee and the Nitti Oil Spill Contingency Planning Committee. The committee was comprised of representatives from the Petroleum Unit, the Department of Transport and Communication, the Sierra Leone Ports Authority, the Department of Trade, Industry and State Enterprises, the Republic of Sierra Leone Military Forces – Naval Wing, the National Tourist Board, the Meteorological Department and the National Power Authority (Government of Sierra Leone, 1994).

The plan is divided into the following major sections: Oil Spill Risks, Spill Response Strategies, Equipment Supplies and Services, Management, Manpower and Training, Communication and Control, and Post Spill Follow up Action.

The Response Dimension of the Plan is based on the three-tier response system:

Tier 1 spills include oil spills near and within terminal areas of operation, and are the responsibility of all operational organizations that handle oils and other substances within those terminals. The amount of oil spilled would invariably be less than 10 metric tons (MT)

Tier 2 oil spills are defined as spills with a total volume of 10 - 3l MT that the operating organization deems too large for them to handle competently. The operations involve product movement/storage at Company premises, multi-user facilities, or public locations, including the high seas, implying the participation of all authorities and responsibilities as stated in the strategy.

The National Emergency Response Plan will be used in Tier 3 emergency response. If Sierra Leone's response capabilities are far insufficient to manage the spilled product, the Departments of Transport, Communications, and Foreign Affairs will be required

to open diplomatic channels to secure assistance from outside Sierra Leone in such cases (Government of Sierra Leone, 1994).

The SLNOSCP identifies the following as major types of risk in Sierra Leone: failure of hoses, failure of valves, tanker/ship accident (collision or grounding), and accidental spillage during ship-to-ship transfer (i.e., bunkering at sea), pipeline failures, collisions of vessels leading to oil spills and tank ruptures due to failure, damage or explosions. Considering the level of oil activities in Sierra Leone, the type of oils likely to be spilled includes: heavy fuel oil, bitumen, crude discharges from passing crude tankers and fuel, diesel oil and white fuels.

The plan proposed the procurement of the following oil spill equipment: booms, skimmers, barges, storage tanks, boats and auxiliary equipment including buckets and shovels. This equipment is required to be inspected and tested monthly and maintenance be done by the oil companies and the Sierra Leone Ports Authority.

The SLNOSCP requires that the Naval Wing to provide initial on-site manpower and additional labour be recruited from the different forces in Sierra Leone and training and safety are undertaken in Sierra Leone by trained professional advisors and consultants. The plan further looks into post spill follow up actions which includes investigation into the cause(s) of spillage, litigation and claims for damages made to the marine environment of Sierra Leone (Government of Sierra Leone, 1994).

2.4 A Review of the Marine Pollution Bill 2016 Part VI – Oil Pollution Preparedness, Response and Cooperation

This bill is part of the oil spill management laws, policies and regulations in Sierra Leone. When passed into law, it would serve as a means to enforce the guidelines set out in the national oil spill contingency plan in order to help deter, respond and punish oil spill infractions. This is demonstrated in Part VI section 191 (A) of the bill, which demands that anybody that is in charge of a ship that is registered in Sierra Leone or anybody who is in charge of an offshore unit within the jurisdiction of Sierra Leone should report to the national co-ordinator of oil spill or the nearest coastal state without delay in an event of an oil discharge from ship or an offshore platform or even the presence of oil at sea. The Marine Pollution Act 2016 applies to Sierra Leonean and

non-Sierra Leonean ships wherever they may be, while in a port, or off shore terminal and other territorial and maritime zones under the jurisdiction of Sierra Leone. Part VI of this Bill specifically addresses issues of Oil Pollution Preparedness, Response and Cooperation (Government of Sierra Leone, 2016). It covers the following sections on:

Oil pollution emergency plans: all ships registered in Sierra Leone and within the jurisdiction of Sierra Leone should have on board an approved Oil Pollution Emergency Plan that is in accordance with all required statutory procedures established by the National Coordinator.

Oil pollution reporting procedures: events of oil spill discharge or a probable discharge of oil, report should be made immediately by the person in charge of a Sea port or an oil handling facility to the National Coordinator. Failure to report a discharge or a probable discharge of oil commits an offence and liable to paying a fine.

Action on receiving an oil pollution report: Upon receiving of a report by the National Coordinator, an assessment on the event, its nature, extent and possible consequences be determined before informing all other stakeholders whose interests are affected or likely to be affected for immediate action to be taken.

National and regional systems for preparedness and response: a national system for oil pollution shall be established to ensure prompt and effective response to oil pollution incident. This National Coordinator shall serve as the lead of this team.

International Cooperation in pollution response: In the event of a serious oil pollution incident, the National Co-coordinator is required to provide advisory services, technical support and equipment upon the request of any state party to the convention affected or likely to be affected.

Research and development: the National Coordinator, directly or through regional organizations promote the exchange of research result and other development programmes relating to discoveries in oil pollution preparedness and response, technologies, surveillance techniques, containment, recovery, dispersion and clean-up to minimize the effects of oil pollution and restoration.

Technical Co-operation: In respect of oil pollution preparedness and response, the National Co-ordinator shall, where appropriate, directly or through international

bodies, as appropriate, provide support for those State Parties to the convention who request technical assistance. These could be in areas such as training of personnel, ensuring the availability of relevant technologies, equipment and facilities and initiate joint research and development programmes.

Bilateral and multilateral co-operation in preparedness and response: The National Co-ordinator may enter into bilateral or multilateral arrangements for oil pollution preparedness and response, and in such cases, the Administration shall send copies of relevant instruments or documents relating to such arrangements to the organization.

2.5 Gaps in National Oil Spill Contingency Plans Reviewed

Generally, it is observed that the institutional framework relating to oil spill contingency plans across Nigeria, Ghana and Sierra Leone is not properly coordinated and does not achieve it utmost results in environmental protection. Kingston & Nweke, (2019) argued that institutions esatablished to manage the oil industry runs parallel of the other and operates independently and therefore do not benefit from organisational synergy in discharging their responsibilities. They further argued that disorganisation in the management of these institutions leads to duplication in job roles resulting to misuse of manpower, organisational finance and other limited resources.

