

DECLARATION OF ORIGINALITY

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Title of Work: Environmental Impact of Oil & Gas Exploitation and Transportation in Kenya in Relation to Article 42 of the Constitution

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Name: Prof. Albert Mumma

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DEDICATION

To the Almighty God who has brought me this far.

To my late grandfather Jonah Khumwa Mwonyonyo; it is your inspiration and belief in me that I am where I am, your spirit lives on!

ACKNOWLEDGEMENT

Though only my name appears on the cover of this dissertation, many great people have contributed to its production. I owe my gratitude to all those people who have made this thesis possible and because of whom my graduate experience has been one that I will cherish forever;

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LIST OF ABBREVIATIONS

- i. CEC – County Executive Committee
- ii. CS- Cabinet Secretary
- iii. CSO – Civil Society Organisations
- iv. COK – Constitution of Kenya
- v. EAC – East African Community
- vi. EAP - Environment Action Plan
- vii. EIA – Environmental Impact Assessment
- viii. EMCA – Environmental Management and Coordination Act
- ix. EOPS - Early Oil Pilot Scheme
- x. ESIA – Environmental and Social Impact Assessment
- xi. IMDG Code -
- xii. NEMA – National Environment Management Authority
- xiii. NOCK - National Oil Company of Kenya
- xiv. NORM – Naturally Occurring Radio Active Material
- xv. O & G – Oil and Gas
- xvi. OBM - Oil Based Mud
- xvii. OPRC - Oil Pollution Preparedness, Response and Co-operation
- xviii. PSC – Product Sharing Contract
- xix. PW –Produced Water
- xx. UN- United Nations
- xxi. UNCED - United Nations Conference on Environment and Development
- xxii. UNFCCC - United Nations Framework Convention on Climate Change
- xxiii. UNHDI - United Nation's Human Development Index
- xxiv. WBM - Water Based Mud
- xxv. TENORM - Technologically Enhanced Naturally Occurring Radioactive Material

TABLE OF CASES

- 1) Gidion Mbuvi Kioko v Attorney General & another [2017] eKLR
- 2) Muya vs. Republic [2004] eKLR
- 3) Wangari Maathai v The Kenya Times Media Trust (1989) KLR 267
- 4) Lopez Ostra v Spain (1995) 20 E.H.R.R 277
- 5) Save Lamu & 5 others v National Environmental Management Authority (NEMA) & another [2019] eKLR
- 6) Advocates Coalition for Development and Environment (ACODE) v Attorney General (Miscellaneous Cause No. 0100 of 2004)
- 7) African Network for Animal Welfare (ANAW) –V- The Attorney General of the United Republic of Tanzania

TABLE OF STATUTES

1. The Environmental Management and Coordination Act, 2015, Laws of Kenya
2. Petroleum (exploration and production) Act, Chapter 308, Laws of Kenya
3. Mining Act, Chapter 306, Laws of Kenya
4. Physical Planning Act (Cap 286, Laws Of Kenya)
5. Petroleum Act 2019
6. The Radiation Protection Act 2007-Cap 243
7. The Maritime Zones Act, Cap 371

ABSTRACT

Oil and gas are key ingredients to moving the wheels of development world over, and for Kenya, the realization of Vision 2030 amongst other socio-economic and development agendas. Kenyans depend on it for both domestic and industrial use, industries rely on it as an alternative to electricity and even the electricity generators (Kengen) do rely on oil to produce electricity - when the water levels of the rivers and dams are low.

However, as Richard M. Auty in 1993, coined the term “resource curse”, with the great opportunities that we stare at as a country, lies equally great dangers to the environment. The curse, can encompass the significant social, economic and political challenges that are unique to countries rich in oil, gas and minerals. This also extends to environmental degradation, which often has irreversible consequences. While there are many challenges unique to oil, mining and gas extraction, governments can make policy decisions that help avoid some of the negative consequences of extraction and maximize the benefits.

The Constitution of Kenya, provides, as a right, that “Every person has the right to a clean and healthy environment.” This goes to impose a requirement that all human activity, including exploitation of oil and gas resources, must endeavour to protect that right.

