ASSESSMENT OF THE OIL AND GAS EXPLORATION INDUSTRY'S COMPLIANCE WITH LOCAL, REGIONAL AND INTERNATIONAL LAWS ON ENVIRONMENTAL HEALTH: A CASE STUDY OF THE CHINA NATIONAL OFFSHORE OIL CORPORATION

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A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIALFULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREEOF BACHELOR OF SCIENCE IN OIL AND GAS MANAGEMENT AT THE INSTITUTE OF PETROLEUM STUDIES KAMPALA IN AFFILIATION TO UCU

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DECLARATION

I AHIMBISIBWE COLLINS (M19/B44/018) declare that this dissertation is my original work and has never been submitted anywhere for an award of a degree in any institution.

Signed…….

AHIMBISIBWE COLLINS

Date……

APPROVAL

This research report is submitted by AHIMBISIBWE COLLINS for examination with my approval as the university supervisor.

Signed…… **Date……**

SUPERVISOR

DEDICATIONS

I dedicate this research dissertation to my family and Uganda Christian University

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To God be the glory is the motto for my acknowledgment. Sincere thanks to God for all His mighty love to enable me reach this point in time. My special thanks also go to my family that gives me a sense of belonging and continually pray for me.

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ABSTRACT

The study was carried out to examine to analyze the extent of compliance is to environmental health and safety standards in the oil and gas industry in Uganda. The objectives of the study were: to assess the environmental health and safety impacts caused by oil and gas exploration activities of CNOOC in Uganda. The second objective was to examine the extent of compliance with national policy, international and regional legal framework that provides for environmental health and safety standards during the oil and gas exploration activities of CNOOC in Uganda and the third objective was to analyze mechanisms for improving environmental health and safety law compliance by CNOOC in Uganda. Both qualitative and quantitative research designs were employed. The participants involved were opinion leaders, community members and CNOOC officials. The researcher used questionnaires, interview guides as research instruments. The sampling technique used was purposive and the selection was random and data collection sources were primary and secondary. The research findings showed that the environmental health and safety quality standards in the law currently are also outdated and need review. Although there is a monitoring plan, the implementation is still weak for example it is suggested that there needs to be a law in place to ensure that the National Oil and Gas Policy of 2008 is enforced. This is due to the fact that the monitoring role is concentrated in the hands of the central government through NEMA and other agencies at the expense of local governments especially District Environmental health and safety Officers yet these are the ones on the ground. The researcher recommends that there is need to enhance compliance with environmental health and safety principles through strengthening the legal framework such that it is preventative in nature as opposed to being reactive. For example, the Petroleum (Exploration, Development and Production) Act, 2013 charges the National Environment and Management Authority (NEMA) with the responsibility of making regulations for the management of the production, transportation, storage, treatment and disposal of waste arising out of petroleum activities.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

This chapter presents the background to the study, the problem statement, and the objectives of the study, the research questions. The chapter also covers the theoretical framework, the significance and justification of the study plus the scope and ends with the definition of key terms to be used in this research paper.

1.2 Background of the study

1.2.1 Historical background

Created in 1962, when it got its independence, Uganda is a landlocked country located in Africa, in the East African Region. It has a population of about 48 million people growing at an annual rate of about 3.4% per annum. It is bordered by five countries: Kenya to the East, Tanzania in the South, Rwanda and Burundi in the South West, Democratic Republic of Congo to the West and Southern Sudan to the North. Over a long period of time, Uganda has relied on imported petroleum products, constituting about 15% of her import bill because of its high petroleum consumption estimated at 935659m3 per annum. This consumption has an annual growth rate estimated at 5% (ME&MD, 2010).

In 1925, Petroleum Potential of Uganda was documented by a Government Geologist E.J. Wayland, in the publication “Petroleum in Uganda”. The report documented existence of oil seepages along the shores of Lake Albert in on both Uganda and DRC sides. Around 1936 - 1956, the first shallow stratigraphic wells were drilled by the African – European Investment Company. The first deep well, Waki B-1 well was drilled in Butiaba, in 1938 and encountered bitumen. Twenty (20) Shallow wells were drilled in Kibiro and Kibuku areas for geological correlation and these are documented by Harris et al 1956. Geological surveys and Mines Department, during the 1940’s and 50’s established the presence of sedimentary sequences in the Albertine Graben (Memoirs of the Geological Survey, 1959). The period 1945 – 1980 is referred to as the period of Limited Activity because of the Second world -war, change in policies of colonial masters where East Africa was zoned for Agriculture coupled with post-

independence political uncertainties and instability in the Country. Consistent and modern efforts commenced in 1983 with the acquisition of 9,578-line km of aeromagnetic data that identified three depo centers along the entire length of the Graben and have been going on.

Other achievements that have been made in this era are presented below;

In 2017 there was appointment of Directors for the Petroleum Authority of Uganda FEED for Upstream Facilities and also for EACOP were launched IGA for EACOP was signed between Uganda and Tanzania and foundation stone laid New exploration Licenses issued to Armour Energy Limited (Australia) and Oranto Petroleum Limited (Nigeria).

In 2016, a year earlier, Six (6) Production Licenses issued to Tallow Uganda Operations Pty and three (3) Production licenses issued to Total E & P Uganda Appointment of Executive Director for the Petroleum Authority of Uganda Seven sets of Upstream and Midstream Petroleum Regulation issued The Hoima to Tanga Crude oil pipeline routing agreed

2015 show the Appointment of the Board of Directors for the Petroleum Authority of Uganda

Uganda had the first competitive licensing round for 6 blocks in the Albertine Graben, that culminated into the licensing of Armour Energy Limited (Australia) and Oranto Petroleum Limited (Nigeria). While in 2014, a Memorandum of Understanding on Commercialization was signed between Government and Licensed oil companies which under pinned the three principles options of crude for export, refinery and crude for power.

In 2013, the Petroleum (Exploration, Development and Production) Act 2013 enacted and this is the principle law governing oil and gas exploration in Uganda. In addition to Kingfisher, Total and Tullow submitted applications for possible award of Production Licenses over sixteen (16) discoveries. Between 2010 – 2012 Farm-out of Heritage oil and Gas to Tullow and Farm-in of Total E & P Uganda and CNOOC Uganda Limited and Production License over Kingfisher issued to them.

Cabinet approved the National Oil and Gas Policy in 2008 and still in the same year, Hardman Petroleum Pty (now Tullow) made the first commercial discovery well in Kayiso Tonya area. Hardman Petroleum Pty (now Tullow) signed an MOU with Government for an Early Production Scheme (EPS) for oil production, Seniorping plant; and Thermal Power generation ~ 50-85MW. In 2005, exploration Area 5 (The Rhino Camp Basin) was licensed to Neptune Petroleum (Tower Resources). Drilling of Mputa-1 well by Hardman and Energy Africa in Kaiso-Tonya area also started. Between 2002 – 2004 Drilling of Turaco wells by HERITAGE

and ENERGY AFRICA, the first deep wells in the basin to encounter oil and gas. HERITAGE is licensed to Exploration Area 1(Pakwach basin).

In 2001 Hardman Resources and Energy Africa had been licensed Exploration Area 2 (Northern Lake Albert Basin). 1998, HERITAGE acquired the first 2-D seismic data (170-line km) in Uganda. 1997 -Licensing of Exploration Area 3 (Semliki Basin), to Heritage Oil and Gas Limited (HERITAGE). 1993 -Petroleum (Exploration and Production) (Conduct of Exploration Operations) Regulations, 1993 came into force. 1991 - A PSA between Fina Exploration Uganda b.v and Government signed. Fina takes the entire Albertine Graben Formation of Petroleum Exploration and Production Department; PEPD carried out ground geological and geophysical surveys in areas identified by the aeromagnetic data. Data acquired was used to Promote the Albertine Graben for investment. 1990 -Cooperation Agreement between Uganda and DRC for Joint Exploration and Development of Common fields signed. 1986 -Commencement of specialized training in petroleum aspects. 1985 -Petroleum (Exploration and Production) Act is enacted World Bank Credit to support to Petroleum Exploration Promotion.

Uganda's oil and gas potential already confirmed shows prevalence of about 3.5 billion barrels. By 2009, Heritage Oil and Tullow had drilled 27 oil wells, 25 of which were confirmed to contain commercially viable hydrocarbons. However more recent research shows that up to 55 wells have now been drilled and 51 of these have hydrocarbons viable for commercial exploitation. Among these, significant productive wells are the following (Kaweesi, 2014): The Kingfisher well, on Lake Albert Shore; Butiaba well, in Block 2; Delta Play Fairway, in Kaiso-Tonya Region, Block 2; the Kasemene well site, with Kasemene -1, Kasemene-2 and Kasemene-3A; Buffalo and Giraffe wells, in Block -1; Nzizi well sites, with Nzizi-2, Kingfisher 1A, Kingfisher 2 and Kingfisher 3A wells; Buffalo and Hartebeest wells, in the Delta area of Murchison Falls National Park.

In a nutshell, oil and gas deposits in Uganda today have been described as Africa's biggest onshore discovery in 20 years. Estimated reserves are about 3.5 billion barrels (which may increase with further exploration) with a daily production rate (flow rate) of 125,000 bpd, capable of rising up to 200,000 bpd in some places. Proven reserves don't merely place Uganda among the top 50 oil producers in the world as predicted by earlier writers (Kathman, 2011) but actually leave Uganda in the 40th position in the ranking of global oil producing economies (Shepherd, 2013). There have been some steps forward especially in 2012, notably the transfer of interests by pioneer operators to new players. For example Total and the China National

Offshore Oil Corporation (CNOOC) have come on board and taken one-third stakes in the oil blocks as partners with Tallow, the company that has played the central role in the development of Uganda's oil to date.

The health and safety legal regime in Uganda is under the Petroleum Exploration, Development and Production Act 2013 and the Occupational Health and Safety Act 2006. The purpose of the Act (Health and Safety) is to regulate health and safety standards (Occupational Safety & Health Act, 2006) for the health, safety, welfare and appropriate training of persons employed in workplaces. Section 18(1) requires the employer to monitor and control the release of dangerous substances into the environment. Thus, where there is major handling of chemicals or any dangerous substance that is liable to be airborne or to be released into rivers or lakes or soil and which are a danger to animal and plant life, the employer is required to arrange for equipment and apparatus to monitor air, soil and water pollution and to arrange for the monitoring of these mediums, with a view to rendering them safe (Ibid Section 18 (1)). Clause (2) states that the records of monitoring in subsection (1) should be kept and made available to the inspector (Ibid Section 18 (2)). These provisions are applicable to all oil exploration companies because of the danger their operations may pose to the environment and human safety.

1.2.2 Contextual Background

To capture recent trends in the industry on health, safety and environment standards (Ibid (n.8)31). The government of Uganda has embarked on the development of the new legal framework law to regulate the development of the Ugandan oil sector in the context of the Oil and Gas Policy, national environmental laws and international standards. The Petroleum Exploration, Development and Production Act of 2013 introduces new aspects in the governance of oil and gas in Uganda (Petroleum Exploration, Development & Production Act, 2013) in an attempt to set governance conditions related to Oil and Gas exploration and production. In my opinion, these are to be considered as international best practice. The Act vests petroleum rights in the government of Uganda. Thus, the entire property in, and control of, petroleum in its natural condition in, on or under any land or waters in Uganda is vested in the government on behalf of the Republic of Uganda (Ibid section 5). Any person who intends to carry out petroleum exploration must therefore apply for a license from the responsible minister (Ibid section 62).

The Act introduces environmental principles. It thus requires every licensee and every person exercising or performing functions, duties or powers under it in relation to petroleum activities to take into account, and give effect to, the environmental principles prescribed by the NEA and other applicable laws (Ibid section 5). This is in line with the provisions of the Rio Declaration such as the one on sustainable development mentioned above (Ibid (n.18)).

1.2.3 Conceptual Background

The Occupational Health and Safety Act requires that petroleum activities are conducted in such a manner as to enable a high level of safety to be maintained and further developed in accordance with technological developments and laws relating to health and safety. A licensee is also required to identify the hazards and evaluate the risks associated with any work performed in the course of petroleum activities carried out under the license that constitute a hazard to the health of an employee for the purpose of that work and the steps that need to be taken in order to comply with the provisions of the Act and regulations made under the Act. The Bill requires that necessary safety precautions are taken to ensure the safety of any persons employed or otherwise present or in the vicinity of any installation and to protect the environment and natural resources, including precautions to prevent pollution.

In February 2008 Uganda's Ministry of Energy and Mineral Development published the National Oil and Gas Policy (NOGP), which explicitly recognizes many of the challenges associated with natural-resource wealth, including the need to mitigate the potential for negative economic and fiscal impacts that often stem from a sudden influx of revenue in the extractive industry sector.11 The NOGP outlines internationally recognized mechanisms for managing such impacts, with the aim of turning finite oil wealth into sustainable development outcomes. It also highlights the need for a longterm national strategy to ensure optimal impacts from oil and gas exploitation by maximizing benefits to Ugandans along the industry "value chain".

The laws that currently exist specifically to regulate both upstream and downstream petroleum activities in Uganda are outdated, having been enacted at a time when large-scale exploration and production activities were not envisaged in Uganda. They include: 1985 Petroleum (Exploration and Production) Act, Chapter 150 laws of Uganda. 5th of December 1957, Petroleum Act Cap 149 and the Petroleum Supply Act of 2003. These laws are accompanied by subsidiary regulations or statutory instruments, such as: Statutory Instrument No. 150—1, the Petroleum (Exploration and Production) (Conduct of Exploration Operations) Regulations,

Statutory Instrument 149—1, the Petroleum (Spirit) (Licensing, Testing and Possession) Rules, Statutory Instrument 149—6, the Petroleum (Spirit) (Marking) (Approval of Marker and Prescription of Fees) Notice. Oil and gas management cuts across policy areas of taxation and revenue management, government accountability, corporate regulation, environment, land security, etc., so it is important to recognize that there are other existing laws relevant to the overall framework for managing the new sector. In addition to the Constitution itself, these include: Land Act, 1998, Access to Information Act, 2005, National Environment Act, chapter 153, Investment Code Act, chapter 92, Penal Code Act, chapter 120, Income Tax Act, 2002, Wildlife Act, chapter 200, National Forestry and Tree Planting Act, 2003, Public Health Act, chapter 281, Water Act, chapter 152 and Public Procurement and Disposal of Assets Act. Other relevant laws include the National Environment Act, cap. 153; Land Act, cap.227; Water Act, cap.152; Occupational Safety; Health Act, 2006; National Environment (Waste Management) Regulations, 1999; National Environment (Wetlands, Riverbanks and Lakeshores Management).

These are supplemented by a number of regional and international environmental health and safety law instruments divided into hard and soft law instruments. Soft law standards include the Rio Declaration (2012); Stockholm Declaration (1972); Johannesburg Declaration (2002) which advocate for environmental health and safety principles such as sustainable development and also encourage safety and healthy through advocating for healthy working conditions and enforcement of labor laws The United Nations Environmental Programme (UNEP) further expounds on the importance of protecting the environment and using it sustainably such that future generations may also be able to utilize the same resources. International hard law standards include the International Labor Organization (ILO) Constitution which sets forth the principle that workers should be protected from sickness, disease and injury arising from their employment; Occupational Health and Safety Convention 1985; Promotional Framework for Occupational Safety and Health Convention 2006; Radiation Protection Convention 1960; Occupational Cancer Convention 1974; Asbestos Convention 1986; Chemicals Convention 1990; Basel Convention on Control of Trans-boundary Movement of Hazardous wastes and their Disposal 1989 which are all geared towards improving working conditions thereby ensuring that workers have a safe and healthy environment in which to work. The suffering caused by such accidents, injuries/ fatalities and illnesses to workers and their families is incalculable hence the need for compliance with these international standards. It is therefore against the foregoing legal and policy framework that this research is premised with the major

purpose being to examine the extent of environmental health and safety law compliance and enforcement of environmental law in oil and gas exploration and production in Uganda.

The environmental health and safety regulatory framework for oil exploration and production in Uganda is new and still inadequate in some areas, including environmental regulation. This is in addition to limited financial and human resources to implement its provisions and limited public awareness of the principles and provisions of the policy and legal framework. There is a relatively high risk of harm to environmental health and safety during oil exploration and production hence the need for measures to minimize such harm to the ecologically/biodiversity sensitive areas to be put in place. Thus, managing the 'environmental health and safety in oil' requires strategies that address environmental health and safety management sustainability.

1.3 Statement of the problem

The oil and sector workers face a number of occupational risks and hazards related to the use of heavy and powerful equipment, exposure to flammable chemicals and processes that can lead to accidents and even death. Health services providers are required to have put in place adequate response mechanisms but is emerging that less than handful meet the standards. Professor Pauline Byakika, the Medical Advisor for Total and Tullow Uganda said safety and occupational health standard requirements in the oil and gas industry are high (Byakika, 2015).

Statistics by the US Bureau of Labor Statistics in 2015 revealed that workers in the oil and gas extraction industry faced the highest at risk of injuries and fatalities on the job compared to all other industries in the United States. A high prevalence 287 (87.8%) of self-reported occupational injuries was found among welding workers with cuts/burns 242 (84.3%) and eye injuries 180 (62.7%) reported as the most sustained injuries. Occupational injuries were associated with being a causal labourer with informal training (AOR 4.70 (2.03–10.84)) and working for longer hours (AOR 2.63 (1.26–5.51)). Those with more work experience were less likely to be involved in occupational injuries (AOR 0.30 (0.11–0.84)).

Uganda has developed policy and legal instruments regulating the oil and gas activities and the general issues of environmental health and safety regulation starting with The 1995 Constitution of Uganda which establishes the right to a clean and health environment. This is supplemented by various legal instruments and regulations such as The Petroleum (Exploration, Development and Production) Act, 2013 which advocates for compliance with environmental, health and safety principles, and many others.

Inspite of these laws, Uganda has not yet achieved the desired degree of environmental health and safety law compliance because these deterrent regulations imposed against violators are not effective due to weak enforcement, inadequacy of the law and lack of proper institutional framework. In addition there seems to be no political will and commitment towards environmental health and safety law compliance as the government is seen to be bending towards development than environmental health and safety conservation which has led to weak enforcement of these regulations.