Sierra Leone, like Nigeria and Ghana have environmental laws and policies in place. The unfortunate aspect is that, most of these laws and policies are not been implemented effectively (Ngoran, 2011). A reason for this assertion is that, there exist limited knowledge even among the institutions that should enforce the laws, or better still even when the laws are known, the capacity to enforce implementation is sometimes low (Ngoran, 2011).

Another issue of policy concern relates to the statutory requirements expected to be fulfilled by petroleum industry operators. These statutory requirements are hardly met largely as a result of the limited technical capacity of the regulatory agency to enforce the laws and monitoring their operational activities (Ngoran, 2011). Across these countries (i.e., Sierra Leone, Ghana and Nigeria) the National Petroleum Agencies are

under the control of government line ministries, this affects their capacity to work independently.

Issues of compensation presents a major gap in oil spill policy implementation as institutions responsible for oil spill management are not empowered enough to adequately compensate victims in the event of oil spill (Kingston & Nweke, 2019). Even where the provisions are made to compensate victims of an oil spill, the high level of malfeasance becomes the other of the day. This therefore means that the judicial frameworks should make this section valuable in oil spill policy development and implementation.

Political commitment in implementing laws, policies and regulations on oil spill management in Sierra Leone poses a huge gap in effective policy implementation in the country. This lack of political commitment affects budgetary allocation to addressing issues of oil spills, procurement of essential equipment and machinery, capacity building for personnel and most importantly the sharing of information. Sabela-Rikhotso, et al (2021) further argued that the lack of financial commitment is an indication of a limited political commitment. The author went on to explain that unclear and poorly communicated political vision has the tendency to instigate conflict resulting from misinterpretation and by extension undermines multi-sector coordination of policies and policy direction. Thus, it can be argued that achieving successful implementation of laws, policies and regulations is dependent on multi-agency collaboration, shared understanding, and agreed upon implementation plan and most importantly joint political commitment.

Lack of effective coordination and conflict of responsibilities between and among government institutions and private oil companies continues to affect the proper implementation of laws, policies and regulations within the sector. In Nigeria according to Olaniyan, (2015) there exist conflicts in responsibilities between the National Oil Spill Detection and Response Agency (NOSDRA) and the Department of Petroleum Resources (DPR); also, in Sierra Leone, there are sometimes rift between the Sierra Leone Maritime Administration and Environmental Protection Agency when it comes to cross-cutting issues of marine environmental protection. The author

argues that these conflicts are a result of legislation giving conflicting mandates, which gives room for "double reporting"; which in turn result in waste of valuable time in implementation and defeats the goal achieving synergies in multi-agency response to oil spills.

What is worth mentioning is the lack of adequate resources to support independent and credible implementation of laws, policies and regulations on oil spills across Sierra Leone, Ghana and Nigeria. This situation is even worse when the Oil producing or transporting companies are the ones providing finance for the monitoring and implementation of oil spill laws, policies and regulations – as such they decide when investigations should be conducted as they provide transportation means and technical expertise which in most cases the regulatory agencies do not have (Olaniyan, 2015).

Another significant gap in the laws on oil spill managemen in Sierra Leone is their ability not to stand the test of time with similar laws across the globe which deal with the same issues even when the circumstances may be different. Section 191 (5) of part VI of the Marine Pollution Bill 2016, states that any person who fails to report discharge oil without reasonable cause will be liable to a summary conviction or a fine not exceding Le 2,000,00 (Two Thousand Leones which is equavalent to two hundred dollars). In as much as the fine and conviction of those who will break the law when it eventually passes into law is a step in the right direction, however, the equivalent of two hundred dollars as a fine does not match international standards. This to a very large extent can be taken advantage of as most offenders will be willing to pay the fine which will not equate to the crime committed. As Telesetsky (2019), argues that the bill, Save *Our Seas Act*, would make the United States take a radical departure in the global enviromental affairs.

These gaps in the three national oil spill contegency plans and the marine pollution bill are a manifestation of the evolving nature of the maritime issues dealing with oil spill management which require constant upgrade.

Chapter 3 Research Data Presentation

3.1 Introduction

This chapter presents research data collected through the administration of questionnaires delivered to ten (10) key stakeholder institutions within the Sierra Leone Maritime Industry. These institutions include those involved in oil transportation, oil regulation and management, policy formulation and implementation of oil spill, as well as environmental protection agencies responsible for oil spill pollution and control.

3.2 Response Rate

Table 1: Response Rate of the Study

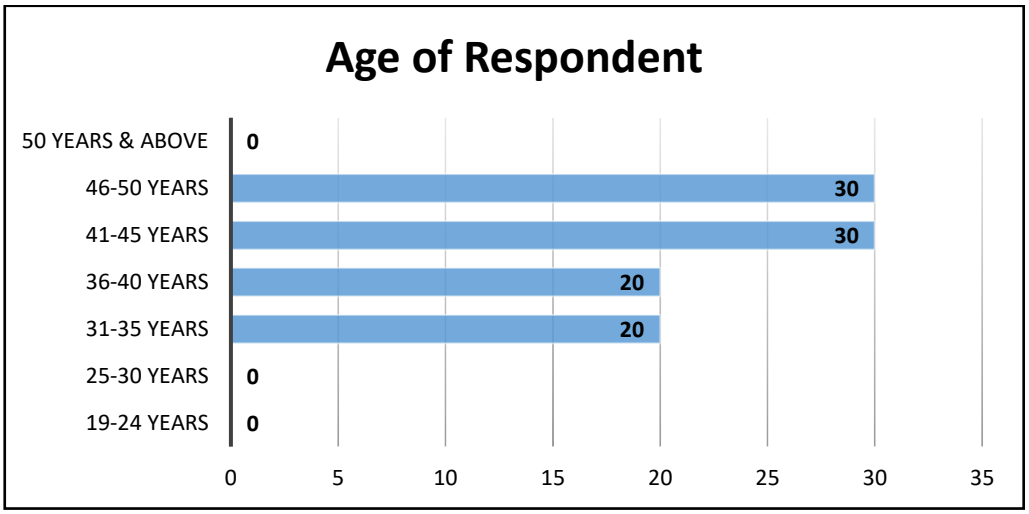
Response Rate of the Study		
No: of Questionnaires Administered	**No: of Questionnaires Received**	**% Response Rate**
20	20	**100**
20	**20**	

Source: ***Field data, 2022***

The study recorded a total response rate of 100%. Respondents' institutions were drawn from among those who are considered as stakeholders in the maritime industry in Sierra Leone. These questionnaires were carefully assessed to be sure that all questions were answered and were answered correctly before they were inputted for analysis and discussions.