The resource curse (also known as the paradox of plenty) refers to the failure of many resource-rich countries to benefit fully from their natural resource wealth, and for governments in these countries to respond effectively to public welfare needs- which includes safe, clean and healthy environment.

This paper therefore seeks to look into the legislative and policy gaps that the country must fill as it embarks on properly venturing into the oil and gas industry, as lead player in East Africa and Africa as a whole.

TABLE OF CONTENTS

DECLARATION OF ORIGINALITY	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
LIST OF ABBREVIATIONS	iv
TABLE OF CASES	v
TABLE OF STATUTES.....	vi
ABSTRACT.....	vii
CHAPTER 1	1
1.0 INTRODUCTION	1
1.1 Background.....	4
1.2 Statement of the Research Problem	7
1.3 Research Objectives.....	7
1.4 Research Questions	8
1.5 Research Hypothesis	8
1.6 Justification of the Study	8
1.7 Literature Review.....	9
1.8 Theoretical Framework	16
1.9 Conceptual Framework	21
1.10 Limitations of the study	21
1.11 Assumptions.....	21
1.12 Research Methodology	22
1.13 Limitations	23
1.14 Chapter Breakdown	24
CHAPTER 2	26
OIL AND GAS EXPLOITATION & THE IMPACT	26
2.0 Introduction.....	26
2.1 Oil and Gas Exploration.....	26
2.1.2 Discovery	27
2.1.3 Post Discovery	29
2.2 Appraisal	29
2.3 Field Development.....	29
2.3.1 Production.....	30
2.3.2 Decommissioning and Abandonment	31

2.3.3 Exploitation.....	31
2.3.3.1 Drilling.....	32
2.3.3.2 Production.....	32
2.3.3.3 Monitoring.....	33
2.3.3.4 Decommissioning.....	33
2.4 Impact of Oil and Gas Exploitation and Transportation to environment.....	35
2.4.1 Trans-boundary environmental concerns.....	35
2.4.2 Gas Flaring.....	37
2.4.2 Water Pollution.....	38
2.4.3 Spillage.....	39
2.4.4 Soil Acidity and Imbalance.....	40
2.4.5 Climate change impacts and the oil and gas activities.....	41
2.4.6 Exposure to Radiation.....	42
2.4.7 Impact on the Air.....	43
2.5 Potential Emergencies.....	45
2.6 Case Study; Impact of Oil and Gas Exploration to the Environment in West Africa.....	45
2.7 Conclusion.....	46
CHAPTER THREE.....	48
THE LEGAL FRAMEWORK FOR PROTECTION OF ENVIRONMENT IN RELATION TO THE OIL AND GAS INDUSTRY.....	48
3.0 Introduction.....	48
3.2 National Law.....	48
3.2.1 The Constitution of Kenya 2010.....	49
3.2.2 Environment Management and Co-ordination Act 2015.....	51
3.2.2.1 Environmental impact Assessment.....	55
3.2.2.2 Environmental Audits.....	57
3.2.2.3 Environmental Restoration Orders.....	57
3.2.3 Petroleum Act 2019.....	58
3.2.3.1 Licensing.....	60
3.2.3.2 Geological and Geophysical Studies.....	61
3.2.4 The Radiation Protection Act 2007-CAP 243.....	61
3.2.5 The Maritime Zones Act, CAP 371.....	62
3.3 Ratified Treaties and Conventions within the Maritime Environment.....	64
3.3.1 International Organizations regulations on Impact of Oil and Gas on the Environment.....	64