Therefore the purpose of this paper is to examine the extent of enforcement and compliance with environmental, safety and healthy laws by the players in oil industry.

1.4 Objectives / Purpose of the Study

The main objective of this study is to analyze the extent of compliance is to environmental health and safety standards in the oil and gas industry in Uganda. **The specific objectives of the study are:**

I. To assess the environmental health and safety impacts caused by oil and gas exploration activities of CNOOC in Uganda.

II. To examine the extent of compliance with legal framework that provides for environmental health and safety standards during the oil and gas exploration activities of CNOOC in Uganda.

III. To analyze mechanisms that can be put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda?

1.5 Research Questions

The major research question is "Is there compliance to the Environmental Health and Safety laws during oil and gas exploration activities by CNOOC in Uganda?" The specific research questions are:

I. What are the impacts of oil and gas activities by CNOOC on the environmental health and safety of the employees and surrounding communities?

II. To what extent does CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda?

III. What mechanisms can be put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda?

1.6 Research Justification

Uganda recently embarked on a commercial oil and gas exploration and production process. Commercial oil and gas deposits were confirmed in 2006 and this has created a lot of questions concerning environmental health and safety law compliance given the fact that the oil and gas industry in Uganda is still nascent. Additionally, old oil and gas were repealed and new ones enacted. Most notable of these are the Petroleum (Exploration, Development and Production) Act, 2013, the Petroleum (Refining, Conversion, Transmission, and Midstream Storage) Act, 2013 and the Occupational Safety and Healthy Act, 2006. Uganda further subscribed to international and regional laws and signed some agreements to this effect such as the Rio Declaration 2012, International Labour Standards on occupational safety and health including the Occupational Safety and Health Convention, 1981 (No. 155) aimed at promoting occupational health and safety and improving working conditions. The switch to commercial oil and gas production poses several impacts towards environmental health and safety such as injuries, diseases especially on around the oil rigs, impacts on wildlife and ecosystems, aquatic impacts, human impacts and many others discussed in the subsequent chapters which through the deterrence and preventive theories are meant to be curtailed by these laws.

The research therefore assesses the sufficiency of these laws and the extent of compliance therewith and makes necessary recommendations to ensure that there is an increased complex environmental health and safety regulatory landscape, with focus on achieving and maintaining regulatory compliance, protecting employee health and safety, managing potential business liabilities with the push for the industry to improve environmental sustainability efforts. This is in line with the objective of Environmental health and safety which is to protect workers, the public, and the environment and to comply with applicable laws and to protect the company's reputation. The research is therefore will benefit institutions responsible for ensuring compliance to environmental health and safety standards such as the Ministry of Energy, Ministry of Labour, the Oil and Gas Companies and the communities around the oil and gas production areas in Uganda through conserving the Environment and also protecting the health and safety of the workers and enabling Uganda develop a better legal and institutional framework to ensure that there is environmental health and safety compliance in the oil and gas industry in Uganda.

1.7 Scope of the Study

The study will place its emphasis on the development of the oil industry in Uganda, the activities and processes of CNOOC involved in oil and gas exploration and production, environmental health and safety impacts of oil and gas exploration and production standards basing on the international, regional and national legal frame work governing the oil and gas industry. The paper will examine the extent of compliance, discuss environmental health and safety rights while concentrating on the right to a clean, safe and healthy environment, and propose mechanisms for improving environmental health and safety law compliance and implementation of safety and healthy mechanisms and regulations in the oil and gas industry of Uganda due to the weak enforcement of the existing regulations and poor institutional framework. The study will focus on the general overview of compliance with environmental health and safety standards in the oil and gas industry of Uganda.

1.8 Theoretical Framework for Environmental Safety and Health

The study will be premised on the theories applicable to compliance with environmental health and safety that is the deterrence or preventive theory and the citizen enforcement theory which foster a more complete understanding of the conceptual bases of legal principles and of the combined effects of a range of rules and procedures that touch on a particular area of activity.' It has been submitted that effective environmental health and safety law enforcement is key to ensuring that the goals of environmental health and safety statutes can be realized. Hence environmental health and safety enforcement like any other government regulation has been based on the theory of deterrence. This theory assumes that persons and businesses act rationally to maximize profits and will comply with the law only where the costs of noncompliance outweigh the benefits of noncompliance.[1]

1.9 Definition of Key terms

Environmental health and safety

Environment (E), health (H) and safety (S), EHS is an acronym for the set that studies and implements the practical aspects of protecting the environment and maintaining health and safety at occupation. In simple terms it is what organizations must do to make sure that their activities do not cause harm to anyone.

[1] A. Heyes, Implementing Environmental Regulation: Enforcement and Compliance at pp.2-4

From a safety standpoint, it involves creating organized efforts and procedures for identifying workplace hazards and reducing accidents and exposure to harmful situations and substances. It also includes training of personnel in accident prevention, accident response, emergency preparedness, and use of protective clothing and equipment.

Better health at its heart, should have the development of safe, high quality, and environmentally friendly processes, working practices and systemic activities that prevent or reduce the risk of harm to people in general, operators, or patients.

From an environmental standpoint, it involves creating a systematic approach to complying with environmental regulations, such as managing waste or air emissions all the way to helping site's reduce the company's carbon footprint.

Regulatory requirements play an important role in EHS discipline and EHS managers must identify and understand relevant EHS regulations, the implications of which must be communicated to executive management so the company can implement suitable measures. [2]

Compliance:

Compliance in business can mean two things: as an "action" and as a "standard." To fully understand what it is and why it matters in your business, you need to know the difference between these two concepts.

In this blog, we'll identify key ideas related to regulatory compliance. We'll begin by answering the basic question: What is compliance?

Compliance as an action

Generally, compliance in business or in a company means adhering to government laws, health and safety standards, or data and security requirements. It is an "action" if there's a conscious recognition of the said rules and policies. Deemed essential to the existence of a business or company, compliance becomes a necessary action.

Regulatory compliance accompanies certain requirements mandated by recognized governing bodies. In this context, to comply means to meet certain requirements so that your company may run legally and safely.

[2] Kavianian, Hamid R. "Occupational and Environmental Safety Engineering and Management", Van Norstrand Reinhold Company, New York (1990), ISBN 0-442-23822-3

This also speaks of the different responsibilities of a company. Compliant businesses are aware that they are responsible both to their employees and clients. To be non-compliant can result in serious consequences.

When you clearly meet regulatory requirements, you create a positive business reputation. And when you identify and take the necessary steps to comply with policies, relevant laws, and regulations, you can define under which program or framework your company should operate. This leads us to our next discussion.

Compliance becomes a standard if you have a well-designed set of rules and policies to help maintain security and stability in your company. These standards are only relevant if they are enforced properly and observed religiously within the organization. To consider it as a standard, it's not enough that you simply adhere to laws and policies. You also need to understand whether following these rules will address the true needs of your company.

Being compliant as a business requires knowing the different types of compliance that fit your organization. One way to identify its applicability to your business is to know its relevance.

CNOOC:

China National Offshore Oil Corporation or CNOOC Group is one of the largest national oil companies in China. It is the third-largest national oil company in the People's Republic of China, after CNPC (parent of PetroChina) and China Petrochemical Corporation (parent of Sinopec). The CNOOC Group focuses on the exploitation, exploration and development of crude oil and natural gas in offshore China, along with its subsidiary COOEC.

The company is owned by the government of the People's Republic of China, and the State-Owned Assets Supervision and Administration Commission of the State Council (SASAC) assume shareholder rights and obligations on the government's behalf. One subsidiary, CNOOC Limited, is listed on the Hong Kong exchange; the other, China Oilfield Services, is listed on the Hong Kong and New York exchanges. In the 2020 Forbes Global 2000, CNOOC was ranked as the 126th -largest public company in the world.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

2.1 Theoretical Review

The field of occupational health and safety is evolving very rapidly because of developments in the related fields such as human psychology. As social scientists develop new theories to explain human behavior, application disciplines such as occupational health and safety update their methods in order to concur with the latest findings.

In discussing occupational health and safety, many scholars fall into the trap of focusing only on "injury", at the expense of discussing "occupational illness and disease" (Jackson, 2011).

This comes from the fact that it is easier to recognize injuries at the workplace such as cuts, bruises, and fractures compared to work related illnesses and diseases. Illnesses and diseases take time to develop hence it may not always be possible to tie them to the working conditions.

However, it is a fact that there are diseases such as respiratory illnesses that come about because of workplace injuries.

One of the significant developments in the study of occupational health and safety was the shift from concentrating on the measures put in place by employers to the role of the employees in the safety of their working environment.

Employee behavior does play a major role in "the occurrence of occupational injury and illness" (Lingard, 2005). This focus led to the development of programs that concentrated on employee behavior, aimed at behavior change. Currently, there is growing realization that concentrating on employee behavior alone does not achieve the full benefits possible in occupational health and safety programs.

Current occupational health and safety programs focus not just on the individual, but also on the Occupational Health and Safety "management systems and organizational culture" (Walter, 2011).

In order to enforce occupational Health and Safety Standards, regulators used the "classical deterrence model" (WHO, 2006). It had two aspects. The first one was specific deterrence that

tried to deal with specific offenders, while the other was general deterrence aimed at general offenders to discourage non-compliance.

The theory behind this model was that if there were a way to uncover offenders regularly, then it would make potential offenders less likely to break the safety codes. This model called for the use of punishment as a deterrent, with severity calculated to discourage non-offenders from becoming offenders (Stellman, 1998).

The theory assumed that if the cost of violation is much higher than the cost of compliance, then the possibility that people will comply willingly increases.

Organizational structures play an indirect role in the safety of workplaces (Boucaut, 2001). The reason for this is that they influence the speed with which occupational safety issues receive attention.

In organizations with clear-cut structures, and clear reporting structures, safety issues receive better attention and such organizations tend to have fewer incidents of accidents and occupational safety mishaps (Burke, 2011).

However, other basic factors mediate the effectiveness of organizational structures hence they cannot guarantee high levels of workplace safety on their own (Jackson, 2011). These factors include interpersonal relationships and attention to workplace safety codes.

Another theoretical framework with a strong influence on occupational health and safety is "responsive regulation" (WHO, 2006). Responsive regulation refers to strategies that have provisions for punishing offenders and persuades potential offenders not to violate regulatory provisions.

This theory stems from the realization that overreliance on "penal enforcement" only can lead to "regulatory resistance" from those who may have chosen to keep within the regulatory requirements.

If the only message practitioners get is that if you violate the regulatory requirements then you will receive punishment, the incentive to act willingly is lost.

At the same time, lacking a formal strategy of persuasion may lead to an informal system, which eventually will collapse due to lack of institutional based enforcement (Jackson, 2011).

In the matter of accident reporting, the behavior reasoning theory holds a lot of ground (Lingard, 2005). This theory postulates that people tend to act based on their reasons. This means that many of the actions that people exhibit have clear reasons behind them (Walter, 2011).

Therefore, to increase accident reporting, there is need to give the workers reason to do so. Workers may fail to report accidents for various reasons such as fear that the blame for the accident will fall on them, or that it may cost someone their job (WHO, 2006).

On the other hand, workers may choose to report accidents if there is an associated reward scheme or if it will lead to some sort of credit. According to the behavior reasoning theory, it is imperative for employees to have many more reasons to report accidents that far outweigh the reasons they might harbor not to report the accident.

Based on these theories, it is interesting to evaluate how they compare with the occupational safety and health standards at the Oil and Gas Companies. As a Oil and Gas Companies the most obvious risks associated with working at the La Camera is burns associated with kitchen work, and waiting on customers.

Chefs face personal accident risks when cooking on the Oil and Gas Companiess kitchen from the hotplates and gas stoves. Waiters are mostly at risk if they fall over hot food and drinks. In addition, they are at risk of scalding from hot steam from the cooking pots. Other risks at the Oil and Gas Companies include fracture and dislocation from falling due to spillage on the kitchen floor and the Oil and Gas Companies floor.

Broken glass and cutlery also poses a risk to the staff at the Oil and Gas Companies. The Oil and Gas Companies frequently handles broken glass and cutlery mostly because of accidents on the Oil and Gas Companies floor because of customers, but occasionally, it also deals with breakages in the kitchen and backrooms during routine handling.

Most of the measures at the oil and gas industries only address injuries at the workplace. They do not address longer-term illnesses that can result from working there. The Oil and Gas Companies has a first aid kit and protocols for responding to the common injuries at the workplace.

However, health insurance is the only measure against long-term illness. There are no comprehensive solutions to problems such as allergies to certain foods and physical

complications arising from spending long periods on foot when serving at the Oil and Gas Companies floor.

The Oil and Gas Companies recognizes the role employees play in the general safety of the working place. It emphasizes on safety, and hygiene to ensure that the staff handles all the equipment in the best way possible.[14]

Shift supervisors check for thing like leaking gas, wet floors, the cleaning of broken glass and the disposal of waste that may result in injuries and illness. Whether these measures are part of a proactive occupational health and safety strategy or the result of looking for competitive advantage in the Oil and Gas Companies sector is difficult to prove.

The best illustration of the deployment of the classical deterrence model is in the requirement to report the occurrence of a spillage or breakage in the Oil and Gas Companies floor for immediate cleaning. The person waiting on a table is responsible for reporting the breakages and spillages that occur there. Failure to do it amounts to misconduct, and can lead to a negative reference.

The role that the organizational structure plays is that the shift supervisor is the one responsible for the most safety issues that occur at the Oil and Gas Companies. They take the decisions relating to the measures required to remedy the situation.

The Oil and Gas Companies is not very strong on responsive regulation because there are not clear rewards for reporting accidents. Instead, there is a raft of penalties for causing or failing to respond to an accident. Accident reporting is always a dicey affair.[15]

For instance, if the breakage is the result of the employees, they face penalties. However, if the accident is the result of the actions of customers, the Oil and Gas Companies meets the cost. Therefore, there is a tendency to ascribe breakages and spillages to patrons.

2.2 Empirical Review

2.2.1 The environmental health and safety impacts caused by oil and gas exploration activities

Oil exploration and production operations have the potential to cause a variety of impacts on the environmental health and safety status of the communities within which exploration and production takes place. This is mainly because the industry heavily focuses on management of

Oil Revenues as opposed to the environmental health and safety standards. These impacts depend upon the stage of the process, the size and complexity of the project, the nature and sensitivity of the surrounding environment, and the effectiveness of planning, pollution prevention, and mitigation and control techniques (Kasimbazi, 2016). In assessing the potential impacts, it is important to consider socio-economic and environmental factors of the site where the oil exploration and production is taking place. Similarly, it is important to consider perception and magnitude of potential impacts, which will frequently depend on subjective interpretation of acceptability or significance.

The impacts include: human, socio-economic and cultural impacts; ecological impacts, potential emergencies; occupational injuries on Oil rigs; occupational diseases on Oil rigs; psychological wellbeing of workers on Oil rigs and exposure to toxic agents (ibid). These are considered hereunder:

a) Human, Socio-economic and Cultural impacts

Exploration and production operations are likely to induce economic, social and cultural changes. The extent of these changes is especially important to local groups, particularly indigenous people who may have their traditional lifestyles affected. The key impacts may include changes in land-use patterns, such as agriculture, fishing, lodging and hunting, as a direct consequence (for example land-take and exclusion) or as a secondary consequence by providing new access routes, leading to unplanned settlement and exploitation of natural resources; change in local population levels, as a result of immigration of labour force and immigration of a remote population due to increased access and opportunities. This influx of more people into the area has however been criticized for escalating tribal tensions, causing moral degeneration and development of unacceptable behaviour such as prostitution, all of which are worsening the spread of HIV/AIDS in Uganda. There shall also be changes in socio-economic systems due to new employment opportunities, income differentials, inflation, differences in per capita income (when different members of local groups benefit unevenly from induced changes); changes in socio-cultural systems such as changes in social structure, organization and cultural heritage, practices and beliefs; and secondary impacts such as effects on natural resources, rights of access, and change in value systems influenced by foreigners.

b) Atmospheric Impacts

Atmospheric impacts of oil and exploration and production have become a concern because if not controlled they have the effect of causing what is technically referred to as *"stratospheric*

ozone depletion" and climate change. The primary sources of atmospheric emissions from oil and gas operations arise from various activities such as flaring, venting and purging gases; combustion processes such as diesel engines and gas turbines; fugitive gases from loading operations and tankage and loses from process equipment; airborne particulates from soil disturbance during construction and from vehicle traffic; and particulates from other burning sources, such as well testing operations.

The principal emitted gases include carbon dioxide, carbon monoxide, methane, volatile organic carbons (VOCs) and nitrogen oxides. Emissions of sulphur dioxides and hydrogen sulphide can also occur but this shall depend upon the sulphur content of the hydrocarbon and diesel fuel, particularly when used as a power source.

c) Aquatic impacts

The principal aqueous waste streams resulting from exploration and production operations are: produced water; drilling fluids, cuttings and well treatment chemicals; process, wash and drainage water; sewerage, sanitary and domestic wastes; spills and leakage; and cooling water. Even in this case the volumes of waste produced will depend on the stage of the exploration and production process. For example, during seismic operations, waste volumes are minimal and relate mainly to camp or vessel activities (UNEP, 1997).