3.3 Presentation of Data

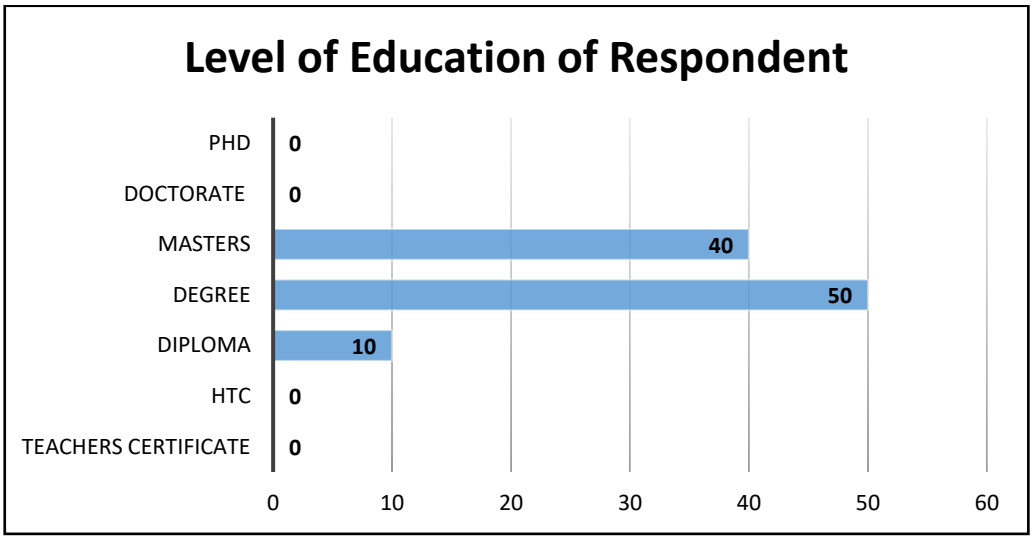
Figure 1: Report on Age of Respondents



Source: ***Field data, 2022***

Figure 1 above reports a total of 30% of respondents between the ages of 41-45 years and 46-50 years while 20% are between the ages of 31-35 years and 36-40 years respectively.

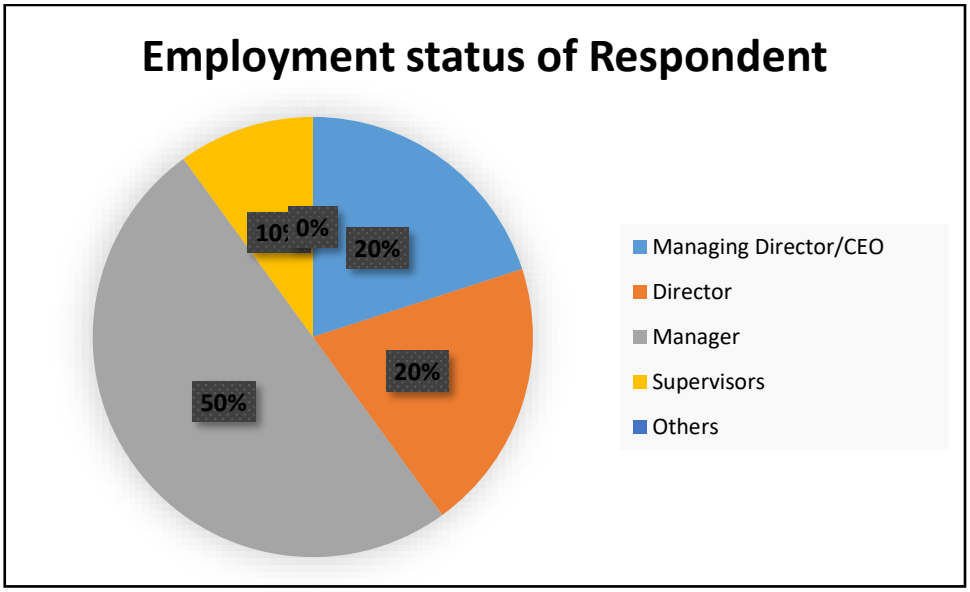
Figure 2: Report on the Educational Level of Respondents



Source: ***Field data, 2022***

50% of respondents reached during the research study are reported holders of a first degree, 40% are Master's degree holders and 10% holders of a certificate.

Figure 3: Report on Employment Status of Respondents



Source: ***Field data, 2022***

Figure 3 report on the employment level of respondents reached for the study. A total of 50% of respondents reached are Managers in their respective institutions, 20% reached were Managing Director/CEO and Directors while 10% accounts for supervisors.