3.3.1.1 United Nations Environment Programme (UNEP).....	64
3.3.1.2 Case Study - Ogoniland in Nigeria	64
3.3.1.3 International Convention on Civil Liability for Oil Pollution Damage (CLC).....	66
3.3.1.4 International Convention on Civil Liability for Bunker Oil Pollution Damage (BUNKER)	67
3.3.1.5 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC).....	68
3.3.1.6 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matters..	69
3.3.1.6 International Convention for the Prevention of Pollution from Ships (MARPOL)	71
3.4 CONCLUSION.....	72
CHAPTER 4	74
NATIONAL FRAMEWORK REQUIRED FOR COMPLIANCE AND IMPLEMENTATION OF ARTICLE 42 OF THE CONSTITUTION.....	74
4.1.1 Introduction.....	74
4.1.2 Oil and Gas Exploration in Kenya	75
4.1.3 Stakeholders in Oil and Gas Exploitation	75
4.1.3.1 Government.....	75
4.1.3.2 Ministries of Petroleum and Mining and Energy;.....	76
4.1.3.3 Ministry of Labour and Social Services;.....	77
4.1.4 National Oil Company	78
4.1.5 Institutional Implementation of Clean and Healthy environment within the oil and gas industry.....	78
4.1.6 Judiciary.....	79
4.1.7 Civil Society.....	79
4.2. Other Stakeholders.....	81
4.2.1 International Oil & Gas Companies (IOCs).....	81
4.2.2 Direct services.....	81
4.2.3 Indirect services	82
4.2.4 Service Companies.....	82
4.2.5 Specialist Services	82
Conclusion	82
CHAPTER 5	84
SUMMARY OF RESERCH FINDINGS AND RECOMMENDATIONS	84
5.1 Introduction.....	84
5.2 Some of the Challenges.	85
5.2.1 Willful disobedience of by relevant institution.....	85
5.2.2 Investment Costs.....	86

5.2.3 Lack of proper training and capacity building	86
5.2.4 Infrastructural Development	86
5.2.5 Waste Disposal.....	87
5.3 Recommendations.....	87
5.3.1 Use of prescriptive approach.....	87
5.3.2 Environmental education and awareness	88
5.3.3 Emerging Enviromental Issues arising from Oil and Gas exploitation.....	88
5.3.4 The Need for Environmental Protection in Kenya.....	89
5.3.5 Waste disposal sites	89
5.3.6 Policy and Regulation enhancement	90
BIBLIOGRAPHY	91

CHAPTER 1

1.0 INTRODUCTION

The Oil and Gas industry has a significant influence on the total pollution and the environment through the exploitation and production operations; oil spillage, gas flaring, transportation and oil refining processes. Hydrocarbons are an essential and necessary ‘tool’, in their varied form, to global economic development and prosperity for decades to come. In order to meet the rising energy demands, there is need to reconcile the goals of energy security and environmental protection, as the environment is the most fundamental resource that holds all other resources.¹

The discovery of commercially viable quantities of oil in Kenya – Turkana County, came as good news not just to the communities within and around Turkana, but also the entire Country. The findings may signify a major change in the country’s position both (socio- economic and regional politics) given the fact that, previously, it has been one of the low income, with over reliance on Agriculture as a foreign exchange earner.

Exploration activities mainly geared towards the extraction of mineral or oil deposits. These activities are aimed at bolstering the economic development of a nation – especially those that are endowed with such deposits. Beside the numerous opportunities that come with mineral exploration, there can be a considerable and irreversible disruption, not only to the human population but also the environment; around the exploration fields and far beyond. If successful, explorative projects increase job and business opportunities, infrastructure- roads, and social amenities -schools, health facilities, to remote and previously impoverished areas- however, this benefits must not come at the expense of the environment.

The industry has three major phases; the upstream, midstream and downstream. The upstream, which is the most important involves exploration, exploitation and production, while the midstream covers the transportation of products to the processing, which is at the downstream- deals with refining and processing of crude oil into various products, as well as the distribution and marketing of the products.² Petroleum exploitation do not include petroleum refining

¹Petroleum & Environmental Biotechnology, The Petroleum Industry and Environmental Challenges, Vol. 5, Issue 4, Abass A Olajire

²International Journal of Innovation and Scientific Research, Environmental and Social Challenges of Oil and Gas exploration in Kenya, Vol.17, No. 1, August 2015, Isiah K. Okuthe

operations. It therefore means that petroleum exploitation includes both upstream and midstream activities but does not include downstream activity.