However most environmental health and safety impacts are posed by the high pH and salt content of certain drilling fluids and cuttings especially if discharged into fresh water sources (for example if discharged into Lake Albert and the continental River Nile which flows through Lake Albert to the northern parts of Africa.) Other aqueous waste streams such as leakage and discharge of drainage waters may result in pollution of ground and surface waters and impacts may result particularly where ground and surface waters are utilized for pastoral and household purposes or where fisheries or ecologically important areas are affected.

d) Terrestrial impacts

These are impacts to the soil quality and structure. Potential impacts to soil arise from three basic sources: physical disturbance as a result of construction; contamination resulting from spillage and leakage or solid waste disposal; and indirect impact arising from opening access and social change. Potential impacts that may result from poor design and construction include soil erosion depending on the soil structure, slope or rainfall. In addition, removal of vegetation may lead to secondary ecological problems particularly in situations where most of the

nutrients in the area are held in vegetation for example in tropical rain forest areas, or where few trees available are vital for wildlife browsing for example in savannah grasslands (UNEP, 1997). It however still unfortunate to note that clearing of vegetation by operators may stimulate further removal of vegetation by the local people especially due to influx of large numbers to tap on the new opportunities, which inevitably leads to population explosion.

e) Eco-system impacts

The above discussion has illustrated that potential impacts may occur to various components of the biosphere from a variety of operational sources. For example human, atmospheric, aquatic and terrestrial impacts may occur if activities are not properly controlled using appropriate best operational practices. In addition, plant and animal communities may also be directly affected by changes in their environment through variations in water, air and soil/sediment quality and through disturbance by noise, extraneous light and changes in vegetation cover. Such changes may directly affect the ecology: for example, habitat, food and nutrient supplies, breeding areas, migration routes, cause vulnerability to predators or cause changes in herbivore grazing patterns, which may then have a secondary effect on predators. Soil disturbance and removal of vegetation and secondary effects such as erosion and siltation may have an impact on ecological integrity, and may lead to indirect effects by upsetting nutrient balances and microbial activity in the soil.

f) Potential Emergencies

There are also potential emergencies that threaten people, the environment or property. Hence plans for all seismic, drilling and production operations should incorporate measures to deal with these emergencies. However, these may happen even with proper planning, design and with the implementation of correct procedures and appropriate personnel training. Emergency incidents which can occur include spillage of fuel (Merebank, 2001), oil, gas, chemicals and hazardous materials; oil or gas well blowout; explosions; fires (facility and surrounds); unplanned plant upset and shutdown events, natural disasters such as floods, earthquake and lightning or conflicts (war and sabotage). For example there is still an unresolved conflict between the central government and the Bunyoro Kingdom establishment on how the royalties and proceeds should be shared (Bainomugisha, 2019). Further threats are posed by the unending civil wars in DRC.

g) Occupational Injuries and fatalities on Oil Rigs

Occupational injuries are definitely a common occurrence among workers on oil rigs. Based on the analysis of data from 518 workers on an American oil rig in the Mediterranean Sea between May 1998 and May 1999, Valentic, Stojanovic, Micovic and Vukelic (2005) identified a number of occupational injuries and diseases among the workers (Seth, 2014). This data was the result of medical examinations of injured workers many of whom were Americans, British, Scots, Italians, Croatians, Bosnians, Albanians, Malteses and Indians. Of the 518 workers examined, occupational injuries were most frequent among the oil drillers (223), their assistants and manual workers at the drilling floor, rotating drill under the tower and around drilling tubes. Then followed injuries in deck hands and engineers (192) and auxiliary personnel (41), catering (36) and specialized services staff (ibid).

The most occurring injuries in terms of this classification were the hand and finger injuries, leg injuries and eye injuries while foot and trunk injuries rarely occurred. They also recorded the causes of these injuries and found to include struck-by (direct stroke), jamming, overstrain/stretch, fall-to-below (slipping from different levels), foot-level-fall (slipping on one level), contact with chemicals and hazardous substances, electrical shocks, flame, and vapour. Among these causes they found that most of the injuries were caused by direct stroke, jamming and overstrain while injuries hardly resulted from contact with chemicals and hazardous substances and electrical shocks, flames and vapour. Jensen et al (2005) found similar types of injuries affecting the same body parts among merchant seafarers across the globe (ibid).

h) Occupational Diseases on Oil Rigs

General Reinsurance Africa Ltd. (2005) found that there is also the risk of exposure to toxic gases. For instance, hydrogen sulfide is said to be a toxic gas usually found in petroleum deposits. It is also believed that it is not detected easily, and drilling crews may release the trapped gas by accident. Exposure to the gas may cause irritation of eyes, nose and throat, headaches, dizziness, nausea and vomiting, disorientation, convulsions and coma. Breathing high concentrations of such gas can lead to sudden death (General Reinsurance Africa Ltd., 2005). Similarly, data collected by Ghana Health Service and Ministry of Health (2002) show that in the manufacturing sector including petroleum and plastics, workers suffer diseases including noise-induced hearing loss, asthmatic attacks, skin diseases and irritation, cancers, musculoskeletal disorders (general body pains, back and joint pains), and respiratory diseases. Put together, this means that Ghanaians who are going to work on the oil rigs are more likely to suffer food poisoning due to handling of crude oil, musculoskeletal disorders, respiratory disorders (such as and digestive system disorders such as ulcers. The musculoskeletal disorders

are known to be the result of awkward work posture, vibration, cold temperatures, repetitions, and quick motions which are all common occurrences in the work process of oil drilling.

i) Psychological Wellbeing of Workers on Oil Rigs

Psychological wellbeing is a simple phrase without a simple definition. We need to understand that psychological wellbeing is not simply the absence of ill-health. According to Luthans (2005), many organizational psychologists use it interchangeably with happiness or subjective wellbeing. Alwater (1990:122) defined psychological wellbeing as a "general term denoting feelings of high self-esteem, life satisfaction, and lack of negative symptoms" such as loneliness, depression, stress, and related conditions.

Recent efforts to define wellbeing have led to the identification of three components; satisfaction with life as a whole and with different aspects of life (for example work, family, community, health, the presence of positive affect the experience of pleasant emotions such as joy, contentment, happiness, pride) and the relative absence of negative affect (the experience of unpleasant emotions such as guilt, sadness, anxiety and depression) (Diener, Sub, Lucas, & Smith, 1999, by Diener (2000; cited in Luthans, 2005: 278). Though the absence of ill-health is not indicative of good psychological wellbeing, psychologists tend to use measures of stress, burnout, anxiety, depression (mood swings), job satisfaction, and sleep as indicators of psychological wellbeing (Parkes, 2002; Spurgeon & Cooper, 2000).

j) Exposure to toxic agents

This is the second broad category of health risks in the oil and gas industry, after injury or fatality, involves acute and long-time exposures to toxic agents. A number of specific agents have been evaluated such as respirable crystalline silica, diesel particulates, hydrogen sulfide, volatile organic compounds (for example benzene), acid gases (HCl) and caustic compounds (NaOH), aldehydes used as biocides, heavy metals (for example lead), radioactive materials (for example uranium, thorium, radon), and noise. These agents are not unique to the oil and gas industry, and there is significant experience in the occupational health and safety field in understanding and reducing or eliminating their impacts on workers' health. Benzene, for example, is a carcinogen that can cause aplastic anemia and leukemia, and exposure to it is regulated by OSHA standards.

2.2.2 The International, Regional and National legal framework that provides for environmental health and safety standards during the oil and gas exploration activities

International law is a system of principles, rules and practices that govern relationships between states and other internationally recognized problems. International environmental health and safety standards therefore encompass the corpus of international law relevant to the protection of the global environmental health and safety. It was originally premised on the principle that states must not permit the use of their territory in such a way as to injure the territory of other states and today international environmental law has since been expanded by a plethora of legally-binding and non-binding international agreements/ treaties that Uganda is signatory to.

Even though there is no effective central authority, breach of international law may result in a variety of sanctions including collective sanctions under the UN or state action under the International Court of Justice system, arbitration, economic sanctions and diplomatic protests. Therefore the aim of this chapter is to discuss the international and regional environmental law compliance requirements (binding and non-binding) and their importance to the nascent oil industry in Uganda. It has five sections: international soft law principles; binding international and regional law compliance requirements; application of international environmental health and safety standards in Uganda, and conclusion.

Sources of International law

The sources of international law are obtainable under the Statute of the International Court of Justice. The statute defines sources of international law to include (Article 38(1) of the ICJ Statute): international conventions whether general or particular, establishing rules expressly recognized by the member states. These include treaties, conventions, pacts, protocols and covenants and international custom accepted as law (international customary law). These are norms and rules that countries follow as a matter of custom and they are so prevalent that they bind all states in the world. An unwritten international norm becomes part of customary law if it is consistently followed over a long period of time by a significant number of states which accepts it as a legal obligation. For example, if a particular commitment to act is repeatedly expressed at important international conferences, and if all the participating states act in accordance with it, then the commitment may become an obligation under international customary law.

These are divided into international soft law principles and international hard law principles after which the regional environmental health and safety regulations will follow.

Application of International and Regional Environmental Health and Safety Laws in Uganda

Uganda recognizes the need to participate in International Environmental Law. The Constitution provides that the president or any other person authorized by the president may make treaties, conventions, agreements or other arrangements between Uganda and any international organizations in respect of any matter, and that parliament shall make laws to govern ratification of any treaty, conventions, agreements or other arrangements (Constitution of the Republic of Uganda, 1995 article 123).

The National Environment Act operationalises the above constitutional provisions by enacting that where Uganda is a party to any convention or treaty concerning the environment, after the convention or treaty has been ratified under article 123 of the Constitution, the minister may, by statutory order, with the approval of parliament by resolution: set out provisions of the convention or treaty; give the force of law in Uganda to the convention or treaty or any part of the convention or treaty required to be given force of law in Uganda; amend any enactment other than the constitution for the purpose of giving effect to the convention; make such other provisions as may be necessary for giving effect to the convention or treaty in Uganda, or for enabling Uganda perform its obligations or exercise its rights under the convention or treaty (National Environment Act, Cap. 153 section 106(1)).

This section applies to any convention or treaty, whether adopted before or after the coming into force of the Act and whether Uganda became party to it before or after the coming into force of the Act (Subsection (2)). All treaties in Uganda are ratified according to the procedure laid down by the Ratification of Treaties Act (Cap 204 Laws of Uganda 2000). The Act provides for the following modes of ratification: ratification by cabinet; and ratification by parliament by resolution where the treaty has the effect of amending the Constitution, or where the treaty relates to armistice, neutrality or peace (Section 2). In case the treaty requires amendment, the Attorney General has to certify in writing that the implementation of the treaty in Uganda would require amendment. The Attorney General's certificate is presented to cabinet and subsequently a motion is tabled in parliament. If satisfied, parliament passes a resolution for the ratification of the treaty. Where a cabinet ratifies a treaty, it must lay it before parliament as soon as possible. Instruments of ratification of a treaty concluded by cabinet or parliament are signed, sealed and deposited by the minister responsible for foreign affairs to the ministry

in charge of all treaties and conventions. Therefore it follows from the foregoing that all international and regional environmental law instruments which has ratified and domesticated are binding on her and should be complied with in all current and future oil operations.

The above compliance requirements set good international and regional binding and soft standards not only for the environment generally but also the oil and gas industry in particular. Therefore Uganda should as far as is practicable aim at complying therewith. One of the major challenges of enforcing international law is its soft character. The law does not prescribe punitive reinforcements against violators. Even where such sanctions are prescribed, there may be no clear and/ or affordable system of pursuing remedies. In addition, international and regional tribunals require that before one can approach them he/she should have exhausted all available local remedies yet in some cases these are inaccessible due to structural bottlenecks. However all this can be overcome by domesticating those standards into local oil and gas legislation which should clearly highlight environmental standards, punishments for noncompliance and the procedures for pursuing remedies.

International Labour Standards on Occupational Safety and Health

The ILO Constitution sets forth the principle that workers should be protected from sickness, disease and injury arising from their employment. Yet for millions of workers the reality is very different. An estimated 2.3 million people die every year from work-related accidents and diseases. More than 160 million people suffer from occupational and work-related diseases, and there are 313 million non-fatal accidents per year. The suffering caused by such accidents and illnesses to workers and their families is incalculable. In economic terms, the ILO has estimated that more than 4% of the world's annual GDP is lost as a consequence of occupational accidents and diseases. Employers face costly early retirements, loss of skilled staff, absenteeism, and high insurance premiums due to work-related accidents and diseases. Yet many of these tragedies are preventable through the implementation of sound prevention, reporting and inspection practices. ILO standards on occupational safety and health provide essential tools for governments, employers, and workers to establish such practices and to provide for maximum safety at work. In 2003 the ILO adopted a global strategy to improve occupational safety and health which included the introduction of a preventive safety and health culture, the promotion and development of relevant instruments, and technical assistance. The ILO has adopted more than 40 standards specifically dealing with occupational safety and health, as well as over 40 Codes of Practice. Nearly half of ILO instruments deal directly or

indirectly with occupational safety and health issues. The following are the selected relevant ILO instruments;

Occupational Safety and Health Convention, 1981 (No. 155) and its Protocol of 2002 The convention provides for the adoption of a coherent national occupational safety and health policy, as well as action to be taken by governments and within enterprises to promote occupational safety and health and to improve working conditions. This policy shall be developed by taking into consideration national conditions and practice. The Protocol calls for the establishment and the periodic review of requirements and procedures for the recording and notification of occupational accidents and diseases, and for the publication of related annual statistics.

Occupational Health Services Convention, 1985 (No. 161)

This convention provides for the establishment of enterprise-level occupational health services which are entrusted with essentially preventive functions and which are responsible for advising the employer, the workers and their representatives in the enterprise on maintaining a safe and healthy working environment.

Promotional Framework for Occupational Safety and Health Convention, 2006 (No.187) This Convention aims at promoting a preventative safety and health culture and progressively achieving a safe and healthy working environment. It requires ratifying States to develop, in consultation with the most representative organizations of employers and workers, a national policy, national system, and national programme on occupational safety and health. The national policy shall be developed in accordance with the principles of Article 4 of the Occupational Safety and Health Convention, 1981 (No. 155), and the national systems and programmes shall be developed taking into account the principles set out in relevant ILO instruments. A list of relevant instruments is contained in the Annex to the Promotional Framework for Occupational Safety and Health Recommendation, 2006 (No. 197). National systems shall provide the infrastructure for implementing national policy and programmes on occupational safety and health, such as laws and regulations, authorities or bodies, compliance mechanisms including systems of inspection, and arrangements at the level of the undertaking. National programmes shall include time-bound measures to promote occupational safety and health, enabling a measuring of progress.

Basel Convention on Control of Trans-boundary Movement of Hazardous Wastes and their Disposal (1989)

Uganda signed this Convention on 11th March 1999. The overall goal of the Basel Convention is to protect human health and the environment against the adverse effects which may result from the generation, trans-boundary movement and mismanagement of hazardous and other wastes. Other objectives include reducing trans-boundary movements of wastes to a minimum consistent with their environmentally sound and efficient management and controlling any permitted trans-boundary movement under the terms of the Convention. It also aims at minimizing the amount of hazardous wastes generated and ensuring their environmentally sound management and assisting developing countries in environmentally sound management of the hazardous and other wastes they generate.

In summary, the aim of the Basel Convention is to help reduce the trans-boundary movements and amounts of hazardous waste to a minimum, and to manage and dispose of these wastes in an environmentally sound manner. The observation of this convention is so critical because oil and gas activities in Uganda have contact with Lake Albert through which river Nile (Albert-Nile) flows to other countries of Africa such as Southern Sudan, Sudan and Egypt, meaning that if waste is not controlled trans-boundary pollution may occur yet this may be so costly not only to the peace but also the economy of Uganda.

Bamako Convention on the ban of the Import into Africa and the Control of Transboundary Movement of Hazardous Wastes within Africa (1991)

The objectives of the Bamako Convention are to protect human health and the environment from dangers posed by hazardous wastes by reducing their generation to a minimum in terms of quantity and/or hazard potential. The Convention requires that each Party adopts and implements the preventive/precautionary approach to pollution problems which entails, inter alia, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm (Article 3(d) of the Agreement.). These principles are without doubt applicable to the oil industry. Firstly, the NOGP also entrenches the precautionary principle. Therefore operators should take preventive measures to contain wastes produced especially produced water and other aqueous streams to ensure that they don't escape into transboundary water catchments especially the Albert-Nile as this can culminate into transboundary pollution.

Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997)

Uganda ratified the Kyoto Protocol on 25th March 2002. This protocol sets binding numerical targets for the limitation and reduction of greenhouse gas emissions especially carbon dioxide,

methane, nitrous oxide, hydro fluorocarbons, per fluorocarbons and sulphur hexafluoride for the industrialized and transitional countries during the period 2008-2012 (Article 3 read together with Annex A to the Protocol). No numerical targets for the reduction of emissions were set for the developing countries, but they are required to report on their emissions. The Kyoto protocol defines three international policy instruments (Kyoto mechanisms) which provide opportunities for annex 1 parties to fulfill their commitments cost effectively. These are: the Clean Development Mechanism (CDM); International Emission Trading (IET); and Joint Implementation (JI) (Kyoto Protocol, 2019). From these three mechanisms, it is CDM that applies to developing countries like Uganda because JI and IET are meant for industrialized countries.

Therefore the operators in the Albertine rift should follow the CDM to make plans to minimize greenhouse and ozone depleting emissions in the process of production due to start by 2020. Key emissions that should be minimized include inter alia carbon dioxide; carbon monoxide; nitrogen oxide and methane.

Regional Law Standards

The Treaty of the East African Community (1999)

The members of the East African Community (now East African Cooperation) agreed to have a concerted effort in matters of development, law development and enforcement, and environmental protection and conservation (Kaweesi, 2019). The above objectives are encapsulated in the EAC Treaty one of whose main objectives is to promote sustainable utilization of the natural resources of the partner states. It calls upon states parties to ensure sustainable management of the environment for present and future generations and sustainable management of natural resources. These objectives indeed tally with those emphasized by the Oil and Gas Policy 2008.

This treaty establishes the East Africa Community. It has important provisions for environmental management especially article 151(1) which provides that partner states undertake to conclude such protocols as may be necessary in each area of cooperation which shall spell out the objectives, scope of and institutional mechanisms for cooperation and integration. Article 111 and 112 of the EAC Treaty provide for conservation and management of environmental and natural resources. Uganda as a member of the EAC is therefore obliged to comply with the principles of sound environmental management as prescribed in the Treaty while undertaking all development activities, which include though not limited to oil

exploration and production. For example she should ensure that there is consultation and cooperation on the technologies to be adopted and prevent transboundary disposal of oil related pollutants within the region.