Table 2: Shows List of Institutions & Oil Spill Laws they know about

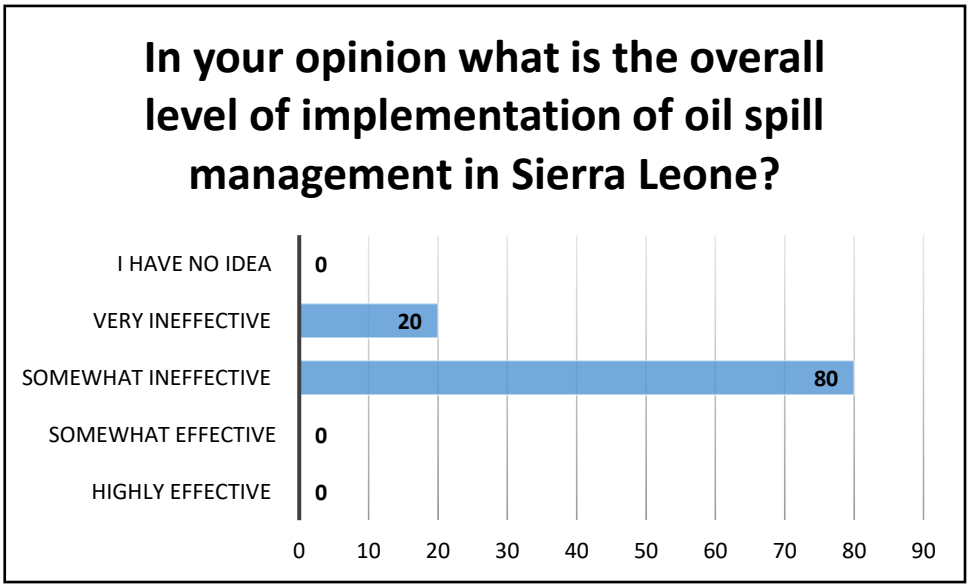
No:	Name of Institution	Laws & Regulations known about
1.	Sierra Leone Maritime Administration	• National Oil Spill Contingency Plan • The Merchant Shipping Act of Sierra Leone • The Sierra Leone Maritime Act • Marine Pollution Bill 2016
2.	Ministry of Tourism	• MARPOL • National Oil Spill Contingency plan
3.	Ministry of Transport & Aviation	• National Oil Spill Contingency plan
4.	National Petroleum Sierra Leone Limited	• MARPOL, • FUND Convention • OPRC
5.	Sierra Leone Ports Authority	• National Oil Spill Contingency plan
6.	Ministry of Justice (Law Officers Department)	• National Oil Spill Contingency plan

7.	Sierra Leone United Boat Owners Association	• National Oil Spill Contingency plan
8.	Environmental Protection Agency	• OPRC • FUND convention, • CLC convention • National Oil Spill Contingency plan
9.	National Disaster Management Agency	• Marine Pollution Bill 2016 yet to become Law • National Oil Spill Contingency plan
10.	Ministry of Fisheries & Marine Resources	• Marine Pollution Bill 2016, • The Petroleum Exploration and Production Act, 2011, • The Environmental Protection Agency Act,2008 • National Oil Spill Contingency Plan

Source: ***Field data, 2022***

Table 2 presents a full list of all institutions targeted for the study. It also reports on respondents' answers to the question on "what are the existing laws and regulation on oil spill management in Sierra Leone does your institution know about?"

Figure 4: Report on the Overall Level of Implementation of Oil Spill Management



Source: ***Field data, 2022***

On the overall implementation of oil spill management in Sierra Leone, data collected reported that implementation is “somewhat ineffective” in the country as reported by 80% of respondents, while 20% reported it “very ineffective”.

Figure 5: Report on important achievements made so far on oil spill management

What are the most important achievements made so far on oil spill management in Sierra Leone?

- Conducting requisite drills and training for oil companies.
- Successful monitoring and evaluation of requisite materials, tools and equipment on oil companies in case of any oil spill incident.
- Oil spill equipment inventory
- Desktop Exercise
- The reviewing of the NOSCP will be completed in 2022

Source: ***Field data, 2022***

Figure 6: Report on major challenges uncounted in oil spill laws & policy implementation

What are the major challenges encountered in implementing oil spill laws and regulations in Sierra Leone?

- Delays in domestication of the Marine Pollution Bill 2016
- Lack of personnel that have the requisite training and knowledge in oil spill management
- Lack required and appropriate trainings across stakeholder institutions
- Lack of oil spill management equipment
- Domestication of the conventions is presently in process therefore, impounding vessels which fails to meet regulatory criteria is a challenge.
- Lack of collaboration and effective coordination among key stakeholder institutions
- Lack of political will and commitment
- Ineffective implementation and enforcement and the failure in mobilizing resources geared towards effective implementation and enforcement of oil spill laws in Sierra Leone.