The ideal situation world over is that, processing of Oil and gas is done close to the source- the point of production, before transportation and onward sales. The LAPSSET³ projects is designed to consist of different transport infrastructure components, i.e. the railway, highway and pipeline. The design is aimed at having the three components run parallel to one another in view of the need for road transport during the construction and maintenance of the other two components.⁴ There is a proposal to have an Oil Pipeline for transporting crude oil from Southern Sudan, via Turkana to Lamu via Isiolo is planned parallel to the highway routes at flat areas, and independently at precipitous areas with a capacity of 500,000 barrels per day (bbl/day).⁵ The Oil realized from the exploration in Turkana is “ideally” supposed to be transported through the Pipeline system to Lamu. Currently, the design proposes the crude oil pipelines are planned from the Lamu Tank Terminal, to the north of the Lamu Port, to the two Single Point Mooring Buoys (SPMBs) at the outer channels through Pate Island. However, this is yet to be realized as the project is yet to be concluded. Early Oil Pilot Scheme (EOPS)⁶ commenced in 2018 before the Pipeline system could be in place.

The EOPS is being carried out through Road transport by use of heavy tanker trucks, travelling a distance of about 1, 100 Km via Nakuru and Nairobi to Mombasa for export. The costs of transporting oil via road is fairly high as compared to Pipeline, which would be more ideal; recurrent costs and maintenance. The effects of the heavy cargo on the road structure and the emissions to the environment is wanting.

In Africa, Nigeria is said to produce averagely two-thirds of Africa’s oil exports by value followed by Libya producing approximately a third oil export, Kenya seeks to get its place on the list.

The Constitution provides for the right to a clean and healthy environment at Article 42.⁷ Further, it seeks to have the environment protected for the benefit of present and future generations through various mechanisms including- legislative, policy, regulatory among other measures particularly those contemplated in Articles 69 and 70 and the right to have obligations relating to the

³Lamu-Southern Sudan-Ethiopia Transport (LAPSSET) Corridor

⁴Final FS & MP Report (Vol. III), May, 2011

⁵Ibid 3

⁶Early Oil Pilot Scheme (EOPS) Briefing dated 30/05/2018

⁷The Constitution of Kenya 2010

environment fulfilled. The Constitution imposes obligations on the State; it is required to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits,⁸ establish systems of environmental impact assessment, environmental audit and monitoring of the environment.⁹ Further, it is required that every person, to cooperates with state organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.¹⁰

⁸Article 69 (1) (a) of the Kenyan Constitution.

⁹Article 69 (1)(f) of the Constitution

¹⁰ Article (69) (2) of the Constitution

1.1 Background

Economies all over the world rely heavily on oil and gas to meet a majority of the energy demands- which is a major factor in development and industry. Besides, oil production is also a key indicator to the economic status of a country, which in turn, define its political place on the regional and International spheres.¹¹ The IEA predicts that global oil demands are likely to reach 90 million barrels/per day in 2020.¹²

Kenya began exploration in the 1950s,¹³ with the first well, being in dug 1954 by British Petroleum and Shell in Lamu. In Mandera, several companies were interested in exploring but the initial tests conducted did not require drilling. The first refinery complex which was aimed at carrying out distillation, hydro-treating, catalytic reforming and bitumen production was commissioned at Changamwe in 1963,¹⁴ with a subsequent one being commissioned a decade later- 1974.¹⁵

In 1975, Texas Pacific et al drilled Hargaso-1 and encountered oil and gas deposits in cretaceous rocks, and in 1976, Chevron and Esso drilled Anza-1 and Bahati-1 wells in southern part of Anza.

National Oil Corporation of Kenya was incorporated in 1981, under the now repealed Chapter 481-Companies Act,¹⁶ and the government has a 100% stake in the institution. In 1982, three deep wells were again drilled in Lamu by a consortium of units; marathon and union.¹⁷

Sometime in 1986, the Petroleum (Exploration and Production) Act, Chapter 308 legislation was revised so as to attract international explorers. Also, the government entered into a joint venture with Petro-Canada International Assistance Corporation.¹⁸

To note, from the Energized Bulletin,¹⁹ it is recorded that between 1985 and 1990, there was a second attempt by Amoco and Total, when they drilled 10 wells in Marsabit, Anza basin and