The EAC Protocol on Wildlife Conservation and Law Enforcement (1999)

The protocol notes that member states have the sovereignty to manage their wildlife resources and the corresponding responsibility to sustainably use and conserve these resources. Article 2(i) stipulates that each party is required to ensure the conservation and sustainable use of wildlife resources in its jurisdiction. Each State is also required to ensure that activities in its jurisdiction or control do not cause damage to the wildlife resources of other states or in areas beyond the limits of national jurisdiction. The observation of this protocol is very instrumental in assessing environmental law compliance of the oil activities in the Albertine rift because this is the place which harbours Uganda's major wildlife National Parks and game reserves, some of which are shared among member states.

The EAC Protocol on Environment and Natural Resources Management (2006)

This is a protocol to the EAC treaty. It is a protocol that makes specific provisions for environmental and natural resources management in the East Africa Community (now East African Corporation). Article 2 provides for the application of the Protocol by partner states and cooperation in the management of the environment and natural resources within their jurisdiction, including transboundary ecosystems and natural resources. Article 39 provides that each partner state shall take appropriate measures within its competence, including the adoption of laws and regulations, administrative and enforcement measures, to ensure compliance with this protocol. The Protocol under Article 19 requires the Partner States to promote the joint harnessing of hydropower and other potential renewable energy sources and petroleum, geology and hydrocarbon potential of the Community. This therefore means that the oil in Uganda should be exploited in the perspective of complying with the protocol since failure to take heed to the guidelines may cost not only Uganda but the entire East African community.

The Environmental Assessment Guidelines for Shared Ecosystems in East Africa (2007)

These environmental assessment guidelines are intended to rationalize the management, exploitation and use of natural resources in shared ecosystems amongst the EAC Partner States. They apply to all activities within the context of a trans-boundary area or cross-border area

between any or all of the five East African countries, which is considered as the potential impact area for a specified activity.

The IGAD (Intergovernmental Authority on Development) Agreement (1996)

The ultimate goal of this organization is to achieve economic integration and sustainable development. It has the following objectives: to promote joint development strategies and gradually harmonize micro-economic policies and programmes in the social, technological and scientific fields; harmonize policy with regard to trade, customs, transport, communications, agriculture and natural resources, and promote free movement of goods, services and people within the region; create enabling environment for foreign cross-boundary and domestic trade and investment; initiate and promote progammes to achieve regional food security and sustainable development of natural resources and environmental protection to encourage and assist efforts of member states to collectively combat drought and natural as well as man-made disasters and their consequences, and to develop a coordinated and complimentary infrastructure in the area of transport, telecommunication and energy in the region. The environment created by this agreement is very important for production in Uganda especially the midstream elements of distribution and marketing. For example it is within the framework of this agreement that proposals are underway to construct a pipeline network connecting Uganda to East African markets of Rwanda and Tanzania, and development of a railway line connecting all the five countries.

Compliance standards under the National Legal Framework for Oil and Gas

The Constitution of the Republic of Uganda (1995) (as amended)

The 1995 Constitution of the Republic of Uganda has elaborate provisions regarding environmental management. In the National Objectives and Directive Principles of State Policy, the Constitution requires the Government of Uganda to take measures to protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. The government is also required to promote and implement energy policies that will ensure that people's basic needs and those of environmental preservation are met. It is further required to promote the rational use of natural resources so as to safeguard and protect the bio-diversity of Uganda. The Constitution also requires government to promote a good water management system at all levels; promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced and sustainable manner for the present and future generations and to prevent or

minimize damage and destruction to land, air and water resources resulting from pollution or other causes.

In the substantive provisions, the Constitution has a specific provision for the right to a clean and healthy environment. Under Article 39, every Ugandan has a right to a clean and healthy environment. This provision is reiterated under section 3 of the National Environment Act Cap 153; and section 5(2) of the National Forestry and Tree Planting Act No. 8 of 2003 which all provide for the right to clean and healthy environment. The breach of the right entitles any person or responsible body to bring an action in furtherance of the right. The Constitution further imposes on the State and the citizens the duty to create and protect a clean and healthy environment which is echoed in the Occupational Health and Safety Act of 2006. The above provisions imply that a person whose right to clean and healthy environment is violated due to oil exploration and production may take the company responsible or government to court to seek redress. The constitution vests the ownership of all minerals and petroleum in the government which is to hold the same on trust for the people of Uganda. This introduces the public trust doctrine in the management of oil and gas resources[3] and this was courtesy of the Constitutional (Amendment) Act of 2005.

This Amendment Act has significant implications for oil and gas management and control, and sharing of royalties from oil and gas. Part XIII and specifically section 43 amends article 244 of the Constitution by replacement. Accordingly, the entire property in and the control of all minerals and petroleum in, on or under any land or waters in Uganda are vested in the Government on behalf of the Republic of Uganda. This is however subject to article 26 of the Constitution which emphasizes the need to fairly and adequately compensate surface land owners before the Government can take over the petroleum rich lands. Parliament is mandated to make laws regulating the exploitation of minerals and petroleum; the sharing of royalties arising from mineral and petroleum exploitation; the conditions for payment of indemnities arising out of the exploitation of minerals and petroleum and conditions regarding the restoration of derelict lands. Some of the laws hereinafter have therefore been enacted under this amendment.

Petroleum (Exploration, Production and Development) Act 2013 (PEPD)

The Petroleum (Exploration, Production and Development) Act came into force in 2013 and it is the primary law responsible for the management and regulation of Oil and Gas activities in

[3] Article 244

Uganda. The major purpose of this Act is to operationalize the National Oil and Gas Policy and to achieve this many strategic approaches are identified: establishing an effective legal framework and institutional structures to ensure that the exploration, development and production of petroleum resources is carried out in a sustainable manner that guarantees optimum benefits for all Ugandans, both the present and future generations and creating a conducive environment for the efficient management of petroleum resources. The Act lays down a number of environmental, health and safety standards which include the following;

The Act enjoins players to conduct petroleum activities in a manner to enable high level of safety and maintain the level in accordance with technology developments, best industry practices, Occupational Health and Safety Act, 2006 and other laws. The Act further stipulates that the lead agency responsible for the wellbeing of health and safety especially around the Oil rigs is the Ministry of Labour and social Development. This is in line with the United National Environmental Program requirements cited above.

The Act calls for security measures to avoid attacks against facilities and investors must have contingency plans to deal with such attacks at all times. In case of accident licensee is required to suspend petroleum activities for as long as the requirement of prudent operations warrants in line with the international and regional standards on environmental health and safety.

The other strategic approaches include the establishment of institutions to manage the petroleum resources and regulate petroleum activities; regulate petroleum activities, including licensing, exploration, development, production and cessation of activities or decommissioning; ensure public safety and protection of public health and the environment in oil activities; support the development of state participation and national content in the petroleum industry and ensure transparency and accountability in all activities regulated under the Act.

The Act calls upon all actors to carry on their operations in compliance with environmental principles. In this vein, a licensee or any other person who exercises or performs functions, duties or powers under the Act in relation to petroleum activities shall comply with environmental principles and safeguards prescribed by the NEA and other applicable laws. A licensee is obliged to ensure that the management of production, transportation, storage, treatment and disposal of waste arising out of petroleum activities is carried out in accordance with environmental principles prescribed under the NEA and other applicable laws. To effectuate this, a licensee is required to contract a separate entity to manage the transportation,

storage, treatment or disposal of waste arising out of the petroleum activities. However the licensee shall remain responsible for all the activities of the entity so licensed. A person contracted by the licensee shall not undertake the above activities without obtaining a licence issued by the NEMA. The Act makes provision for punitive reinforcements where one violates the environmental principles therein contained. Accordingly, a person who carries on the production, transportation, storage, treatment or disposal of waste arising out petroleum activities without a licence or fails to comply with the conditions prescribed in the licence commits an offence and is liable on conviction to a fine not exceeding one hundred thousand currency points (2 Billion Uganda Shillings) or imprisonment for a term not exceeding ten years or both.

The Act also mandates the NEMA to make regulations for the management of production, transportation, storage, treatment and disposal of waste arising out of petroleum activities. These regulations shall prescribe, in case of contravention, penalties not exceeding a fine of five thousand currency points or imprisonment for a term not exceeding ten years or both, and may also prescribe that the court which convicts the person shall order the forfeiture of anything used in the commission of the offence. However these regulations shall have to first be laid before parliament for approval. A person shall not be granted a petroleum production licence unless their development plan takes proper account of best petroleum industry practices and safety factors[4]. This is however largely vague because the Act does not satisfactorily define what amounts to "best petroleum industry practices".

The petroleum production license granted under the Act must expressly require the licensee to undertake Environmental Impact Assessment prior to commencing production activities. The minister is also empowered to make regulations relating inter alia to the conservation and prevention of the waste of natural resources, whether petroleum or otherwise, and the carrying out of environmental impact assessments for that purpose Regarding access to information by the public, the Act empowers the Minister, in accordance with the Access to Information Act, 2005, to make available to the public details of all agreements, licenses and any amendments to the licenses or agreements whether or not terminated or valid; details of exemptions from, or variations or suspensions of the conditions of a licence; approved field development plan; and all assignments and other approved arrangements in respect of a licence. The information referred to above shall be available to any person upon payment of the prescribed fee. This seems to be a good guarantee for transparency and accountability in the sector. However it has

[4] Section 74 (1) (B)

been restricted by the stringent confidentiality provisions under S152 and other express restrictions in S153.

The National Environment Act, Cap 153

The National Environment Act (NEA, 2000) is Uganda's framework environmental law and its central tenet is sustainable environmental management. It prescribes a set of environmental management principles which include: to assure all people living in the country the fundamental right to an environment adequate for their health and well-being; encourage the maximum participation by the people of Uganda in the development of policies, plans and processes for the management of the environment; use and conserve the environment and natural resources of Uganda equitably and for the benefit of both present and future generations, taking into account the rate of population growth and the productivity of the available resources; conserve the cultural heritage and use the environment and natural resources of Uganda for the benefit of both present and future generations; maintain stable functioning relations between the living and nonliving parts of the environment through preserving biological diversity and respecting the principle of optimum sustainable yield in the use of natural resources and reclaim lost ecosystems where possible and reverse the degradation of natural resources.

Further principles include, to establish adequate environmental protection standards and to monitor changes in environmental quality; publish relevant data on environmental quality and resource use; require prior environmental assessments of proposed projects which may significantly affect the environment or use of natural resources; ensure that environmental awareness is treated as an integral part of education at all levels; ensure that the true and total costs of environmental pollution are borne by the polluter; and to promote international cooperation between Uganda and other states in the field of the environment. It establishes the National Environment Management Authority (NEMA) as a body responsible for coordinating, monitoring and supervising all environmental matters in Uganda (ibid). The NEA confers on every person has a right to a healthy environment and obligates every person to maintain and enhance the environment, and where need arises inform the authority or the local environment committee of all activities and phenomena that may affect the environment significantly.

In furtherance of the right to a healthy environment and enforcement of the duty to maintain and enhance the environment, the authority or the local environment committee is entitled to bring an action against any other person whose activities or omissions have or are likely to

have a significant impact on the environment to prevent, stop or discontinue any act or omission deleterious to the environment; compel any public officer to take measures to prevent or to discontinue any act or omission deleterious to the environment; require that any ongoing activity be subjected to an environmental audit or require that any ongoing activity be subjected to environmental monitoring or request a court order for the taking of other measures that would ensure that the environment does not suffer any significant damage. NEMA or the local environment committee proceeding is entitled to bring an action notwithstanding that the person cannot show that the defendant's act or omission has caused or is likely to cause any personal loss or injury.

The Act further requires that Environmental Impact Assessment be undertaken by a developer where the lead agency, in consultation with the executive director, is of the view that the project may have an impact on the environment; is likely to have a significant impact on the environment; or will have a significant impact on the environment. The NEA prescribes the requirement to observe environmental quality standards. In this vein, it prohibits any person from carrying out any activity which is likely to pollute the air, the water or the land in excess of standards or guidelines prescribed or issued under Act. Thus a person requires a pollution licence to carry out a polluting activity. A pollution licence cannot be issued unless the licensee is capable of compensating the victims of the pollution and cleaning the environment in accordance with the "polluter pays" principle.

NEA requires NEMA to establish standards for air quality, water quality, the discharge of effluent into water, the control of noxious smells, the control of noise, vibration and pollution, soil quality and standards for minimisation of radiation. Section 35 prohibits any activity not being a traditional activity, in a wetland without the prior written approval of the Authority given in consultation with the lead agency responsible. Section 49 of the National Environment Act provides for the protection of natural heritage sites. It provides that NEMA, with the assistance of Local Environment Committees, District Environment Committees and the lead agency, identify those elements, objects and sites in the natural environment which are of cultural importance to the various peoples of Uganda.

Occupational Safety and Health Act (2006)

The Act was intended to consolidate, harmonize and update the law relating to occupational safety and health; repeal the Factories Act Cap.220 and provide for connected matters. The Act makes provisions for the protection of the health, safety and welfare, and provision of

appropriate training of persons employed in work places. Section 18 (1) of the Act requires the employer to monitor and control the release of dangerous substances into the environment.

Thus where there is major handling of chemicals or any dangerous substance which is liable to be airborne or to be released into rivers or lakes or soil and which are a danger to the animal and plant life, it shall be the duty of the concerned employer to arrange for equipment and apparatus to monitor the air, soil, and water pollution and to arrange for the actual monitoring of these mediums, with a view of rendering them safe from the dangerous undertaking. Subs. (2) states that the records of monitoring in subsection (1) shall be kept and made available to the inspector. These provisions are applicable to all Oil Companies and Mining Companies in respect of Oil and Gas exploration and mining because of the danger they expose to the environment and human safety.

Compliance standards under the National Policy Framework for Oil and Gas

In addition to the international and regional compliance requirements, legal regime governing the oil and gas industry in Uganda is also constituted by locally tailored policy and legislative compliance requirements. The major policy and legislative environmental law compliance requirements were developed after 1994 with the formulation of the National Environment Action Plan. This saw the development of the major National Environment Management Policy and the National Environment Act as Uganda's framework legislation. It is under these that subsequent sectoral policy and legislation have developed. Legislation covered in this chapter includes the Constitution, major oil and gas law and other relevant environmental laws. Compliance with these policy and legislative aspirations and standards will enable Uganda develop an environmentally healthy and safe, sound and sustainable oil and gas sector.

The National Oil and Gas Policy for Uganda (2008)

According to the Republic of Uganda, National Oil and Gas Policy for Uganda (2008), the goal of this policy is to use the country's oil and gas resources to contribute to early achievement of poverty eradication and create lasting value to society. The policy recognizes the need to protect the environment and health during oil exploration. Principle 5.1.5 specifically provides for protection of the environment and the conservation of biodiversity. It provides that the environment, human development and biodiversity should be neatly balanced for mutual benefit and survival and that the policy should contribute to and promote this balance to ensure sustainable development. It imposes a responsibility on oil companies to protect the

environment in which they work or any areas in the country affected by their operations while the government is required to legislate regulate and monitor compliance.

Health and safety measures are crucial in oil exploration and production because of the nature of the activities involved. Under Principle 6.2.5, the Oil and Gas Policy makes provisions for protection against activities that negatively affect health. It thus recognizes several potential causes of negative impacts on human health from oil and gas activities such as oil spills, which can contaminate water sources leading to sickness and disease; gas blowouts, which can result in fires that destroy property and may lead to loss of human lives; and gas flares and dust, which result in air contamination leading to sickness. The policy seeks to promote prevention and rapid emergency response mechanisms and efforts to construct roads in a manner that reduces or prevents dust pollution.

The policy further recognizes that drilling in settled communities and water bodies used by the population can be hazardous. It requires that where deviation/directional drilling can minimize these hazards and achieve the desired results of the drilling objective in an efficient manner, deviation drilling should be promoted. This minimizes hazards such as water pollution that impacts the health of the workers and the people in the surrounding communities especially those around water bodies such as Lake Albert in the Albertine region of Uganda.

The policy also recognizes that health hazards do not occur in isolation of each other. While pollutants and toxins are directly inhaled by humans, causing disease, they also invade the food chain, entering fish, animals and vegetables. Thus, monitoring of the quality of water and food is needed to test for unacceptable levels of pollutants and toxins such as lead and mercury. It affirms the need to collaborate with other relevant policies, to support the review, updating and implementing the waste disposal standards, together with the establishment and enforcement of the necessary monitoring, evaluation and control mechanisms.

The National Environment Management Policy (1994)

The National Environment Management Policy is an output of the National Environment Action Plan (NEAP) process. The overall goal of the policy is to establish sustainable social and economic development, which maintains or enhances environmental quality and resource productivity on a long-term basis that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs[5]. Specifically, the

[5] Chapter 2 part 2.1 of the policy

policy seeks to meet the following objectives: to enhance the health and quality of life of all people in Uganda and promote long-term sustainable, socio-economic development through sound environmental and natural resource management and use; integrate environmental concerns in all development policies, planning and activities at national, district and local levels, with full participation of the people; and conserve, preserve and restore ecosystems and maintain ecological processes and life support systems, especially conservation of national biological diversity. This is geared at ensuring that there is adequate environmental health and safety.

The policy also seeks to optimize resource use and achieve a sustainable level of resource consumption; raise public awareness to understand the appreciate linkages between environment and development; and ensure individual and community participation in environmental improvement activities. Underlying these broad policy objectives are certain key principles which guide policy development and implementation strategies: Every person should have a constitutional right to live in a healthy environment and the obligation to keep the environment clean; the development of Uganda's economy should be based on sustainable natural resource use and sound management; security of land and resource tenure is a fundamental requirement of sustainable natural, resource management; and that the utilization of non-renewable resources should be optimized and where possible their life extended by recycling.

The National Water Policy (1999)

The overall objective of the policy is to manage and develop the water resources of Uganda in an integrated and sustainable manner. This is to be done in a manner that ensures and provides water of adequate quantity and quality for all social and economic needs of the present and future generations, with the full participation of all stakeholders. The water policy requires application of Environmental Impact Assessment in all water related projects and for integration of the water and hydrological cycle concerns in all development programmes. With respect to oil exploration the policy provides for: upstream and downstream water use relationships; regulation of industrial discharges of effluents to water; use and sharing of water resources by various stakeholders; and international cooperation of trans-boundary water resources. This policy is crucial for oil exploration and production because it emphasizes water quality and quantity. Hence in light of the policy the operators should ensure that their activities do not lead to pollution of neighboring waters for example through discharge of aqueous wastes. According to a survey done in Bunyoro area the oil wells were found to have spilled

into neighboring areas causing pollution of the land. This was contrary to The National Water Policy as pointed out. Henceforth the oil and gas industry is to some extent non-compliant to these standards.