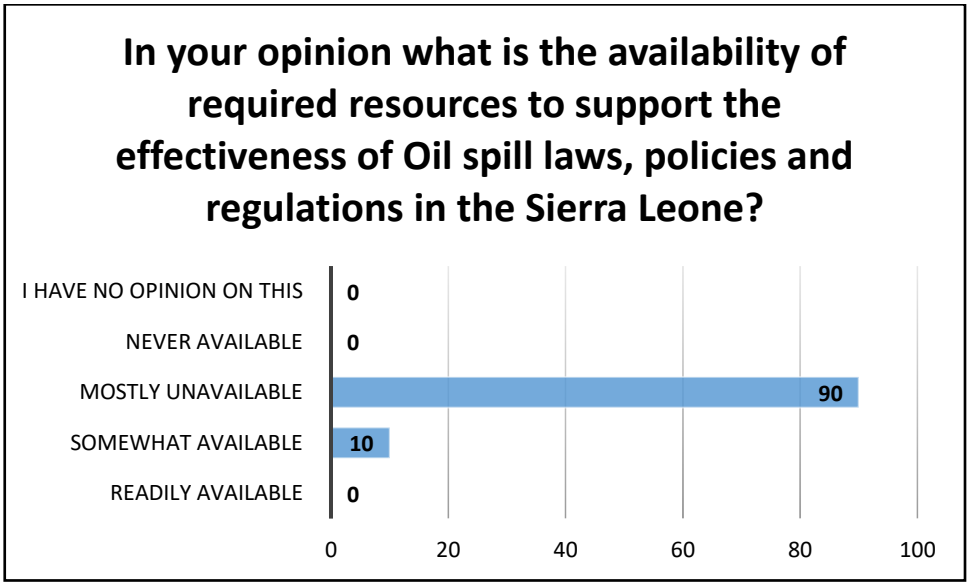
Source: Field data, 2022

Table 3: Report on the Role of key Stakeholder Organizations

No:	Name of Institution	Key Role of the Institution
1.	Sierra Leone Maritime Administration	SLMA is tasked with the responsibility by IMO to regulate all ships and shipping related activities including marine pollution incidents. The Sierra Leone Maritime Administration is the lead agency in charge of initiating and receiving information directly from agencies of other states, regional bodies and international organizations. The role of the lead agency is primarily to direct the response team, but also include planning, preparedness, monitoring, response operations and ensuring that other agencies play an appropriate part in supporting any action.
2.	Ministry of Tourism	The Ministry of Tourism and Cultural Affairs is tasked with the responsibility of contributing to the transformation of Sierra Leone into a middle-income country through the exercise of it mandate as stated.
3.	Ministry of Transport & Aviation	Creates an integrated and safe transportation network that incorporates all modes of transportation that reflect regional priorities, and provides a strong foundation for economic growth.
4.	National Petroleum Sierra Leone Limited	The principal duty of the agency is to regulate the exploration and production of affordable, reliable, and cleaner energy in Sierra Leone. To achieve this mandate, the organization work towards transforming the country's oil and gas sector in a responsible manner that prioritizes safety, respect for communities and the environment.
5.	Sierra Leone Ports Authority	In accordance with the Port Act No. 56 of 1964 (as amended in 1991) the SLPA's mandate is to manage and control all ports related activities in Sierra Leone and to operate the port of Freetown and oversee activities at the Ports of Nitti and Pepel.
6.	Ministry of Justice (Law Officers Department)	The distinguished mandate as per it functions is: to provide legal services and access to justice.
7.	Sierra Leone United Boat Owners Association	We monitor activities of our members and their work along the shores of Sierra Leone. We also monitor and report illegal activities and pollution of all forms to the responsible authorities.
8.	Environmental Protection Agency	To implement government's environment policies, plans and programmes and to coordinate, monitor, regulate, supervise and advice on all issues of the environment in Sierra Leone

		and serve as focal point for all international environmental matters.
9.	National Disaster Management	This Agency was developed to manage disasters and similar emergencies throughout Sierra Leone, to establish offices of the Agency throughout Sierra Leone, to establish national, regional, district and chiefdom disaster management committees, to establish a national disaster management fund to provide finances for the prevention and management of disasters and similar emergencies throughout Sierra Leone and to provide for other related matters.
10.	Ministry of Fisheries & Marine Resources	The Ministry of Fisheries and Marine Resources has its mission to plan, develop, rationally mange and conserve all living aquatic resources of the country for the benefit of the country.
***Source: Field data,* 2022**		

Figure 7: Report on Resources Availability for Oil Spill Management



Source: ***Field data, 2022***

Figure 7 reports on the availability of required resources to fully support the effectiveness of laws and policies relating to oil spill management and control. Data collected reveal that required resources needed to support the effectiveness of oil spill laws and regulation are "mostly unavailable" as reported by 90% of respondents reached. However, 10% reported that required resources are "somewhat available".

Figure 8: Report on the Approaches used to Support Oil Spill Laws, Policies and Regulations

What approaches does the government and its line agencies have in place to support the effectiveness of oil spill laws, policies and regulations in Sierra Leone?

- To secure external support in terms of resources and expertise from IMO and other associated organization
- To engage in sensitization, provide cleaning equipment and monitor implementation of laws and regulations
- The development of National Oil Spill Contingency Plan which indicates various duties for other line ministries and agencies to adhere to in case of emergency spills.
- Review and amend national laws relating to oil spill.
- Stakeholders' engagement through collaboration and cooperation
- To raise awareness on the impact of oil spill in our environment and the intention to implement and fully enforce the laws and regulations of oil spill in Sierra Leone.

Source: ***Field data, 2022***

Figure 9: Report on Recommendations to the Challenges of Oil Spill Laws, Policies & Regulations

What would you recommend be done by your organisation to address the challenges affecting the effectiveness of laws, policies and regulations on oil spill management in Sierra Leone?

- Draw government attention to the importance of managing oil spill. Present to the government of Sierra Leone a strong justification for the need to support the management of oil spill.
- Provide funding for implementation through its resources or from external donors and continue to support and collaborate towards effective regulation and policy formulation on oil spill management.
- Enhancing government agencies through the domestication of international conventions which therefore improve on the marine environment thereby projecting a positive impact on the status of the blue economy.
- Stakeholder institutions should have insight knowledge of the problem at hand, regular training and workshops, equipment and prior knowledge in oil spill management.
- Stakeholder institutions should effectively collaborate with other stakeholders in the maritime industry to help strengthen laws, policies and regulations on oil spill management.
- The current legal frameworks be made to have the effect of workable laws by expressing the political will in their implementation and enforcement.

Source: ***Field data, 2022***

Figure 10: Report on Recommendations to Government & Other Stakeholders

What would you recommend to the government and other stakeholder organisations in improving on the situation of oil spill management laws, policies and regulations in Sierra Leone?

- To firstly ratify, domesticate, implement and enforce the parent convention.
- Provide and facilitate the training of personnel to monitor the laws, policies and regulations on oil spill.
- Engage key stakeholders on a consultative workshop and also speed up the domestication process. Organize stakeholders' consultative workshop in order to get expert opinion on the management of oil spill.
- Government should allow those institutions responsible to be independent, and laws and policies related to oil spill should be domesticated. With that in mind government should give premium to the domestication of these international conventions as it will help in mitigating the effect of oil spill.
- Government and stakeholder organizations should prioritize oil spill management to help stimulate maritime transport for socio-economic productivity and to help forestall the environmental consequences of oil spill.
- Government should prioritize this area and embark on mobilizing resources to undertake certain projects directed at improving on the situation of oil spill management laws, policies and regulations in Sierra Leone.

Source: Field data, 2022

Chapter 4 Data Analysis and Discussions

4.1 Introduction

The statement of the research problem generally emphasized that Sierra Leone is a party to the UNCLOS, SOLAS, STCW and MARPOL as well as a member state to the IMO. However, the country struggles with the evolving nature of the maritime industry, especially in dealing with oil spill and environmental pollution and the seeming non-existence of oil spill laws and regulation. Where the laws and regulations exist, implementation is mostly non-effective. This study therefore, investigates existing laws and their implementation in managing oil spill in Sierra Leone.