¹¹Ibid 2

¹² International Energy Act

¹³<http://national.co.ke> accessed on 19/09/2013

¹⁴Kenya Petroleum Refineries Limited, 2007

¹⁵ Kenya Petroleum Refineries Limited, 2007

¹⁶<http://www.vanoil.ca> accessed on 20/09/2013

¹⁷ Oil News Kenya “History of Oil Exploration in Kenya” <https://www.oilnewskenya.com/history-of-oil-exploration-in-kenya-1950-to-2010/> (Accessed on 27/11/2018)

¹⁸Daily Nation “Big companies scramble for black gold prospects” <https://www.nation.co.ke/news/1056-457216-kp1hw0z/index.html> (Accessed on 27/11/2018)

¹⁹ the National Oil of Kenya official Newsletter, issue 002 of July 2012

Mandera. The wells were dry but with slight traces of oil and gas, not commercially viable. A research has shown that Amoco was involved in more than just prospecting for oil.

In 1991, National oil initiated an in-house study of the Lamu Basin as part of a long-term strategy to re-evaluate the existing geological, geophysical and geochemical data relating to each of the sedimentary basins in Kenya which concluded in 1995.

In 2000, seven production sharing contracts were signed and Woodside completed 7, 842 wells off the shore of Lamu. In 2001, tertiary rift study was completed and it led to the actual quantification of potential sources and reservoir in the area.

A report by a parliamentary committee set up in 2003 to probe the extra ordinary rate at which people were developing cancer and animals dying in large numbers (more than 10,000 sheep).²⁰ Biostratigraphy studies, as captured by the report, suggest that these wells may not have penetrated deep enough to test the Neocomian-lower Albian sediments which comprise the source reservoir and seal within the Sudan rift basin.

By 2011, there were several oil exploration companies working within the country, of the potential 38 blocks, only 24 of them were licensed; as of June 2011.

In 2012, two companies; Africa Oil Corporation and Tullow oil embarked on exploratory drilling within block 10BB, Ngamia-1 well to a depth of 2,340 meters and reported a significant discovery- this was a game changer due to the volumes of oil and gas deposits.

The discovery of commercially viable oil reserves made in March by Tullow Oil has led to the entry of major foreign oil companies since then. There has also been an increase in the number of exploration blocks as gazetted by the minister from the initial 38 to 46. Of the 46 blocks established under the Petroleum Act, 45 have been licensed to 23 different international oil companies.²¹

²⁰ The report findings do indicate that Amoco was involved in burying boxes and sacks that had different metals and hard canvas. This was later discovered after residents and chemical biologists noted a white substance (salt like and very corrosive when in contact with the skin) around water sources in areas like Kirigi. This water was declared unfit for both animal and human consumption. It was also found out that the exploring wells were not properly sealed, especially in the Bubisa area of Marsabit. Experts found that the water had high levels of Nitrite, Arsenic (cancer causing agent) and Nitrate Amoco later sold 50% of its interest to BP-Shell who later drilled Eliye Springs-1 and Lopert-1 which is West of Lake Turkana in a tertiary rift basin. The Loperot-1 well gave satisfactory results. All along, none of the wells gave an indication of commercially viable reserves.

²¹International Monetary Fund, 2013

Gas has been discovered on one of the offshore wells in the Lamu Basin,²² and it is further, suspected that part of the disputed Somali- Kenya territory within the Indian ocean holds large deposits of oil and gas.

Coal exploration is majorly within the Mui Basin (400 Km²) in Kitui county, Eastern Kenya, and is subdivided into four main blocks. Seventy wells have so far been drilled. Coal has been found at various depths in several of these wells ranging from lignite²³ to sub-bituminous types.

The oil exploitation began, and eventually, crude oil was adequate to export. On 03/06/2018, Kenya became the first East African country to export crude oil from Ngamia 8 oil fields in Turkana County through Mombasa; it is transported by road from the fields in the north, down to the coast, which is the point of export- in what is referred to as Early Oil Pilot Scheme (EOPS)²⁴.