Uganda Policy Framework for Industry Sector (2008)

The vision of the policy is to build the industrial sector into a modern, competitive and dynamic sector fully integrated into the domestic, regional and global economies. The policy objectives include the exploiting and developing natural domestic resource based industries such as petroleum and promotion of competitive industries that use local raw materials. The main features of this Policy Framework, drawn in line with objectives of PEAP, PMA and Strategic Exports Programme (SEP), among others are to: create a business friendly environment for private sector-led industrialization in which industries will develop, improve productivity and the quality of products through, inter alia, creativity and innovation and become more competitive in the global economy; improve infrastructure development for effective and efficient industrialization program; promote environmentally health and safe sustainable industrial development to reinforce national goals of long-term growth and development and promote safe work place practices in all industry sub-sectors.

2.2.3 The mechanisms for improving environmental health and safety law compliance by Oil and Gas Companies in Uganda

Institutional Framework for enforcing compliance with Environmental Health and Safety standards during oil and gas exploration and production.

Ministries

Ministry of Gender, Labor and Social Development

The Ministry, in collaboration with other stakeholders, is responsible for community empowerment, protection and promotion of the rights and obligations of the specified vulnerable groups for social protection and gender responsive development. The Ministry is further tasked with ensuring that occupational health and safety standards are maintained in working environments in Uganda. This covers the workers in the Oil and Gas rigs in the Albertine region. The Ministry ensures this by carrying out inspections in the Oil and Gas exploration and production areas and engaging the employees within the Oil and Gas industries in discussions on the various health and safety problems they encounter while working as seen in the previous chapters for example lack of safety or protective gear, exposure to dangerous

chemicals such as crude oil and gas, lack of adequate health services and the like. Through this the Ministry has powers to order the Oil and Gas companies such as Tullow Oil to ensure that necessities are in place for a healthy and safe working environment.

On the Compliance with the Occupational Safety and Health Act, No. 9 of 2006 Specifically "Plant Examination and Workplace Registration in line with The Occupational Safety and Health (Plant Examination and Workplace Registration Fees) Regulation, 2014" And "Approval of Architectural Plans/Drawings of New Workplaces and Alteration of Existing Ones" November 2014, the Ministry of Gender, Labour and Social Development has a mandate under the Occupational Safety and Health Act, No. 9 of 2006 to ensure that all public and private workplaces/enterprises/companies/organizations adhere to safety and health measures (MGLSD, 2020). The Occupational Safety and Health Act, 2006, Section 40 mandates the Commissioner for Occupational Safety and Health to keep a register of all work places in the country and pursuant to this, Section 41 requires that a fee be paid before a workplace is registered. Section 69-82 requires a fee to be paid for examination and certification of statutory plants and equipment like steam boilers, air receivers, gas receivers, mobile cranes, tower cranes, overhead cranes, lifting chains, shackles and lifts among others, by an authorized person.

Free Protection

In accordance with the provisions of the Occupational Safety and Health Act, it is the responsibility of employer to provide free protective equipment including clothing to the workers involved in hazardous work. The type of PPE needed varies depending on the nature of work being performed. The right use of PPE reduces risk of accident and the adverse effects on health. It is also a duty of the employer to provide instructions for the use of personal protective equipment and make sure that they are used whenever required.[6]

Training

In accordance with the Occupational Safety and Health Act, it is the responsibility of an employer to provide instruction, training and supervision as is necessary to ensure health and safety at work of his workers.

Labor Inspection System

[6] S 13(2g), 19, 91 & 95(7) of Occupational Safety and Health Act 2006

Labor inspection system is present in Uganda. Occupational Safety and Health Act provides for a vibrant labor inspection system (part II). The Commissioner is responsible for the administration of Occupational Safety and Health Act to improve and ensure health, safety, security and good working conditions at the enterprises, inspecting enterprises and ensuring the law enforcement.

The national legislation provides inspectors the power to enter, inspect and examine the work premises at any time during day or night; inspect any machinery, plant, appliance, fitting or chemical in the workplace; take measurements, photographs, samples and make recordings for the purpose of examination and investigation; ask for registers, documents, certificates and notices to inspect, examine and copy them; interview any one; make all the necessary examination and inquiry; if the inspector is a medical practitioner he/she may carry out medical examinations; and may take police officer along with him/her if necessary. The Labor inspector is also authorized to dismantle the substance or to subject it to any process or test if it appears to have caused or likely to cause danger to safety and health.

Ministry of Energy and Mineral Development

The Ministry of Energy and Mineral Development (MEMD) is responsible for the Energy and Minerals sector in Uganda. This is the Ministry responsible for management, regulation and development of the Oil and Gas industry in Uganda. One of the main functions of the Ministry is to issue petroleum licenses to Oil and Gas companies to enable them carry out Oil and Gas exploration and production in Uganda.

These licenses are issued subject to fulfillment of the mandatory requirements as indicated in the Petroleum (Exploration, Development and Production) Act of 2013 for example the Oil and Gas Company applying for the license ought to have carried out a complete Environmental Impact Assessment (EIA). This plan must be presented in accordance with other requirements in the Act to ensure that there is a plan to deal with the inevitable environmental health and safety impacts that result from oil and gas exploration and production for example the then Minister of Energy of Energy and Mineral Development, Hon Eng. Irene Muloni on August 30th ,2016 granted eight petroleum production licenses to Total E&P Uganda B.V (3 licenses) and Tullow Operations Uganda Pty (5 licenses) following conclusion of the evaluation of the applications for Production Licenses submitted by the two companies respectively.

Authorities and Agencies

National Environmental Management Authority (NEMA)

The National Environmental Management Authority is a tool for monitoring all activities that affect the environment in Uganda provided for in the National Environment Act (NEA). This Act defines environmental monitoring to mean the continuous determination of actual and potential effects of any activity or phenomenon on the environment, whether short term or long term. The general objective of monitoring is to establish the status of environment and to evaluate the impacts of various activities on the environment in general and natural resources in particular.

The specific objectives are: to understand the present levels of degradation by various agents so as to judge whether the abatement policies, projects and programmes are succeeding; identify environmental risks and impacts not previously known so that they can be brought under control; follow the movement of harmful agents though the environment into living creatures and man himself; and to identify activities that are beneficial to the environment and ensure sustainable use of natural resources.

NEMA is required, in consultation with a lead agency, to monitor all environmental phenomena with a view to making an assessment of any possible changes in the environment and their possible impacts; and the operation of any industry, project or activity with a view to determining its immediate and long-term effects on the environment. For this purpose, an environmental inspector appointed[7] may enter upon any land or premises to monitor the effects upon the environment of any activities carried out on that land or premises.[8] This is to ensure that there is proper use of the environment such that it is not depleted totally because there has to be sustainable development which enables future generations to use the same environment as well.

Judiciary

The Judiciary is the body responsible for administration of justice. It is indicated in the Constitution of the Republic of Uganda that judicial power is derived from the people and shall be exercised by the courts established under in the name of the people and in conformity with the law and with the values, norms and aspirations of the people.

[7] Section 79 NEA
[8] Section 23 NEA

Henceforth the judiciary is responsible for bringing to justice those who are guilty of breaching the environmental health and safety regulations and laws as above discussed. This is aimed at deterring people and oil and gas companies from violating these laws and regulations especially during the oil and gas exploration and production activities.

Moving forward, with effect from August 2017, perpetrators of environmental degradation will be tried in a new specialized court called: Utility, Standards, Wildlife and Environment. The creation of the court is a culmination of years of protracted negotiations between Judiciary and environment ministry. The creation of a specialized court, a departure from the normal court system, rests on the allegations that the status quo has delayed cases and yet the environment is degraded at a faster rate.

NON GOVERNMENTAL ORGANIZATIONS

Nongovernmental organizations such as Advocates Coalition for Development and Environment (ACODE) and TEAN have contributed massively to environmental health and safety standards. ACODE for example is an independent public policy research and advocacy think tank based in Uganda but working in Eastern and Southern Africa. One of the core pillars of ACODE is to transfer evidence based research findings and alternative policy options from research papers and books into civic spaces that generate public debate to promote pro-poor policy making and effective policy implementation.

These organizations have gone to courts of law where there have been cases of violation of the environment and this has led to a plethora of cases such as *Advocates Coalition for Development and Environment (ACODE) v Attorney General* where ACODE sought orders and a declaration that issuing a private company (Kakira Sugar Works) a 50 year forest permit by government in a forest reserve for the purpose of growing sugarcane was in contravention of the Constitution because there was no project brief provided by the private company and that the views of the communities were never sought. It was held in the favor of the applicants and the license was revoked basing on the private company failing to provide the project brief.

These NGOs however face a huge financial challenge and in most cases there is no proper mechanism to enforce the court ruling. This is because they are limited in terms of resources and authority. For example in the above cited case although ACODE was successful they were unable to enforce the judgment as it was merely declaratory.[9] The permit was merely revoked

[9] Ibid

and the developer, Kakira Sugar Works is still occupying the forest, which it cut down and planted sugar cane in blatant violation of the law.

Research Gap

The study is hampered by insufficient published literature in the field of oil and gas exploration and production in the Ugandan perspective, especially on the subject of environmental health and safety (EHS) compliance. Also, because of the political nature of the oil resource, some information could not be accessed because of a lack of transparency especially to do with documents relating to oil and gas exploration and production. The technical nature of the processes and activities, even some of the relevant present literature was difficult to synthesize and contextualize on behalf of the researcher whose skills were still developing. This was a purely doctrinal legal research based on desk and library materials so the researcher did not physically collect data from respondents. It was restricted to analysis of legal concepts and principles of law, statutes, cases and rules concerning environmental health and safety in the oil and gas industry in Uganda which is better suited to bring out the main objective of the study which is to determine whether there is compliance with environmental health and safety standards.

CHAPTER THREE

METHODOLOGY

3.1 Research Methodology

This section discusses how the study will be conducted to fulfil the objectives of the research. Research methodology is a way to systematically solve the research problem. According to Kothari (2004) research methodology considers the logic behind the methods used in the context of the research study and explains why the use of a particular method or technique so that research results are capable of being evaluated either by the researcher or by others. The chapter explains the research design, study population, sample size, data collection methods, research tools, data management, data analysis and presentation of data and ethical considerations.

3.2 Research Design

The research will adopt a case study model (Sarantakos, 1998). The design will be chosen because it offers an opportunity to analyse in depth many specific details that are often not taken into account by other methods, but also demonstrates a causal argument about how general social forces shape and produce results in particular environments (Neuman, 2003). The focus will be residents and leaders in the areas of the Albertine region in Western Uganda were oil exploration is taking place. Second, the choice of case study design is based on the assumption that the case study is typical of a certain type, so that after careful analysis, the generalizations found are applicable to the case study and the whole region. Qualitative (interviews) and quantitative (questionnaires) research methods will be used. The objective will be to obtain opinions from the target population and to assess the oil and gas exploration industry's compliance with local, regional and international laws on environmental safety and health: a case study of the china national offshore oil corporation

3.3 Target population

In statistics a population is an entire group about which some information is required to be ascertained (Banerjee, 2010). According to records with CNOOC Human Resource Department, the organization employees over 200 employees in its different projects and this will be considered the target population of this specific study.. However due to financial and time constrains, the accessible population could be 100 of which 10 are on managerial level.

Table 1: Target Population

Na.	**Categories of Population**	**Number of the Population**	**Due to COVID-19 we can assess**	**Per cent of the Population**
1.	General employees	180	90	90%
2.	Employees at managerial level	20	10	10%
	Total	**200**	**100**	**100%**

CNOOC HR department Records (2022)

3.4 Sample Design

A sample is a small separated part of the population showing the quality of the whole population from which it is drawn (winner, 2000). Although, Entwhistle and Nisbert (1996) made the following observation which has important implication for determining the sampling procedure; 'there is no single procedure for sampling. The method chosen depends on the purpose of enquiry, type of analysis to be done, time and facilities which have to be accepted as external constraints'**.**

3.4.1 Sample Size and Sample Technique

(a) Sample Size

The researcher will use the Krecje and Morgan (1970) table to determine the sample use. According to Krejcie and Morgan (1970) table, he says with a population of 100, a sample size of 80 is appropriate. This is further presented in table 2 below;

Table 2: Sample Size

(b) Sampling Techniques

Na.	Categories of Population	Number of the Population	Size of the Sample	Sampling Method
1.	General employees	90	70	Simple random sampling
2.	Employees at managerial level	10	10	Purposive sampling
	Total	**100**	**80**	

The sample will be selected using mixed methods where by purposive sampling techniques will be used to determine sample among the employees at the managerial level. Then the researcher will employ random sampling to select the sample among the general population.

3.5 Data Collection

This section presents the types of data that will be collected, the data collection instruments that will be used and how they will be administered.

3.5.1 Types of Data

The study will collect both primary and secondary data for analysis.

3.5.2 Primary Data

Primary data will be collected by using questionnaire and interviews within among employees of CNOOC.

3.5.3 Secondary Data

Secondary data will be obtained from reviewing various documents concerning the impacts of the oil and gas industry on critical local ecosystems and the smallholder livelihoods that depend on them.

3.6 Data Collection Instrument and Procedure

Data collection in the study refers to how the researcher obtained information to answer the research questions to compile and interpret from the primary and secondary sources of information as well as integrating the different sources to consolidate the write up of the report.

The study will employ mainly two research instruments to collect the primary data, the selected instrument are: the questionnaire and interview guide. The tools will comprised of three sections that are directly influenced by the study variables/objectives; section I will explore land use change directly and indirectly caused by the presence of oil and gas industry, in order to assess the impacts on agricultural ecosystems, section II will examine the potential impacts of oil exploitation on marine ecosystems through the release of toxic chemicals in its operation industry and the third section will explore the effects of changes in these critical ecosystems on the socio-economic and cultural well-being of local communities whose livelihoods are directly dependent on them.

Primary data will be collected by the following methods: the questionnaire entailed in both self-administered and researcher-administered questionnaire, self-administered questionnaire will be used to reach out to a big number of local residents. The interview guide will be used to collect data from Community and opinion.

3.7 Validity and Reliability Test

3.7.1 Pilot Test

Pilot test for this study will be conducted to test the viability and quality of information collected within a specified period of time. Consistence and accuracy of the questionnaire will be established through pretesting as supported by Norland (1990) as cited by Mokaya in 2013. The questionnaire will be provided to 10 people and will not be informed that it's a pre-test. The respondents for the test will be drawn from the classified category of the target population of the neighbouring sub county.

The purpose of the pre-test will be to ensure that the research tools (questionnaire and interview guide) adequately assess the impacts of the oil and gas industry on critical local ecosystems and the smallholder livelihoods that depend on them, taking into consideration the political-economic contexts through which these occur. Pre-testing will help in determining the strengths and weakness of the research tools concerning question format, wording, order and clarity of questions, skip pattern, task difficulty, timing, respondent interest and attention.

3.7.2 Validity of the Research Instrument

Validity is the degree to which results obtained from the analysis of the data represents the phenomena under study. Borg & Gall (1989) defines validity as the degree to which a test measures what it purports to measure. This study will use the content validity to validate the supervisor of the research to go through the instrument as an expert and moderate those for constructive criticism; his opinion will be taken to be the measure for the validity of the instrument. The instrument will be subjected to internal and external controls whereby the internal controls were achieved by making sure the questionnaires were in a language that is simple and easy to understand. The external controls will be achieved through random sampling which made sure that the sample was varied thus adding to the credibility of the results.

The validity of the instrument quantitatively was further established using the Content Validity Index (CVI). This involved the expert scoring of the relevance of the questions in the instrument in relation to the study variables. The instruments yielded a CVI above 0.7 after being fed in SPSS and thus were be within the accepted ranges. Amin (2005) notes that a CVI of more than 0.7 implies that the tool is valid. Index (CVI) will be computed using the formula below:

$$CVI = \frac{\text{Number of relevant items}}{\text{Total number of items}} \times 100$$

3.7.3 Reliability of instruments

Reliability is the extent to which a test or procedure of data collection yields similar results under constant conditions on all occasions (Bell, 1997). According to Bell (op cit) there are several devices for checking reliability in scales and tests such as re- test, alternative forms methods or the split half method. This study will use the Cronbach Alpha to determine reliability. Cronbach's alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items, and is a function of number of items in a test, the average covariance between pairs of items, and the variance of the total score (Goforth,2015).

Qualitatively, the reliability of the instruments was established through a pilot test of the questionnaire to ensure consistency and dependability and its ability to tap data that would answer the objectives of the study. The results of the findings were then subjected to a reliability analysis. Quantitatively, reliability was established using the Cronbach's Alpha

Reliability Coefficient test and see whether results indicated that the scale for the variables was reliable. Upon performing the test the values that were 0.7 and above were regarded reliable.

In the case of psychometric tests, must fall within the range of 0.7 above for the test to be reliable (Creswell, 2003).The formula below was applied to test reliability of the instruments is:

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum SD^2 i}{SD^2 t}\right)$$

α = Alpha coefficient

K = Number of items in the instrument

∑ = Sum

$SD^2 i$ = Individual item variance

$SD^2 t$ = Variance of total score

A reliability of .70 indicates 70% consistency in the scores that are produced by the instrument (Amin, 2005).

3.8 Data Analysis

The data collected will be analysed using both qualitative and quantitative methods. Quantitative Data will be analysed according to the research questions and objectives using Statistical Package for Social Sciences (SPSS) whereby data will be analysed using descriptive and inferential statistics. Descriptive statistical tools will include frequency tables, graphs, and analyses of variances, compared means and figures as well as percentages. Whereas Qualitative data from the field will be arranged according to main themes developed by the researcher. Correctness of transcription was conducted; minor corrections, particularly grammatical errors and incomplete responses to the questions were corrected and triangulated with quantitative data will be based on the study objectives.