This Chapter discusses the data collected and presented in chapter three of this study.

4.2 Discussion of Research Result

This section discusses the research results under two major responses from the data collected as stated below:

Discussions on the responses on: Understanding the situation of oil spill regulation and management in Sierra Leone

As presented in Table 2 above, a total of 10 key stakeholder organisations were reached for this study. Data collected from these organisations report the awareness and existence of the undermentioned laws, bills, policies and regulations on oil spill management in Sierra Leone:

- The National Oil Spill Contingency Plan (NOSCP)
- The International Convention for the Prevention of Pollution (MARPOL)
- Oil Pollution Preparedness Response and Co-operation (OPRC)
- The International Fund for Compensation for Oil Pollution Damage (FUND Convention)
- Civil Liability Convention (CLC Convention)
- Marine Pollution Bill, 2016
- The Petroleum Exploration and Production Act, 2011
- The Environmental Protection Agency Act, 2008

Implementation of these identified laws and regulation in Sierra Leone is reported as "somewhat ineffective" by 80% of respondents while 20% reported the laws and regulations are "very ineffective" as presented in figure 4 above. Even though the laws and regulations are in existence, their implementation is not effective towards addressing events of oil spill outbreaks. The NOSCP is the most known policy and was last updated in 2017 and is currently under review, while the Marine Pollution Bill, 2016 is yet to be enacted into law in the country. The study does not record any information on reviewing of the other national laws and regulations anytime soon in the country.

It is also observed that most of the respondents' stated different laws, policies and regulations which they believe are legislations, policies and regulations of oil spill management. Six out of the ten institutions as shown in table 2 responded by listing other laws and regulations when asked to list the oil spill laws and regulations they know about. However, some of these stated laws, policies and regulations are Acts and Conventions that have bearing to oil spill management from either the Environmental Protection Agency, National Petroleum Agency or other related agency in the maritime domain. This shows that most respondents within the stakeholder institutions cannot clearly distinguish between the oil spill management laws, policies and regulations and environmental laws and regulations of institutions like the Environmental Protection Agency; though it is expected that not all stakeholder institutions would be fully abreast with these laws, policies and regulations, however, having a better understanding of these laws, policies and regulations by stakeholder institutions will help greatly in the coordination, implementation and enforcement of the said laws, policies and regulations on oil spill management in Sierra Leone.

Responses on the question on "what are the most important achievements made so far in oil spill management in Sierra Leone?" as reported in Figure 5 above reveal that the country has not accomplished much in its planning, preparation and or response in event of an emergency oil spill in the country. Institutions reached out to report the current reviewing process of the NOSCP, conducting of requisite drills and training

for oil companies and monitoring and evaluation of materials, tools and equipment as major accomplishment in oil spill management across the country.

The researcher seeking to understand the situation on the effectiveness of laws, policies and regulations on oil spill management in Sierra Leone, went on to sought answers on the major challenges faced in implementing oil spill laws and regulations in the country. Answers to this question are reported in Figure 6 above. Major challenges reported includes but not limited to: significant delays in the enactment of the Marine Pollution Bill drafted since 2016, the lack of political will and commitment to addressing issues related to the planning, preparation and response of oil spillage, lack of oil spill equipment for simulation exercise and lack of trained personnel.
Data collected further reveal that the targeted institutions reached all have clearly defined mandates, however, it is disappointing to note that these institutions are not performing their roles for which they were established.

Discussions on the responses on: The Challenges of the Current Laws, Policies and Regulations on Oil Spill Management

The second objective of the study sought to deepen the understanding of the challenges impeding the effective implementation of laws, policies and regulations on oil spill management in Sierra Leone.
In light of the above, the researcher asked respondents to justify the challenges reported in Figure 6 above. Responses to this question includes but not limited to the undermentioned:

"We cannot measure it now due to the fact that we have not had a major oil spill yet in the country. Nevertheless, judging from what the country has in the form of policies and regulations, it is not satisfying to say the least".

National Disaster Management Agency.

"The oil spill contingency plan is in place but not properly implemented and enforced because of lack of the expertise and equipment to manage it".

Ministry of Transport and Aviation.

"The most critical obstacles in current laws, Policy and Regulation on oil spill management in Sierra Leone are the lack of political support, ineffectiveness of environmental institutions in particular with regard to implementation and enforcement and the inability of government to mobilize financing".

Ministry of Justice.

"Much has not been seen on oil spill management in Sierra Leone apart from the national oil spill contingency plan. Although there is a draft Marine Pollution Bill 2016, it is yet to become law and cannot be relied on as an achievement".

National Petroleum Sierra Leone Limited.

"The Oil spill laws regulation and policies in Sierra Leone are somewhat ineffective, because it lacks the effective monitoring and implementation process".

Sierra Leone United Boat Owners Association.

Another major challenge affecting the effectiveness of laws, policies and regulations on oil spill management in Sierra Leone is the non-availability of resources to plan, prepare and respond to any event of oil spillage. Figure 7 above reports a total of 90% of respondents say resources are "mostly unavailable" while 10% say resources are "somewhat available".

Another concern relates to the approaches being used by government and its line ministries to support the effectiveness of oil spill laws, policies and regulations in Sierra Leone. The study reports the following approaches:

- Embarking on public sensitization
- Reviewing of the NOSCP
- Lobbying external support for resources and expertise from IMO and other organisations

It is expected that the government and it line ministries should take more proactive measures within the country to plan, prepare and respond promptly to any event of oil spill in the country. This study has also reported a lack of political commitment and coordination among stakeholder organisations within the maritime industry. This lack of political will and coordination is clear recipe for failure in responding to oil spills in the country. This is believed to be one of the reasons for the significant delay in transposing international conventions into domestic laws in the country. Therefore, the question on meeting international best practice in addressing oil spill management through laws, policies and regulations cannot be answered confidently by stakeholder institutions targeted for the study. Below are some responses:

"The present laws for the implementation of oil spill are out dated. Existing laws must be revised to meet international best practices".