As of today, exploration and production sharing contracts (PSC)²⁵ are governed by the Petroleum Act,²⁶ Petroleum Regulations, the Income Tax Act²⁷ and the Environmental Management and Coordination Act,²⁸ the Petroleum Act²⁹ and the Mining Act.³⁰

The exploitation of the oil and gas deposits presents Kenya with both Environmental and social challenges due to weak institutions, lack/inadequate public participation, poor communication amongst stakeholders, unskilled labour and expertise (locally sourced) within the industry, lack of sufficient policies, poor structures, influence from government systems- both at the National/Central and County/Regional levels; of which, they all have direct impact on the activities, hence leading to unsustainable results on the environment.

²² Ibid 21

²³ A soft, brownish-black coal in which the alteration of vegetable matter has proceeded further than in peat but not as far as in bituminous coal, Also called brown coal

²⁴Early Oil Pilot Scheme (EOPS) Briefing dated 30/05/2018.

²⁵ Article 30.1 of the Model Agreements Declaration provides that despite the confidentiality provisions in this contract, the parties shall, in line with the 2004 Abuja Joint Declaration on transparency and governance in the JDZ, make public all kinds of payments, such as the amount of signature and production bonuses, the fees and annual rental made and the aggregate volume of available crude oil allocated to the Joint Development Authority under(royalties, oil costing, oil taxation, and profits) and such information shall be published on its website. See Advisor, September 2005/No.258, Association of International Petroleum Negotiations.

²⁶Petroleum (exploration and production) Act, Chapter 308, Laws of Kenya

²⁷ The Income Tax Act, Chapter 470, Laws of Kenya

²⁸ Environment management and Coordination Act, No 8 of 1999, Laws of Kenya

²⁹ Petroleum Act, 2019

³⁰ Mining Act, Chapter 306, Laws of Kenya.

1.2 Statement of the Research Problem

This study is focused at establishing environmental impact of oil & gas exploitation and transportation in Kenya, in relation to Article 42 of the constitution.

The exploitation and production segment of the industry world over is accompanied by several environmental challenges. The activities in upstream operations which are likely to result in environmental hazards include seismic acquisition, drilling, development- production and transportation, all of which pose a myriad of challenges to the environment, at different levels and with different magnitudes.

Since 1950's, tireless attempts have been made in Kenya to strike oil. They were mainly centered along the northern corridor stretching all along from the Coastal shores of Lamu to the far Northern border of Kenya and Ethiopia and South Sudan, in Turkana. For a period of almost sixty years, negligible signs were found but due to the low volumes of the gas and rocks identified, it did not make economic sense to explore further. In March 2012, the exploring companies struck large volumes of oil in Northern Kenya and reported of its commercial viability. The discovery marks a great milestone for the development of this industry.

In light of this development, this paper seeks to evaluate the necessary and mandatory steps that ought to be undertaken by the players, stakeholders, government and the relevant agencies to ensure proper and adequate measures are taken to safeguard, protect, preserve and conserve the environment; including legislative, policy, regulatory and best practices. This is so that, the minerals do not result into a blessing and curse, at least not to the environment that sustains life.

Although there are several laws in place in relation to the fulfilment of Article 42 of the Constitution, nevertheless, there are wide gaps, hence the urgent need to properly structure legislation, policy and implement Environmental law principles while monitoring the enforcement mechanisms so as to safe guard the environment.

1.3 Research Objectives

1. To assess the Environmental law principles, policies and legislation that are key in protecting the environment;
2. To analyse the importance of implementing prevention mechanisms to achieve a clean and healthy environment;

3. To create awareness of the impact of crude oil production and processing on the environment and of, practices to reduce environmental impact;

1.4 Research Questions

1. How effective are the Regulations in relation to the achieving Article 42 of the Constitution within the oil and gas industry in Kenya?
2. What are some of the gaps in the law, principles, policies and regulations in the course of implementation?
3. What are some of the recommendations to fill the gaps within the industry?

1.5 Research Hypothesis

Although there are various policies and guidelines to environmental Conservation, anchored and backed up by the law, there still remain crucial gaps in the framework and implementation, nevertheless, there is an opportunity to identify the gaps; legislate and establish proper policies so as to protect, preserve and conserve the environment while ensuring that Article 42 of the Constitution is safeguarded. It is also paramount to rationalise and take deliberate measure to guarantee a clean and safe environment, especially since this is a fundamental human right, which must not only be protected, but also enforced.