3.9 Measurement of Variables

The independent variable (factors contributing to low milk prices) and the dependent variable (women participation in parliamentary elections) will be measured on a five point Likert type scale (1- strongly disagree, 2-Disagree, 3-Not sure, 4- Agree and 5-Strongly agree). The choice of this measurement is that each point on the scale carries a numerical score which was used to measure the respondents' attitude and it is the most frequently used summated scale in the study of social attitude. According to Bill (2011), the Likert scale is able to measure perception, attitudes, values and behaviors of individuals towards a given phenomenon.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The previous chapters of the study addressed the contextual, theoretical and descriptive aspects of the study. The focus of this present chapter is to present and analyse the field data

and examine the findings in the light of the objectives of the study. The quantitative data collected under the study was coded for the analysis. SPSS was used to analyse the quantitative data. The qualitative data was also thoroughly discussed in relation to the objectives of the study.

4.2 Response Rate

Presentation of tabulated data according respondents' response rate

Table 4.1: Response Rate

Instruments	Frequency	Percent
Number of questionnaires distributed	**92**	**100**
Number of questionnaires returned	**66**	**71.7**
Interviews Carried out with the Respondents		
Number of interviews expected to be carried out	**19**	**100**
Number of interviews carried out	**19**	**100**

Source: primary data (2018) ***N=85***

Table 4.1 above presents the response rate from the study. Face to face interviews were carried out with the respondents; in total 19 respondents were interviewed making a total percentage of 100 out of the 19 interviews that were expected to be carried out. These included officials from CNOOC. The researcher used questionnaires to collect data from the respondents. Out of the 92 questionnaires that were distributed, 71.7 were returned making 65% return rate.

4.1 Background Information of Respondents

Personal attributes like gender, education, marital status and age have significant effect on the respondent's ability to to analyze the extent of compliance to environmental health and safety standards in the oil and gas industry in Uganda. The socio-demographic description of respondents, presented for analysis in this study included; age, gender of respondent, educational level, marital status, directly engaged and affected by oil exploration activities of CNOOC in Uganda.

Table 4.2: Background Information of Respondents

S/N	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Q1: Age Group of the Respondent					
a).	**20-30 years**	**40**	**47.4**	**47.4**	**47.4**
b).	**31-40 years**	**22**	**26.3**	**26.3**	**73.7**
c).	**41-50 years**	**14**	**16.3**	**16.3**	**90**
d).	**Above 50 years**	**9**	**10**	**10**	**100**
	Total	**85**	**100**	**100**	
Q2: Gender of Respondents					
a).	**Male**	**54**	**63.2**	**63.2**	**63.2**
b).	**Female**	**31**	**36.8**	**36.8**	**100**
	Total	**85**	**100.0**	**100.0**	
Q3: Education Level of the Respondents					
a).	**Masters**	**9**	**10**	**10**	**10**
b).	**PGD**	**1**	**1.1**	**1.1**	**11.1**
c).	**Degree**	**23**	**26.8**	**26.8**	**37.9**
d).	**Diploma**	**35**	**42.6**	**42.6**	**80.5**
e).	**Certificate**	**17**	**19.5**	**19.5**	**100**
	Total	**85**	**100**	**100**	
Q4: Marital Status of the Respondent					
a).	**Married**	**35**	**44.7**	**44.7**	**44.7**
b).	**Single**	**8**	**21.1**	**21.1**	**65.8**

c).	**Separated**	**16**	**18.4**	**18.4**	**84.2**
d).	**Divorced**	**13**	**15.8**	**15.8**	**100**
	Total	**85**	**100.0**	**100.0**	

Source: Primary Data 2022 **N-85**

Ideally, a holistic view of the age group of the respondents indicate that (47.4%) of respondents were 20-30 years, (26.3%) were 31-40 years, (16.3%) were 41-50 years and (10%) of the respondents were 51 years of age and above. This means majority of the respondents were below the age of 40 years, these years is when someone is more productive and interfaces with CNOOC activities that might be affecting the environment s/he is working or living in.

The table above shows that majority of the respondents (63.2%) were male while (36.8%) of the respondents were female. This shows that gender was considered during this research and it also points to the fact that oil activities displace women and pull men that usually undertake hard labour in oil exploration facilities.

Majority of the respondents that is, (42.6%) were found to be with a diploma as their highest level of education, these were followed by (26.8%) respondents with a degree, (19.5%) had a certificate, (10%) had a master's degree while only (1.1%) had PGD. this indicates that all the respondents were qualified enough to answer the questionnaire but revealed a fact that semi-educated populations are always pulled to factory settings to offer semi-skilled labour that attracts lower pay compared to highly qualified labour.

The study further indicated that majority of the respondents (44.7%) were married, (21.1%) of the respondents were single, (18.4%) were separated while (15.8%) were divorced. Since majority of the respondents were married, separated or divorced, these categories of groups are characterised by being responsible thus with the ability to respond to the research.

4.2 The impact of oil and gas activities on the environmental health and safety of the employees and surrounding communities

Oil and gas exploration activities have an impact on the environmental health and safety of employees and surrounding communities, the research in this section seeks to establish the impact of oil and gas activities on the environmental health and safety of the employees and

surrounding communities, the Likert scale and standard deviations are used to analyse data for this specific section.

Table 4.4: Oil and Gas activities' impact on the environmental health and safety of the employees and surrounding communities

Statements	RESPONSES											
	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree		Mean	Std. Dev.
	F	%	F	%	F	%	f	%	f	%		
Impacts of oil and gas exploration on biodiversity												
The burying of oil and gas pipelines in the Delta fragments rich ecosystems such as rainforests and mangroves. Apart from the reduction in habitat area, clearing of pipeline track segregates natural populations, which may in turn distort breeding behavior.	11	13.2	14	15.8	4	4.7	38	45.3	18	20	3.452	1.33
Destabilization of sedimentary materials associated with dynamite shooting causes	15	18.5	18	21.6	2	2.6	40	46.8	9	10.5	3.094	1.35

increases in turbidity, blockage of filter feeding apparatuses in benthic (bottom dwelling) fauna, and reduction of plant photosynthetic activity due to reduced light penetration												
Oil spillages routinely occur in the lake Albert. Sources of oil entering the environment are variable, including pipeline leakage and rupturing, accidental discharges (e.g. tank accidents), discharges from refineries and urban centers, etc. There are also biogenic sources of hydrocarbons in the environment.	**9**	**10.5**	**11**	**13.2**	**-**	**-**	**54**	**63.2**	**11**	**13.2**	**2.789**	**.80**
The overall effects of oil spill on biota and ecosystem health are manifold. Oil interferes with the functioning of various organ systems of plants and animals. It creates environmental conditions unfavorable for life; for example, oil on water surface forms a layer which prevents oxygen penetration	**9**	**10.5**	**11**	**13.2**	**2**	**2.6**	**9**	**10.5**	**54**	**63.2**	**4.026**	**1.46**

into water bodies, and this in turn leads to suffocation of certain aquatic organisms.												
Crude oil contains toxic components, which cause outright mortality of plants and animals as well as other sub-lethal damage. Generally, toxicity is dependent on the nature and type of crude oil, the level of oil contamination, the type of environment, and the selective degree of sensitivity of individual organisms.	**13**	**15.8**	**4**	**5.3**	**7**	**7.9**	**18**	**21.1**	**43**	**50**	**3.842**	**1.48**
Gas flaring associated with oil production in the albertine region is very unfriendly to natural ecosystems and biodiversity. Gas flares typically contain more than 250 toxins.	**2**	**2.5**	**16**	**18.4**	**-**	**-**	**58**	**68.4**	**9**	**10.5**	**3.842**	**.70**
Explosion of dynamite in association with oil exploration leads to mortality of fish and other aquatic organisms. The burying of oil and gas pipelines fragments rainforests and mangroves. Oil spills and gas flaring create	**9**	**10.5**	**11**	**12.5**	**-**	**-**	**54**	**63.7**	**11**	**12.6**	**3.784**	**.79**

environmental conditions unfavorable for life												
Leakages and fire incidents are also associated with gas production and transportation.	**9**	**10.5**	**2**	**2.6**	**11**	**13.2**	**49**	**57.9**	**13**	**15.8**	**3.657**	**1.10**
Impact on employee safety												
High fatality rate: motor vehicle accidents are number one cause	**13**	**15.8**	**9**	**10.5**	**2**	**2.6**	**18**	**21.1**	**43**	**50**	**3.789**	**1.52**
Silica levels on worksites are often above safety and regulatory standards	**54**	**63.2**	**-**	**-**	**11**	**13.2**	**9**	**10.5**	**11**	**13.2**	**3.684**	**1.056**
Exposure to other chemicals, including benzene, may exist	**9**	**10.5**	**3**	**3.2**	**2**	**2.6**	**62**	**73.2**	**9**	**10.5**	**3.700**	**1.058**
Exposure to noise is likely to exist	**18**	**21.1**	**-**	**-**	**6**	**7.9**	**38**	**45**	**22**	**26.1**	**3.868**	**.73**
Lack of occupational illness recognition, reporting and surveillance limits existing data sources for understanding impacts to occupational health	**11**	**13.2**	**2**	**2.6**	**-**	**-**	**9**	**10.5**	**63**	**73.7**	**4.315**	**1.36**

Source: Primary Data 2022 **N=85**

Item one when assessing impact of oil and gas exploration activities on the environment and safety required the respondents to state whether the burying of oil and gas pipelines in the albertine region rich ecosystems such as rainforests and mangroves. Apart from the reduction in habitat area, clearing of pipeline track segregates natural populations, which may in turn distort breeding behavior. The total number of respondents was 85; majority of the respondents agreed with the statement 65.3%, 29% disagreed with the statement while 4.7 were undecided. The tabulation revealed a mean of 3.452 and a standard deviation of 1.33.

The second statement required respondents to state whether destabilization of sedimentary materials associated with dynamite shooting causes increases in turbidity, blockage of filter feeding apparatuses in benthic (bottom dwelling) fauna, and reduction of plant photosynthetic activity due to reduced light penetration; majority of the respondents 57.3% agreed with the statement, 40.1% of the respondents disagreed with the statement while 2.6% were undecided. The tabulation revealed a mean of 3.094 and a standard deviation of 1.35.

Agreeing with the study findings, Kingham (2021) says that Oil and gas drilling has a serious impact on our wild lands and communities. Drilling projects operate around the clock generating pollution, fueling climate change, disrupting wildlife and damaging public lands that were set aside to benefit all people.

Further the study tasked respondents to state whether oil spillages routinely occur in the Lake Albert. Sources of oil entering the environment are variable, including pipeline leakage and rupturing, accidental discharges (e.g. tank accidents), discharges from refineries and urban centers, etc. There are also biogenic sources of hydrocarbons in the environment; results reveal that majority of the respondents 76.4% agreed with the statement, only 23.7% disagreed with the statement. The tabulation revealed a mean of 2.789 and a standard deviation of 0.80.

The fourth statements required respondents to state whether the overall effects of oil spill on biota and ecosystem health are manifold. Oil interferes with the functioning of various organ systems of plants and animals. It creates environmental conditions unfavorable for life; for example, oil on water surface forms a layer which prevents oxygen penetration into water bodies, and this in turn leads to suffocation of certain aquatic organisms. Results revealed that majority of the respondents 73.7% agreed with the statement, 23.7% disagreed with the statement while 2.6% of the

respondents indicated were undecided. The tabulation revealed a mean of 4.026 and a standard deviation of 1.46.

The next statement here required respondents to state whether Crude oil contains toxic components, which cause outright mortality of plants and animals as well as other sub-lethal damage. Generally, toxicity is dependent on the nature and type of crude oil, the level of oil contamination, the type of environment, and the selective degree of sensitivity of individual organisms; majority of the respondents 71.1% were found to be in agreement with the statement, 21.2% of the respondents disagreed with the statement while 7.9% were undecided. The tabulation revealed a mean of 3.842 and a standard deviation of 1.48.

During the interview one respondent said:

For many years the government prioritized the development of fossil fuels over habitat conservation and recreation. Government agencies gave the oil and gas industry generous access to public lands, tax breaks and subsidies. With this support, the industry encroached upon too many of our nation's wild lands.

Still the respondents were required to state whether Gas flaring associated with oil production in the albertine region is very unfriendly to natural ecosystems and biodiversity. Gas flares typically contain more than 250 toxins; 78.9% of the respondents agreed to the statement while 20.9% of the respondents disagreed with the statement. The tabulation revealed a mean of 3.842 and a standard deviation of 0.70.

Further, the study required the respondents to state whether explosion of dynamite in association with oil exploration leads to mortality of fish and other aquatic organisms. The burying of oil and gas pipelines fragments rainforests and mangroves. Oil spills and gas flaring create environmental conditions unfavorable for life; 76.3% of the respondents agreed with the statement while 23.7% disagreed with the statement. The tabulation revealed a mean of 3.784 and a standard deviation of 0.79.

More still statement in this sub section calls upon respondents to state whether Leakages and fire incidents are also associated with gas production and transportation; majority of the respondents

73.7% agreed with the statement, 13.1% disagreed with the statement while 13.2% indicated were undecided. The tabulation revealed a mean of 3.657 and a standard deviation of 1.10.

The researcher in this sub-section endeavours to find out Impact of oil and gas exploration activities on employee safety

The first statement here required the respondents to state whether High fatality rate: motor vehicle accidents are number one cause of injuries; results indicated that majority of the respondents 84.2% agreed with the statement while 15.8% disagreed with the statement. The tabulation revealed a mean of 4.315 and a standard deviation of 1.36.

The second statement requires the researcher to state whether Silica levels on worksites are often above safety and regulatory standards; findings reveal that majority of the respondents 71.1 agreed with the statement, 16.3% disagreed with the statement while 2.6% of the respondents were undecided. The tabulation revealed a mean of 3.789 and a standard deviation of 1.52.

In the third statement; here the researcher intended to reveal whether Exposure to other chemicals, including benzene, may exist; majority of the respondents 63.2% disagreed with the statement, 23.7% agreed with the statement while 13.2% were undecided. The tabulation revealed a mean of 3.684 and a standard deviation of 1.056.

Last but not least, the respondents were asked to state whether Exposure to noise is likely to exist. Findings revealed that majority of the respondents 83.7% agreed with the statement, 13.7% disagreed with the statement while 2.6% were undecided. The tabulation revealed a mean of 3.700 and a standard deviation of 1.058.

Lastly, on the statement, lack of occupational illness recognition, reporting and surveillance limits existing data sources for understanding impacts to occupational health; here majority of the respondents 71.1% agreed with the statement, 21.1% disagreed with the statement while 7.9% were not decided. The tabulation revealed a mean of 3.868 and a standard deviation of 0.73.

4.3 The extent does CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda

In this section, the research sought to ascertain the extent does CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda. The Likert scale and standard deviation is used to analyse data for this section.

Table 4.6: Showing Responses on whether CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda

	RESPONSES											
	Strongly Agree		Agree		Not Sure		Disagree		Strongly Disagree		Mean	Std. Dev.
	F	%	F	%	F	%	f	%	f	%		
CNOOC Limited fulfills corporate responsibilities for environmental protection in all aspects and in a multi-dimensional way, strictly managing our environmental performance throughout the operational process, and improving water utilization efficiency. The Company is fully committed to protecting marine ecology	9	10.5	-	-	11	13.2	54	63.2	11	13.2	3.684	1.056

Adhering to the idea of a "Green, Low-carbon, Clean, and Circular Economy", the Company has stepped up our efforts to become an "Energy-saving and Environmentally friendly" enterprise, and has continuously implemented environmental management.	**9**	**10.5**	**3**	**3.2**	**2**	**2.6**	**62**	**73.2**	**9**	**10.5**	**3.700**	**1.05**
Following the management principle of "in-process control better than post-control, pre-control better than inprocess control, and whole process control better than pre-control", the Company has managed environmental protection with environmental impact assessment as the core. Using the CNOOC Limited	**2**	**2.6**	**2**	**2.6**	**9**	**10.5**	**62**	**73.7**	**9**	**10.5**	**3.868**	**0.73**

Environmental Protection Management Information System as the platform, we have performed environmental protection management, emphasizing strict environmental impact assessment, pollutant emission monitoring and overall emission reduction throughout the project construction process.												
Under the framework of ecological protection, the Company has put significant effort into green development, imposed rigorous control of marine environmental protection, and complied with the requirements of the	**9**	**10.5**	**2**	**2.6**	**11**	**13.2**	**49**	**57.9**	**13**	**15.8**	**3.657**	**1.10**

Environmental Protection Law.												
During the year, the Company continued to revise the marine environmental protection system, though the Regulations on the Environmental Impact Assessment of Domestic Offshore Oil and Gas Fields and the Management Rules for the Completion of Environmental Protection Facilities in Domestic Marine Oil and Gas Development Projects, which effectively reduced environmental risks and potential hazards at various stages, and improved the Company's environmental management	**11**	**13.2**	**-**	**-**	**2**	**2.6**	**9**	**10.5**	**63**	**73.7**	**4.315**	**1.36**

Adhering to the principle of "paying equal attention to developing reserves and reducing usage, giving priority to conservation" and focusing on improving the utilization efficiency of water resources, the Company strengthens technological transformation and promotes comprehensive treatment and reuse of wastewater to conduct all-around water resources management.	**13**	**15.8**	**9**	**10.5**	**2**	**2.6**	**18**	**21.1**	**43**	**50**	**3.789**	**1.52**
The Company has fulfilled the requirements outlined in the Measures for Environmental Protection Management During Production and Measures to Manage Accountability for	**-**	**-**	**9**	**10.5**	**11**	**13.2**	**54**	**63.7**	**10**	**12.6**	**3.784**	**0.79**

Environmental Damages, and has strictly maintained our ecological "red line" for harmonious coexistence with the ocean to achieve mutual benefits. For newly built and refurbished environmental protection projects, we have implemented the Measures to Manage Newly Built and Refurbished Environmental Protection Projects.												

Source: primary data, 2022

According to the results in table 4.6 above, majority of respondents sampled were in agreement with statements on whether CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda.