Sierra Leone Maritime Administration

"It will be based on international best practices as the country will not be using unilateral laws that only applies to the waters of the country where foreign ships will be plying. It has to be a standard that is being practiced worldwide".

Ministry of Tourism

"These regulations are developed based on international conventions"

Ministry of Transport & Aviation

"These are international laws which the government has signed, so the government need to domesticate them to be incorporated within our national laws".

National Petroleum Sierra Leone Limited

"They do meet international standards and practices as required by the IMO. The IMO do carry out audit to ensure that member states meet international standards and practices to which Sierra Leone is no exception"

Ministry of Justice

4.3 Limitations to the Study

The study assumed that if Sierra Leone laws, policies and regulations on oil spill planning, preparation and response are effective the country will be in a position to respond promptly in the event of an oil spill outbreak. This assumption however, has proved to be otherwise. The study specially was faced with the undermentioned challenges:

The sample size of the study was relatively small and the researcher was unable to realistically conduct expert interviews on focus group discussions on the subject matter. This was due to the fact that the researcher attempted to set up an online zoom interview session with experts in the selected stakeholder institutions, however, the responses were not encouraging, hence, the interviews did not materialise. The research area covered government institutions and other players in the maritime industry of Sierra Leone. The researcher is of the view that subsequent research studies could target a much larger sample size and targeting more government institutions and players in the maritime industry with different methods of data collection.

The study was also challenged with resource constraints in terms of time, the research being conducted remotely from Sweden as well as difficulty in accessing information. However, various measures were put in place to minimise the problems which emerged in order to reach the goal of this research investigation. Considering the nature of work for government line ministries the researcher was unable to do expert interviews with respondents; as such the use of quantitative and qualitative data collection through the use of questionnaire was adopted for the study. The issue of secrecy and hierarchical protocols to collect information especially within government institutions seriously affected the timing of data collection as the research questionnaires took longer than expected.

Another limitation faced during the study was the limited appropriate literature on the research subject specific to oil spill laws, policies and regulations in Sierra Leone. Also, there is limited literature particularly on the national oil spill contingency plans of Ghana, Nigeria and Sierra Leone which the researcher uses for comparative analysis

in the review. In light of this, the researcher made extensive use of literatures available within the West African context.

Therefore, the research results cannot be taken to be absolute. Notwithstanding that, the researcher is of the view that the results are still adequate and useful for the purpose for which it was undertaken.

Chapter 5 Conclusion and Recommendations

5.1 Conclusions

Based on the results and discussions presented in the previous chapters the researcher has arrived at the following conclusions:

The Sierra Leonean maritime industry's institutional framework on a broader perspective is lagging behind and fall short of international standards. The majority of institutions carry out their functions in parallel with one another and separately so that there is no institutional synergy. Additionally, the institutions' management incoherency lead to duplication of functions, which wastes labour, money, and other resources. Since they lack the legal capacity to compensate victims of oil spills across the country, agencies in charge of managing the oil and gas industry are left with a large gap in their operations.

According to the study, the implementation of oil spill laws, policies, and regulatory frameworks is a challenge, because it is practically non-existent in the country. There are not enough resources (money and human), tools, or equipment to make implementation more efficient and effective. According to data collected from respondents, progress in the industry is limited and cannot be measured because the government, it line ministries, and commercial partners do not seem to pay much attention to strategies for preparing for and responding to an oil spill. Policy implementation is generally weak.

The study observed that Sierra Leone could have serious economic, social, health, and environmental effects in the case of a substantial oil leak, particularly if policy implementation, preparedness, and response strategy are not strong. The study comes to the conclusion that some of the main causes of the weakness in oil spill policy and oil spill management are the lack of proactive leadership, political will, infrastructure, tools, and equipment to respond to oil spills.

Despite the multi-agency strategy to oil spill management’s increasing importance and relevance, as well as its legal acceptance, its actual execution in Sierra Leone continues to be ineffectual. For a nation like Sierra Leone, the significance of a comprehensive, efficient, and successful multi-agency response to oil spill management cannot be

overstated. The multi-agency strategy guarantees a multifaceted approach to handling oil spill situations. In order for cases of oil spills to be investigated and dealt with quickly, each agency, ministry, and corporation engaged in the multi-agency response must be aware of their responsibilities and act in accordance with them in a well-coordinated manner. Also, in order to prevent irreparable harm to people's lives and property due to an oil leak, resources (both human and material) must be utilised to the fullest extent possible. To make sure that the multi-agency response to oil spill incidents is a reality and not a mirage, all parties involved in the country's maritime domain should and must collaborate.

Nigeria and Ghana have updated their NOSCP. Sierra Leone on the other hand is still on the process of reviewing it NOSCP. The Marine Pollution Bill of 2016 is yet to be enacted into law and the country is yet to have an oil spill emergency response plan. This further shows the lack of commitment to addressing laws, policies and regulations as well their implementation as relates to oil spill management.

5.2 Recommendations

The recommendation has two parts – recommendations for practical purpose and recommendations for further research study in the area of oil spill management.

In figures 9 and 10, respondents suggested recommendations to be considered by stakeholder institutions and the government on how to address the challenges affecting the effectiveness of laws, policies and regulations on oil spill management and how to improve the situation in Sierra Leone. Among others, it is strongly recommended that: Government agencies responsible for oil spill management should be enhanced by transposing international conventions to domestic laws which will in turn improve the marine environment, hence, projecting a positive impact on the status of the blue economy.

Government should express it political will in the implementation and enforcement of the oil spill laws and regulation. In essence, the legal framework should be made workable and take centre stage.

Funding should be provided by the government or through its external donors in order to continue to support and collaborate effort towards effective regulation and policy formulation on oil spill management.

The above-mentioned recommendations in a broader perspective speak to the issues the researcher has interrogated in this study. However, it begs the question, is it possible to implement such recommendations within the shortest possible time, considering the resources required for such an enterprise? Realistically, it will have to take time and enormous resources in order to get it done, but starting from the basics, while continuously building on the basics will be the key to a successful implementation of these recommendations.