1.6 Justification of the Study

Article 42 of the Constitution provides that, every person has the right to a clean and healthy environment, which includes the right;

- a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and
- b) to have obligations relating to the environment fulfilled under Article 70.³¹

The law envisions a situation where all citizens (including non-citizens) are entitled to a clean and healthy environment while placing an even duty on them, to take measures to protect and conserve the environment.

³¹ The Constitution of Kenya, 2010.

The justification of this study is therefore, due to the activities of exploitation and transportation of Oil and Gas from Turkana County, various communities around the exploitation fields and along the transport corridor have been immensely affected; their health and that of their livestock and the environment, hence affecting their daily lives, some effects of which are irreparable.

Additionally, there are no clearly spelled out action plans on how the oil companies will manage waste products, despite the general NEMA provisions, considering that the toxic levels of some of the waste is extremely dangerous, and some water sources such as Lake Turkana and the irrigation projects around the region would be greatly affected.

It is also relevant to consider the impact it would have on the water bodies; several rivers, Lake Turkana and ultimately, the Indian Ocean, especially the gas exploitation along the coast, and also due to the installation of the oil pipeline connecting the coast region and the mining fields to the north. Moreover, the Indian Ocean will be bombarded with oil related activities due to the introduction of oil exportation activity making it more susceptible to accidental oil spills – crude and refined.

Thus the study is meant to highlight the gaps, loopholes and weaknesses of the existing legal regime and policy framework in its implementation within the oil and gas industry in order to protect the Constitutional rights and enforce the duties thereto.

1.7 Literature Review

Oil exploitation possess potential environmental risks that Kenya must directly confront these looming situation, by putting sufficient safeguards to protect the environment, before it is too late.³² Kenya's nascent oil and gas industry is faced with a number of environmental management challenges. They include institutional, infrastructural and financial incapacity, insufficient legal, policy and regulatory frameworks among others. The state must be able to put in place sound environmental management measures- more so the legislative, policy and regulatory frameworks, which will then shape the form and substance of the institutional,

³² Gatuka S.W.: Oil exploitation in Kenya: socioeconomic and environmental impact in Turkana county: (2017). Available at: <http://idis.uonbi.ac.ke/node/188502> Accessed on 18/08/2019.

infrastructural, financial and all the related disciplines. Learning from the “pioneer” oil producing countries and global best practices so as not to experience the misfortune.³³

History indicates that the negative impact of oil exploration and production lasts for decades. Oil-related accidents have been experienced for decades. One of the largest oil spills in history is the Amoco Cadiz Oil Spill; in 1978, the tanker ran aground on Portsall Rocks, 5 km from the coast of Brittany, France, ultimately split in three and sank. The accident released 1.6 million barrels (250,000 m³) of oil. The spill caused the death of 9,000 tonnes of oysters and 20,000 birds (mostly diving birds).³⁴ The resultant damage included the death of millions of seas creatures and organisms whose natural habitat is the sea. Fishermen raised concerns- that they caught fish with deformities, tumors and skin ulcerations. This is the same fish that, ideally was to be consumed by human being, hence spreading further the effects.

The United Nations, through the International Marine Organization, which was established in 1959, had already put in place policies which would hold energy companies and countries accountable for pollution control, law, marine safety and others. However, individual companies and countries seemed to have ineffective oil spill contingency plans as the damage was quite evident.

The Chevron Oil Company has been involved in numerous law suits related to human life and environmental sustainability. Texaco, *which is now owned by Chevron*,³⁵ was accused of discharging formation water of up to 68,000,000 cubed meters from the Largo Agrio oil field of Ecuador into the Amazon forest.

The Deepwater Horizon oil spill which is also referred to as the BP oil spill. This took place in April 2010. The oil gusher flowed for 87 days. The oil spilled is estimated to be 4.9 million barrels (780,000 cubed meters). Due to this accident, young dolphins died six times the normal rate. These deaths were among other numerous deaths in other marine life. It is recorded the

³³ Institute of Economic Affairs. Situational analysis of energy industry, Policy and strategy for Kenya. Nairobi: Institute of Economic Affairs, (2016), p.25.