The first statement required the respondents to state whether CNOOC Limited fulfills corporate responsibilities for environmental protection in all aspects and in a multi-dimensional way, strictly managing our environmental performance throughout the operational process, and improving water utilization efficiency. The Company is fully committed to protecting marine ecology; majority of the respondents 76.4% were in agreement with the statement, 10.5% disagreed while 13.2 were undecided. The tabulation revealed a mean of 3.684 and a standard deviation of 1.056.

The second statement asked the respondents to state whether Adhering to the principle of "paying equal attention to developing reserves and reducing usage, giving priority to conservation" and focusing on improving the utilization efficiency of water resources, the Company strengthens technological transformation and promotes comprehensive treatment and reuse of wastewater to conduct all-around water resources management; findings revealed that majority of the respondents 83.7% agreed with the statement, 13.7% disagreed with the statement while 2.6% were undecided. The tabulation revealed a mean of 3.700 and a standard deviation of 1.05.

A respondent during the interview said

As an environmentally responsible energy company, we have implemented a low-carbon strategy with a concrete action plan to integrate environmental protection throughout the life cycle of oil and gas fields. Believing in the philosophy that lucid waters and lush mountains are invaluable assets, the Company has actively responded to the Paris Agreement and employed multiple measures to tackle climate change and cut greenhouse gas emissions. In the peripheral areas of our operations, we pay close attention to biodiversity conservation and environmental remediation and improvement, and strive to create a better ecological system.

In agreement with the study findings, CNOOC Country Director said that it is their commitment to sustainable development that the company will develop existing natural resources in a safe, efficient, and environmentally friendly manner and provide society with clean, reliable and stable energy that meets reasonable energy demand. The economy, environment, and society form the

three cornerstones for us to unfold our businesses in energy resource development and value creation. As our business and economic contributions grow steadily, we will press ahead on the road of environmental protection and societal progress. Continued efforts will be made in integrating economic, environmental and social factors to drive the sustainable development of the Company.

The third and last statement in this sub section required the respondents to state whether following the management principle of "in-process control better than post-control, pre-control better than in process control, and whole process control better than pre-control", the Company has managed environmental protection with environmental impact assessment as the core. Using the CNOOC Limited Environmental Protection Management Information System as the platform, we have performed environmental protection management, emphasizing strict environmental impact assessment, pollutant emission monitoring and overall emission reduction throughout the project construction process; the study revealed that majority of the respondents 84.2% agreed with the statement, 5.2% disagreed with the statement while 10.5% were undecided. The tabulation revealed a mean of 3.868 and standard deviation of 0.73.

Item four required the respondents to state whether under the framework of ecological protection, the Company has put significant effort into green development, imposed rigorous control of marine environmental protection, and complied with the requirements of the Environmental Protection Law.; findings reveal that majority of the respondents 63.7% agreed with the statement, 13.1% of the respondents disagreed with the statement while 13.2% were undecided. The tabulation revealed a mean of 3.657 and standard deviation of 1.10.

Item five required respondents to state whether during the year, the Company continued to revise the marine environmental protection system, though the Regulations on the Environmental Impact Assessment of Domestic Offshore Oil and Gas Fields and the Management Rules for the Completion of Environmental Protection Facilities in Domestic Marine Oil and Gas Development Projects, which effectively reduced environmental risks and potential hazards at various stages, and improved the Company's environmental management; 84.2% of the respondents agree with the statement, 13.2% disagree with the statement while 2.6% were undecided about the statement.

Item six required respondents to state whether adhering to the principle of "paying equal attention to developing reserves and reducing usage, giving priority to conservation" and focusing on improving the utilization efficiency of water resources, the Company strengthens technological transformation and promotes comprehensive treatment and reuse of wastewater to conduct all-around water resources management.; findings indicate that majority of the respondents 66.4% agree with the statement, 29% disagree with the statement while 4.7% were undecided. The tabulation revealed mean of 3.094 and standard deviation of 1.35.

The last item required respondents to state whether The Company has fulfilled the requirements outlined in the Measures for Environmental Protection Management During Production and Measures to Manage Accountability for Environmental Damages, and has strictly maintained our ecological "red line" for harmonious coexistence with the ocean to achieve mutual benefits. For newly built and refurbished environmental protection projects, we have implemented the Measures to Manage Newly Built and Refurbished Environmental Protection Projects.; majority of the respondents 55% agree with the statement, 38% disagree with the statement while 2.6% of the respondents were not decided. The tabulation revealed mean of 3.452 and standard deviation of 1.33.

During the interview, one respondent said:

In 2018, CNOOC Limited devoted greater effort in its oil and gas exploration, and its exploration activities reached a record high. Adhering to value-driven and business exploration and anchoring on its exploration and discoveries of mid-to-large sized oil and gas fields, several major discoveries were made. This continuously maintained a good development momentum of oil and gas exploration. Various exploration breakthroughs were achieved in new frontier areas in offshore China, and a strategic core exploration area was gradually formed on both sides of the Atlantic Ocean. Our management capability and technological innovation capability have been further enhanced, and the efficiency of exploration operations has been significantly improved.

4.5 Research Objective Three: The mechanisms put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda

The researcher analyzed the questionnaires that were distributed to the respondents using descriptive statistics i.e. frequencies, percentages, mean and standard deviation illustrated in table 4.16. This research objective was conceptualized using seven questions which required each respondent to do self-rating on the mechanisms put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda. Responses were based on Likert scale ranging from one which represented strongly disagrees to five which reflected strongly agree. The resulting summary statistics are in Table 4.9 below.

Table 4.9: Showing responses on the mechanisms put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda

Statements	RESPONSES											
	Strongly Agree		Agree		Not Sure		Disagree		Strongly Disagree		Mean	Std. Dev.
	F	%	F	%	F	%	f	%	f	%		
Energy Conservation- upgraded and optimized our energy and carbon control system to automatically collect energy invested consumption data from key energy consuming units.	9	10.5	2	2.6	11	13.2	49	57.9	13	15.8	3.657	1.10
Low Carbon Management	11	13.2	-	-	2	2.6	9	10.5	63	73.7	4.315	1.36
Employment Policies	11	13.2	13	15.8	4	4.7	39	45.3	18	21.1	3.452	1.33
Employee Rights and Interests.	16	18.4	18	21.6	2	2.6	40	46.8	9	10.5	3.094	1.35
Employee Development.	9	10.5	11	13.2	54	63.2	11	13.2	-	-	2.789	0.80
Employee Health.	9	10.5	11	13.2	2	2.6	9	10.5	54	63.2	4.026	1.46
Staff Care	9	10.5	11	13.2	54	63.2	11	13.2	-	-	2.789	0.80

Source: Primary Data 2022

In table 4.9, the researcher sought to know the mechanisms put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda, findings are presented below.

Using item one in this section, the researcher required the respondents to state whether the country's eenergy conservation policy was upgraded and optimized energy and carbon control system to automatically collect energy invested consumption data from key energy consuming units; responses indicate that majority of the respondents 73.7% agreed with the statement, 13.1% disagreed with the statement while 13.2% were undecided. The tabulation revealed a mean of 3.657 and standard deviation of 1.10.

Item two required the respondents to state Low Carbon Management- Under the instructions of the Plan to Control Greenhouse Gas Emissions under the 13th Five-Year Plan (NDRC Document No. 61 [2016]) is implemented; majority of the respondents 74.2% agreed with the statement, 13.2% disagreed with the statement while 2.6% were undecided. The tabulation revealed mean of 4.315 and standard deviation of 1.36.

One of the respondents supported the above findings when he stated that;

The Notice on Earnestly Launching a National Carbon Emissions Trading Market (NDRC Climate Document No. 57 [2016]) and other relevant documents and policies in China, the Company manages energy conservation, emission and carbon reduction throughout the year and tackles major issues. He continued to state that they set up a set of metrics and KPIs for energy conservation and carbon emission reduction in light of the regulations, and reviewed the annual performance of subsidiaries accordingly

Item three required the respondents to state whether Employment Policies are in place; 66.4% of the respondents agreed with the statement, 29% disagreed with the statement while 4.7% were not sure. The tabulation revealed mean of 3.452 and standard deviation of 1.33.

Another respondent opined in support of the findings that

CNOOC Limited respects the basic human rights which all employees are entitled to, strictly abides by applicable domestic and international laws and regulations, and has constantly improved its internal employment management system. In China, we act in strict compliance with international conventions ratified by the Chinese Government, such as the Convention on the

Elimination of Discrimination in Employment and Occupation, and local laws and regulations such as the Labor Law of the People's Republic of China, the Labor Contract Law of the People's Republic of China, Employment Ordinance, etc. We have established our own employment and labor contract management system to safeguard all employee's rights and interests in compliance. For overseas operation, the Company acts in compliance to relevant laws and regulations and international conventions in which the Chinese government supports. We have established an overseas employee management system, and respect the legitimate rights of all employees.

Item four required the respondents to state whether the company observes Employee Rights and Interests- Majority of the respondents 57.1% agreed with the statement, 40% disagreed while 2.6% were undecided. The tabulation revealed mean of 3.094 and standard deviation of 1.35.

Backing up the findings, one respondent added;

CNOOC Limited endeavors to create an open, transparent, equal, and diversified environment, and pays attention to protecting the legitimate rights and interests of employees. We offer employees competitive compensation packages; implement a salary increase scheme and a remuneration allocation system that is consistent with the market. The Company’s remuneration allocation, which put more emphasis on technical experts and the field employees, is closely associated with employees’ quality of work, values and contributions. A pay mechanism that matches employee income to the Company profit growth has also been adopted to ensure employees benefit from the Company’s ongoing development.

Item five required the respondents to state whether the company is guided by an Employee Health policy; majority of the respondents 63.2% were undecided, 23.7% disagreed with the statement while 13.2% agreed with the statement. Tabulation revealed a mean of 2.789 and standard deviation of 0.80.

During the interviews, one respondent said

CNOOC Limited complies with the Production Safety Law of the People's Republic of China, Law of the People's Republic of China on Prevention and Control of Occupational Diseases, Fire Prevention Law of The People's Republic of China and relevant laws and regulations of host countries and regions overseas. The Company continued to improve our occupational health

management system. We took active measures to control noise hazards in the offshore operational environment, made further use of occupational health management information systems, and applied hierarchical management to achieve full coverage occupational health surveillance and regular monitoring of hazards that could lead to occupational disease

Item six, the second last required the respondents to state whether the company had a Staff Care program; results show that majority of the respondents 73.7% agreed with the statement, 23.2% disagreed with the statement while 2.6% were undecided. The tabulation revealed a mean of 4.026 and standard deviation of 1.46.

The findings were collaborated with interviews and here another responded supported that;

CNOOC Limited takes good care of its employees and follows the concepts of "people-orientation" and "mutual development with employees" in practice. In order to help employees maintain their work-life balance, the Company offers paid vacations and home leaves, and also encourages employees to take vacations. Besides, the Company also grants a one-time settlement subsidy and comprehensive allowance and provides temporary dorms for migrant employees. We have “Mommy’s Caring House” for breast-feeding female employees to keep them safe, healthy and happy.

CHAPTER FIVE:

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of findings

This study was premised on the following research questions;

The central research question is "Is there compliance to the Environmental Health and Safety laws during oil and gas exploration and production in Uganda?" The specific research questions are:

I. What are the impacts of oil and gas activities by CNOOC on the environmental health and safety of the employees and surrounding communities?

II. To what extent does CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda?

III. What mechanisms can be put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda?

The findings were as follows:

Uganda is about to commence commercial oil and gas production at least by 2020. This follows the discovery of oil deposits worth about 3.5 billion barrels. In the course of this research it was found that the oil industry of Uganda has reached the midstream stage. This is a stage of development and production, storage, distribution and marketing. The ongoing stage now is development of structures and facilities for commercial production. The main of these is the plan to construct a refinery. It has been established that the oil and gas exploration and production process involves a number of activities which have implications for environmental health and safety law compliance. These activities include exploration surveying, exploration drilling, appraisal, development and production, transportation of oil and gas, storage and site decommissioning and rehabilitation. However, if these processes are not properly managed under a regime that respects environmental law compliance, Uganda may suffer an environmental curse.

That the above activities can lead to degeneration of the environmental health and safety through occupational injuries and diseases and other related health and safety hazards which affect well being of workers caused by lack of protective gear while working on the oil fields, atmospheric/ air pollution; soil/ terrestrial pollution; degradation of the aquatic environment; human, socio-economic and cultural impacts, ecological interferences and emergencies such as oil spills. It was also established that Uganda has sound policy and legislative environmental health and safety law compliance regime which if enforced can lead to an environmentally healthy and safe sound oil and gas sector. This composed of a matrix of international and regional binding and nonbinding instruments which Uganda has ratified, and national enactments. Whereas some laws and regulations especially on environmental health and safety standards need to be made more effective, the present legal regime is good enough to start with. Furthermore a court has been set up to handle environmental concerns to ensure that they are handled expeditiously.[10] This and other structural, legal and institutional changes should be implemented to ensure effective compliance with environmental health and safety standards as will be pointed out in the recommendations below.

So far, the performance of the actors as regards environmental health and safety law compliance is not desirable. Though some progress was made for example by formulating the Environmental Sensitivity Atlas for the Albertine Graben; Albertine Graben Monitoring Plan and conduct of EIA and SEA, there is still a lot to be desired despite efforts to ensure that the workers in Oil and gas industry especially within the oil rigs have basic necessities to ensure that they work in a safe and healthy environment. Weaknesses stem right from the government which is being too slow in enacting new required laws and Regulations and/or updating existing ones. There is also a problem with implementation of EIA and enforcement of occupational safety and health standards as baseline studies and reports prepared by operators are still facing a lot of criticism.

The multi-sectoral monitoring system proposed is not operating to the required standards due lack of clarity of duties and responsibilities especially as between the central government sectors and local governments. The companies have also not yet published their waste management plans,

[10] Op Cit 158

something which still poses a future threat to the environmental health and safety status in the oil and gas industry of Uganda.

Laws should furthermore be made to provide for liability for damage arising from the impacts of environmental health and safety noncompliance such that the defaulters are made liable for their actions. Aside from finding companies liable for noncompliance, regardless of fault, both the upstream and midstream laws (Section 130 and Section 58 (1)) fail to provide for a compensation regime for victims of such pollution or any losses resulting from poor management of petroleum operations, in particular, the unforeseeable long term damages such may have on the environment and human health. It would appear that according to Section 131 there is no liability for pollution damages if caused with a licence, which legalizes pollution. Liability for pollution damage should accrue with and without a licence. However, there are more clear and detailed provisions in the draft National Environment Management Bill currently under review (clauses 95-100). Clause 100 states that a person (including a legal company) who pollutes the environment is strictly liable for the damage caused to human health or the environment regardless of fault. Therefore there is need to harmonize the upstream legal provisions on pollution control with the principle legislation on environmental management such that the existing laws on environmental health and safety are given effective enforcement.

5.2 Conclusion

The existing oil activities are an important progress towards development in Uganda. Oil is a resource that can create lasting value for the Ugandan people. However, if the resource is not properly managed it can bring a curse rather than a blessing. The research concludes that there is no environmental health and safety law compliance in Uganda's oil sector. This because of the failure to fulfill the above underscored standards. Firstly the EIA conducted has been criticised for lacking full appreciation of the problem and full public participation. In addition, there was no area specific EIAs for sensitive areas such as Lake Albert. The SEA conducted is criticised for not covering the entire Albertine Graben. When it comes to audits and reviews, the government has not come up with Audit plans for oil sector.

The environmental health and safety quality standards in the law currently are also outdated and need review. Although there is a monitoring plan, the implementation is still weak for example it

is suggested that there needs to be a law in place to ensure that the National Oil and Gas Policy of 2008 is enforced. This is due to the fact that the monitoring role is concentrated in the hands of the central government through NEMA and other agencies at the expense of local governments especially District Environmental health and safety Officers yet these are the ones on the ground. If anything, all these monitoring agencies are not only understaffed but also poorly funded. The laws enacted also have a general weakness.

Companies operating in the oil and gas industry in Uganda have to a large extent failed to comply with international health and safety standards. Often this demands a significant investment from local service providers in improving their systems to meet requirements. Health and safety courses include: emergency first aid, fire training, manual handling skills, risk assessments, working at heights, and lifting operations. Occasionally in Uganda complaints of pollution of land and water whereby the crude oil escapes from containment into the neighboring land thereby making the land poor for planting crops arise against Oil and Gas companies especially in Bunyoro Region where the exploration and production process is actively taking place.

The provisions in the Occupational Safety and Health Act 2006 to do protection of workers from hostile working conditions by providing protective wear during working hours are often ignored by the oil and gas companies due to weak enforcement of these standards and a poor institutional framework which does not seek to ensure that there is practical compliance to safety and health standards in the oil and gas industry. This has increased the number of occupational injuries and other related occupational hazards in and around the work places. This led government into undertaking local training content[11] whereby Uganda is in the process of increasing its own training capacity, and plans soon to employ more Ugandan trainers to conduct the courses. Currently, to ensure that the courses meet the highest standards, the company draws on its network of experienced consultant trainers, but it expects to have four Ugandan trainers by the end of 2012.

The fines prescribed are not deterrent enough to scare away polluters. Hence pollution is already recognisable in the Albertine Graben in the form of noise, bad smell, unrehabilitated abandoned wells and the like which have negatively impacted the environmental health and safety status of the region. In fact, no company has up to date published a clear waste management plan. While

[11] http://www.oilinuganda.org/oil-industry-2/other-insurance-distribution-associations-training/petroleum-skills-uganda-ltd.html

the government confirms its commitment to transparency and accountability under the National Oil and Gas Policy (NOGP), these standards are not implemented in practice. To date PSAs have not been made fully public despite campaigns by CSOs. The oil and gas industry is further hampered failure of the existing laws to establish liability for damages due to pollution during the upstream and midstream stages of oil and gas production.