The following additional recommendations are suggested for implementation by the government and other relevant authorities in the maritime industry in Sierra Leone.

In order to coordinate a multi-agency response in the case of an oil spill in the nation, all areas of conflict between and among laws, policies, and regulations should be harmonized with clearly defined leadership, roles, and duties. This will ensure multi-agency respond effectively and efficiently, and have a favourable influence on responding to oil spills. Additionally, it would make sure that agencies' tasks and responsibilities are not duplicated while creating and putting into effect the nation's laws, policies, and regulations regarding oil spills.

The SLMA and other pertinent support agencies should strictly implement and enforce all applicable regulations pertaining to the multi-agency response to an oil spill in the nation. Insufficient enforcement and implementation of laws by pertinent agencies results in legislation going inactive and pertinent agencies lacking the coordination necessary for a successful multi-agency response process. The success of the multi-agency response system depends on the coordination of key responding agencies. For timely, quick, and effective response from relevant agencies, implementation and enforcement are also required. The environmental impact of oil spills can be lessened with effective response procedures.

The SLMA needs to be strengthened and given more autonomy by the government of Sierra Leone in order for it to independently carry out the obligations set forth in its enabling Act. This shows that the government is willing and dedicated to dealing with the oil spill disasters. For this to be successful, adequate funds, technology, and labour are needed. Furthermore, for a successful multi-agency response strategy, relevant agencies must have appropriate funding.

The government and its stakeholders should make efforts to adhere to IMO best practice recommendations that satisfy the necessary requirements for an efficient implementation of the nation's preparedness and response strategy for oil spills.

The statute establishing institutions in the oil industry should clearly and adequately spell out the responsibilities of the institutions responsible for overseeing and administering the oil sector in Sierra Leone.

The institutions responsible for managing, creating, and enforcing policies in the Sierra Leone oil and gas sector should be statutorily positioned so that they can take action or guarantee that, if necessary, multinational and local oil companies will adequately compensate victims of oil spills.

In order to ensure effectiveness in the management and administration of oil and gas policies, the various institutions charged with the duty of administering, managing, or formulating policies regulating the oil and maritime industries in Sierra Leone should always be in a position to exchange ideas, synchronize their policies, and work in concert.

The government of Sierra Leone and its stakeholder organizations should fast track the process of updating the NOSCP and the enactment of the Marine Pollution Bill of 2016 and the development of a National Oil Spill Emergency Response Plan.

Finally, if the Government of Sierra Leone and the lead agencies in the national oil spill preparedness and response follow the above stated recommendations, the country will be better placed in responding to oil spill incidences in term of its operational capabilities, laws, policies and regulations which will enhance the country’s status in the world maritime industry.

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Appendices

Appendix 1: Research Letter of Consent

Dear Sir/Madam,

This academic research questionnaire is to help collect data for my dissertation for the MSc Maritime Affairs (with specialization in Maritime Law and Policy) from the World Maritime University.

My research topic is: "**Oil Spill Management in Sierra Leone: An Assessment on the Effectiveness of Laws, Policies and Regulations".**

I would be grateful if you could answer all the questions in this questionnaire as your responses will be used for data analysis. The authenticity of this research study is dependent on the accurate and factual information provided by you. Therefore, every information provided will be treated with utmost confidentiality as this study will contribute towards improving oil spill management in Sierra Leone.

Kindly send the completed questionnaire to w1904892@wmu.se by 15th July 2022.

Thank you for participating in this study voluntarily.

Yours sincerely,

Umaru Kamara.

Appendix2: Research Questionnaire

#	QUESTIONS	RESPONSE	Code
GENERAL INFORMATION OF RESPONDENTS			
1.	Age of respondent. 30-35	20 -25 years ☐ 25 – 30 years ☐ 30 – 35 years ☐ 35 – 40 years ☐ 40 – 45 years ☐ 45 – 50 years ☐ 50 and above ☐	
2.	Level of Education of respondent.	Certificate ☐ Diploma ☐ Degree ☐ Masters ☐ Doctorate ☐ Others (Specify)……	
3.	Employment status of respondent.	Managing Director/CEO ☐ Director ☐ Manager ☐ Supervisors ☐ Others (Specify)……	
4.	Name of respondent organization		
Understanding the Situation of Oil Spill Regulation and Management in Sierra Leone			
5.	Please list the existing laws and regulations on Oil Spill management in Sierra Leone you know about		
6.	Please state the last year of review of the above stated laws and regulations on Oil		

	Spill management in Sierra Leone		
7.	In your opinion what is the overall level of implementation of oil spill management in Sierra Leone?	Highly effective ☐ Somewhat effective ☐ Somewhat ineffective ☐ Very ineffective ☐ I have no idea ☐	
8.	What are the most important achievements made so far in Oil Spill management in Sierra Leone?		
9.	What are the major challenges in implementing Oil Spill laws and regulations in Sierra Leone?		
10.	Please describe the role of your organisation in ensuring Oil Spills laws and regulations works effectively in Sierra Leone		

The Challenges of the Current Laws, Policy and Regulations on Oil Spill Management in Sierra Leone			
11.	Please elaborate on your answer to question 7		
12.	In your opinion what is the availability of **required resources** to support the effectiveness of Oil spill laws, policies and regulations in the Sierra Leone?	Readily available ☐ Somewhat available ☐ Mostly unavailable ☐ Never available ☐ I have no opinion on this ☐	
13.	What approaches does the government and its line agencies have in place to support the effectiveness of Oil spill laws, policies and regulations in Sierra Leone?		
14.	Based on your knowledge of the current laws,		

	policies and regulations on Oil Spill management in Sierra Leone; please explain how these laws meet international best practices		
RECOMMENDATIONS			
15.	What would you recommend be done by your organisation to address the challenges affecting the effectiveness of laws, policies and regulations on Oil Spill management in Sierra Leone?		
16.	What would you recommend to the government and other stakeholder organisations in improving on the situation of Oil Spill management Laws, policy and		

	regulations in Sierra Leone?		
17.	Any other comments		
Thank you for your participation in this research study.			