Uganda has further not joined EITI. In addition, there has not been clear accountability for the signature bonuses received by the Government. A signature bonus is a one off upfront payment made by an oil company to a government in return for rights to explore or exploit oil. In a Report compiled by Platform and CISCO (Civil Society Coalition of Oil), Uganda received USD 500,000 in signature bonuses in its exploration areas but this money cannot be traced to any public account.[12] A Report compiled by Global Witness reveals that there has not been enough communication to manage public expectations. Throughout the interviews conducted in oil affected areas, it became clear during discussions that not enough information was in the public domain regarding the timing of oil production; the feasibility and locations of the proposed refinery and pipelines; the beneficiaries of the oil, in particular the role of the traditional authority vis-à-vis government authority and information about the ways in which oil revenues are likely to be shared.[13]

Furthermore, the exploration and production of oil today in Uganda is still faced with a number of environmental health and safety management challenges such as occupational injuries, diseases and other related health and safety hazards, effective implementation of EIA principles, threats to humans, animals, ecology, atmosphere and culture, air , water and land pollution. All these challenges have implications on environmental health and safety law compliance in the oil and gas sector. In order to address the above challenges there should be commitment of all companies licensed to carry out exploration and production. Similarly, the Uganda government needs to have a solid understanding of exploration and production operations and how they may affect the environmental health and safety status of communities within. The activities of these two camps should be complementary and geared towards achieving the most cost effective and environmentally healthy and safe sound petroleum sector.

[12] Global Witness Uganda's Petroleum Legislation: Safeguarding the Sector (Feb.2012) at pp. 12-14
[13] Ibid

The environmentally healthy and safe sound oil and gas sector envisaged here should be one which systematically integrates environmental health and safety issues into business decisions; integrates health, safety and environmental management into a single system; considers all environmental health and safety components that is soil, air, water, plants, people and animals in decision making at strategic planning and operational levels, prevents waste at its source through pollution prevention techniques and making maximum re-use of waste components rather than installing treatment for discharges; evaluates alternatives on a cost/benefit/risk basis that includes environmental health and safety values and aims at minimising resource inputs.[14]

5.3 Recommendations

a) Strengthen legal and institutional frameworks through adoption of an enforcement policy

There is need to enhance compliance with environmental health and safety principles through strengthening the legal framework such that it is preventative in nature as opposed to being reactive. For example the Petroleum (Exploration, Development and Production) Act, 2013 charges the National Environment and Management Authority (NEMA) with the responsibility of making regulations for the management of the production, transportation, storage, treatment and disposal of waste arising out of petroleum activities. However, the prescribed fine of five thousand currency points in Section 3 (9) is not dissuasive enough. Raising the fine to one hundred thousand currency points as prescribed in Section 3 (7) could guard against non-compliance by licensees.

The Minister of Energy and Mineral Development should also publicly disclose the outcomes of an assessment of the impact of the petroleum activities on trade, industry and other risks such as occupational health and safety hazards, pollution, or economic and social costs. Although an assessment is required under Section 47 (3) for new licensing areas, there is no provision for similar assessments provided for in the other stages of resource development for interested stakeholders to comment. Even though the affected communities are accorded an opportunity to express their views on new areas of exploration, their fate is left in the hands of the Minister who may disregard their interests (Section 47 (6). There is need for reassertion in the form of a

[14] UNEP, op cit, at 27

constitutional amendment to eliminate any suspicions between the people and their government about benefits of petroleum.

There is need for Uganda to join the Extractive Industries Transparency Initiative (EITI) and form the Oil and Petroleum Uganda Association to oversee activities in Uganda. There should further be an enforcement policy whereby inspectors are appointed whose main objective is to stimulate compliance with health and safety legislation and to ensure that a good standard of protection is maintained. Inspectors have, and make use of, important statutory powers. They can enter any premises where work is carried out without giving notice, although they will often visit by prior arrangement. They can talk to employees and safety representatives, take photographs and samples, and impound dangerous equipment and substances. If they are not satisfied by the levels of health and safety standards being achieved, they have several means of obtaining improvements

Furthermore Government should create a legal and policy framework ensuring that exploitation of natural resources is conducted in a manner that respects human rights and freedoms especially rights of workers at work places basing on the right to a healthy and safe environment. Oil companies are equally enjoined to respect, protect and provide remedies to victims of their corporate quest for the exploitation of natural resources in Uganda. Before issuing a certificate of compliance in accordance with the provisions of Section 13(6) of the Public Finance Management Act, 2015, the National Planning Authority (NPA) should demand that the Ministry of Energy and Mineral Development provides for the review of the Upstream and Midstream laws to make them human rights compliant in the subsequent National Budget Framework.

The legal framework should provide for public disclosure of contracts and environmental impact assessments for accountability purposes and a demonstration by government and international oil companies to provide remedies to those affected by the negative social and environmental externalities of the petroleum industry in Uganda. International oil companies should work closely with government and civil society to consult and secure free, prior and informed consent through community engagement in the conduct of environmental impact assessments in addition to making them and other contracts such as production sharing agreements and signature bonuses publicly accessible without superfluous bureaucratic limitations.

b) Safe and Healthy working conditions

The Ugandan Government should ensure that there is safe and healthy working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health; and for other purposes.

c) Waste Management Planning

It has been observed that one of the major challenges to environmental health and safety law compliance in Uganda's oil and gas sector is pollution due to poor waste management. It was overwhelmingly pointed out by the respondents in Bulisa that the waste products which is the crude oil and other related chemicals as a result of the production process pollute the land and make it unfit for growing crops. This waste is also harmful to the health of the workers in the oil rigs and the surrounding communities hence there is need to develop a waste management plan identifying anticipated solid and liquid waste streams and addressing determination, inspection and waste minimization procedures, storage locations, and waste-specific management and disposal requirements. Include a recycling strategy to be practiced by workers during all project phases; minimize the generation of both solid and liquid wastes (including produced water) from well drilling and well development operations that are potential environmental health and safety contaminants and employ drilling and recovery systems that recycle drilling fluids, and minimize the amount of final disposal of contaminated fluids and materials.

d) Corporate Social Responsibility

There is need for the government to ensure that oil and gas companies practice corporate social responsibility such that they are able to give back to the communities within which they operate by maintaining a good healthy and safe environment for the workers and conserving the environment. Activities such as tree planting, provision of safe working gear, health clinics, setting up on-site and off-site emergency plans, social meetings between people, government and oil and gas companies to harmonise the working and living conditions of workers especially should be encouraged to ensure that there is compliance with environmental health and safety standards. This also creates a good and healthy relationship among the main players involved.

There is further need to embrace bio-diversity offsets through corporate social responsibility such that plant and animal life is also protected especially in communities which widely embrace agriculture. These are biodiversity conservation management or improvement actions considered to counterbalance impacts to biodiversity resulting from development. This can be achieved through purely voluntary measures taken by corporations, conservation management or other actions negotiated between decision-makers and developers.

e) Environmental health and safety Sound Technology

Utilize of efficient and Environmental health and safety Sound Technology. This technology ensures health and safety, protects the environment, is less polluting, uses all resources in a more sustainable manner, recycles more of the waste and products, and handles residual wastes in a more acceptable manner than the technologies for which they were substitutes. Environmental health and safety sound technologies in the context of pollution are "processes and product technologies" that generate low or no waste that could cause harm to the health or well being of the workers and also for the prevention of pollution. They also cover "end of the pipe" technologies for treatment of pollution after it has been generated.

f) Air Quality Monitoring Systems

Implement air quality monitoring systems. There is need to have mitigation measures to avoid or reduce air quality impacts from oil and gas production. Examples of such measures include: fugitive dust, air releases, process emissions and secondary emissions. Many impacts can be reduced or avoided when considered during the siting and design phase.

g) Environmental health and safety Training and Awareness

There is need for environmental health and safety training and awareness so that potentially affected people can know their rights, the relevant legislative requirements, detailed procedures and work instructions for key activities and tasks, risks and emergency plans and the means of responding to incidents. Such training should also go towards the bodies responsible for enforcement of environmental health and safety standards to ensure that they are able to effectively implement these standards such that occupational hazards in the oil and gas industry are avoided. There is further need to employ these people after the training as per Article 21 of the Petroleum

(Exploration, Production and Development) Act, 2013 which provides for Training and Employment. It is to the effect that "train and employ suitably qualified Ugandan citizens following commencement of Production and undertake the schooling and training of Ugandan citizens for staff positions, including administrative and executive management positions, provide grants to support the training of government officials on matters related to the management and oversight of the petroleum sector. However, these laws lack provisions that ensure that Ugandans employed by the transnational oil companies receive the same treatment, pay and opportunities at their work place with their foreign counterparts.41 A recent report by the Office of the Auditor general[15] revealed that Ugandans working in three transnational oil companies (Tullow Oil, CNOOC and Total) were being underpaid compared to their foreign counterparts. The report discovered that expatriates on average earned five to ten times more than nationals, while other expatriates were found to have overstayed past the due dates for the nationalization of their positions. Henceforth there is need to employ the trainees such that they serve in the best interests of the nation by upholding the environmental health and safety standards.

h) Identification of potential hazards

Oil companies should maintain procedures to identify systematically the environmental health and safety hazards and effects which may affect or arise from their activities, and from materials employed in them such as injuries and diseases on the oil rigs and other occupational health and safety hazards as well as the various environmental impacts to human life and animal life. The scope of the identification should encompass all activities from inception oil activities through to decommissioning.

This can be achieved through a Health, Safety and Environmental Impact Assessment (HSEIA) which a systematic process of identifying the impact of existing, new or substantially altered projects on health, safety and the environment. Identifying potential HSE risks and taking the necessary measures to deal with them quickly and effectively can result in cost savings by avoiding preventable injuries and environmental disasters.

[15] Keith Muhumuza, "Auditor General Faults and Government and Oil Companies on skilling Locals." http://www.monitor.co.ug /Business/Auditor--General--faults--government-oil/-/688322/2687092/-/af385ez/-/index.html (accessed June 30th, 2017).

i) The role of Government

The role of government in setting and enforcing environmental health and safety regulations is crucial to minimizing the potential environmental health and safety impacts. The trend towards performance-based regulations, rather the traditional command and control approach, has the potential to stimulate more innovative and effective environmental management in all areas of the world including Uganda.

j) The role of Civil Society Organizations

Civil society organizations and the Government of Uganda have a shared interest in ensuring that oil exploitation activities are undertaken in a manner that is consistent with national policy, legislation and promoting sustainable and equitable development in Uganda. Hence there is need to shift from politicization to strengthening CSOs and supporting their works. Where there a criticism by a CSO the government should feel advised rather than insulted, and the recommendations should be implemented.

l) Expansion of stakeholder participation

The law should provide for oversight committees that comprise of the ruling party, the opposition party, civil society, and parliament to jointly undertake the scrutinizing the oil contracts, national oil receipts and national expenditure. In this context government should not be worried of civil society and the opposition but treat them as partners in avoiding the resource curse. Public participation in oil and gas activities should also be enhanced especially when it comes to decisions that may affect them. It is very crucial that the policy goals envisaged in the oil and gas policy are implemented before oil production starts.

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Appendix 1: Determinant of Sample Size from a Given Population

Table for Determining Sample Size from a Given Population

Appendix 1.

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297

20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367

Note.—N is population size.

S is sample size.

APPENDEX1: QUESTIONNAIRE FOR RESPONDENTS

Dear Respondent,

My name is AHIMBISIBWE COLLINS, a bachelor's student at the Institute of Petroleum Studies affiliated to Uganda Christian University pursuing a Degree in Bachelor of Science in Oil and Gas Management. I am carrying out this study: **ASSESSMENT OF THE OIL AND GAS**

EXPLORATION INDUSTRY'S COMPLIANCE WITH LOCAL, REGIONAL AND INTERNATIONAL LAWS ON ENVIRONMENTAL SAFETY AND HEALTH: A CASE STUDY OF THE CHINA NATIONAL OFFSHORE OIL CORPORATION. The data collected will be basically used for academic purposes and will be treated with utmost confidentiality. The researcher will be grateful if you could spare a few minute to complete this questionnaire.

Part A: Personal Data

Item	**Response**	**Choice/tick**
Gender:	Male	
	Female	
Age bracket	18-20	
	21-30	
	31-40	
	40 and above	
Marital status	Single	
	Married	
	Separated	
	Widowed	
	Divorced	
Number of children you caring for	1-3	
	4-6	
	7-10	

	11-13
	14 and above
Level of education	Never went to school
	Primary level
	Secondary level
	College
	Degree
Occupation	Home maker
	Farmer/pleasant
	Salaried/former
	Casual worker
	No work

How long have you known CROOC?	Less than a year	
	1-4 years	

How long have you known CROOC?	Less than a year	
	1-4 years	
	5-9 years	
	10-14 years	

	15years and above	

Part B: The impact of oil and gas activities on the environmental health and safety of the employees and surrounding communities

	SA	A	NS	D	SD
Impacts of oil and gas exploration on biodiversity					
The burying of oil and gas pipelines in the Delta fragments rich ecosystems such as rainforests and mangroves. Apart from the reduction in habitat area, clearing of pipeline track segregates natural populations, which may in turn distort breeding behavior.					
Destabilization of sedimentary materials associated with dynamite shooting causes increases in turbidity, blockage of filter feeding apparatuses in benthic (bottom dwelling) fauna, and reduction of plant photosynthetic activity due to reduced light penetration					
Oil spillages routinely occur in the lake Albert. Sources of oil entering the environment are variable, including pipeline leakage and rupturing, accidental discharges (e.g. tank accidents), discharges from refineries and urban centers, etc. There are also biogenic sources of hydrocarbons in the environment.					
The overall effects of oil spill on biota and ecosystem health are manifold. Oil interferes with the functioning of various organ systems of plants and animals. It creates environmental conditions unfavorable for life; for example,					

oil on water surface forms a layer which prevents oxygen penetration into water bodies, and this in turn leads to suffocation of certain aquatic organisms.					
Crude oil contains toxic components, which cause outright mortality of plants and animals as well as other sub-lethal damage. Generally, toxicity is dependent on the nature and type of crude oil, the level of oil contamination, the type of environment, and the selective degree of sensitivity of individual organisms.					
Gas flaring associated with oil production in the albertine region is very unfriendly to natural ecosystems and biodiversity. Gas flares typically contain more than 250 toxins.					
Explosion of dynamite in association with oil exploration leads to mortality of fish and other aquatic organisms. The burying of oil and gas pipelines fragments rainforests and mangroves. Oil spills and gas flaring create environmental conditions unfavorable for life					
Leakages and fire incidents are also associated with gas production and transportation.					
Impact on employee safety					
High fatality rate: motor vehicle accidents are number one cause					
Silica levels on worksites are often above safety and regulatory standards					
Exposure to other chemicals, including benzene, may exist					

Exposure to noise is likely to exist					
Lack of occupational illness recognition, reporting and surveillance limits existing data sources for understanding impacts to occupational health					

Part C: The extent to which CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda

CNOOC Limited fulfills corporate responsibilities for environmental protection in all aspects and in a multi-dimensional way, strictly managing our environmental performance throughout the operational process, and improving water utilization efficiency. The Company is fully committed to protecting marine ecology					
Adhering to the idea of a "Green, Low-carbon, Clean, and Circular Economy", the Company has stepped up our efforts to become an "Energy-saving and Environmentally friendly" enterprise, and has continuously implement environmental management.					
Following the management principle of "in-process control better than post-control, pre-control better than inprocess control, and whole process control better than pre-control", the Company has managed environmental protection with environmental impact assessment as the core.					

Under the framework of ecological protection, the Company has put significant effort into green development, imposed rigorous control of marine environmental protection, and complied with the requirements of the Environmental Protection Law.					
During the year, the Company continued to revise the marine environmental protection system, though the Regulations on the Environmental Impact Assessment of Domestic Offshore Oil and Gas Fields and the Management Rules for the Completion of Environmental Protection Facilities in Domestic Marine.					
Adhering to the principle of "paying equal attention to developing reserves and reducing usage, giving priority to conservation" and focusing on improving the utilization efficiency of water resources, the Company strengthens technological transformation and promotes comprehensive treatment and reuse of wastewater to conduct all-around water resources management.					
The Company has fulfills the requirements outlined in the Measures for Environmental Protection Management During Production and Measures to Manage					

Section D: The mechanisms can be put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda

Energy Conservation by upgrading and optimizing energy and carbon control system to automatically collect energy invested consumption data from key energy consuming units.					
Low Carbon Management by using the instructions of the Plan to Control Greenhouse Gas Emissions					
Employment Policies- CNOOC Limited respects the basic human rights which all employees are entitled to, strictly abides by applicable domestic and international laws and regulations, and has constantly improved its internal employment management system.					
Employee Rights and Interests- CNOOC Limited endeavors to create an open, transparent, equal, and diversified environment, and pays attention to protecting the legitimate rights and interests of employees.					
Employee Development- CNOOC Limited sticks to the concept of "growing together with employees" and has improve its training system.					
Employee Health- CNOOC Limited complies with the Production Safety Law of Uganda.					
Staff Care- by taking good care of its employees and follows the concepts of "people-orientation" and "mutual development with employees" in practice.					

APPENDEX1: FGD Guide

Dear Respondent,

My name is AHIMBISIBWE COLLINS, a bachelor's student at the Institute of Petroleum Studies affiliated to Uganda Christian University pursuing a Degree in Bachelor of Science in Oil and Gas Management. I am carrying out this study: ASSESSMENT OF THE OIL AND GAS EXPLORATION INDUSTRY'S COMPLIANCE WITH LOCAL, REGIONAL AND INTERNATIONAL LAWS ON ENVIRONMENTAL SAFETY AND HEALTH: A CASE STUDY OF THE CHINA NATIONAL OFFSHORE OIL CORPORATION. The data collected will be basically used for academic purposes and will be treated with utmost confidentiality. The researcher will be grateful if you could spare a few minute to complete this questionnaire. What are the impacts of oil and gas activities by CNOOC on the environmental health and safety of the employees and surrounding communities?

To the company staffs

To the fauna in the area (animals)

To the vegetation

To the marine life

To what extent does CNOOC observe and follow the major international, regional and national legal instruments governing environmental health and safety standards in the oil and gas industry in Uganda?

What mechanisms can be put in place to strengthen CNOOC's compliance to environmental health and safety in Uganda?