³⁴Hartog, C. den; Jacobs, R. P. W. M. 1980. "Effects of the Amoco Cadiz Oil Spill on an Eelgrass Community at Roscoff (France) with special reference to the mobile benthic fauna". *Helgoland Marine Research*, 33, no. 1-4, pp. 182–191.

³⁵http://www.texacobaltic.eu/en/texaco_history accessed on 02/01/2019

spill also caused deformities in amberjack and tuna which would shorten their lives or cause immediate death. Eleven workers died as a result of the accident.³⁶

According to a qualitative phenomenological³⁷ study on the assessment of the impact of the oil resource exploitation on elected communities of Nigeria's Delta State conducted, it was found that several environmental and social problems are associated to the oil exploitation.³⁸

In a more recent local incident, a pipeline fire explosion in Lunga Lunga, Nairobi in the year 2011 caused at least 75 deaths while leaving many more with lifelong injuries,³⁹ such constant or continuous leaks have evident environmental impact. Unfortunately, the Kenya Pipeline Authorities have no evident plan of minimizing or eliminating such leaks.

It is an established fact that, factors that affect the environment ultimately affect the climate (*which is a global concern*) and the weather patterns. If the Companies involved fail to have a well cut out and elaborate strategic plan of reducing these emissions, emergency response systems to spillage and leakages, Kenya will increase the amount of green-house gas emissions released into the air. This will result into increase in temperatures, hence directly affecting vegetation and animal life. As a fact, Turkana experiences hot and dry climate, thus the food and water scarcity; which has "*modelled the way of life of majority of the residents into pastoralists.*" Therefore, increase in temperatures will lead to more food and water shortage, which directly affects the people's livelihoods. Lake Turkana is part of the environmental attributes of the region. As a result of acidity increase in the atmosphere, areas surrounded by oil fields are characterized with acid rain, poorer water quality and ground water contamination.⁴⁰

³⁶National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. 2011. "The Gulf Oil Disaster and the Future of Offshore Drilling", *GPO Oil Commission*. Retrieved from <http://www.gpo.gov/fdsys/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf>

³⁷ Phenomenological is defined as denoting or relating to an approach that concentrates on the study of consciousness and the objects of direct experience. Merriam-Webster 1st Edn, 1828

³⁸Omoredede, C. K (2014). Assessment of the Impact of Oil and Gas Resource Exploration on the Environment of selected Communities in Delta State, Nigeria. *International Journal of Management, Economics & social Sciences*, 3(2): 79-99

³⁹BBC News Africa. 2011. "Kenya fire: Nairobi pipeline blaze 'kills at least 75'", *BBC News*, September 12. Retrieve from <http://www.bbc.com/news/world-africa-14879401>

⁴⁰Torkashvand, P., Karami, S. Mozafari, S. Mansour, M. and Ardabili, A., 2013, "The effects of oil and gas wastes' management on environment's sustainable development," *International Research Journal of Applied and Basic Sciences*, Vol 4, Part 9, Pg. 2470-2472.

Critically, there is scarce literature on this sector that directly focuses on the Kenyan situation, however, with the little that there is, this paper will seek to intensely analyse the existing legislation, policy framework and guidelines.

Oloa V. M.⁴¹ in his undergraduate law dissertation, he observes the importance of the Kenyan government in developing a proper and functional corporate governance and accountability systems, so as to ensure maximum benefit from the oil resource. He addresses the legal challenges affecting Turkana oil and recommends several ways of governance that the government should adopt, and also for the inter-relation between itself and the counties on oil. However, in this research, he does not address the environmental issues that are substantial in proper governance and corporate accountability.⁴²

Nyende M.⁴³ in her dissertation on “Petroleum Exploration in Uganda”, ascertains that the Ugandan laws are inadequate and liberal in addressing restoration of degraded environment. She also notes that, lack of legal enforcement mechanisms and penalties to address restoration of derelict land is a pressing concern. However, her work does not exhaustively address liability of international companies in environmental pollution and its implementation under Uganda’s legal and institutional framework.

Okuthe I. K.⁴⁴ on the Challenges of Oil Exploration in Kenya both Social and Environmental argues that, the country has failed to consider was the major environmental effects that come with the exploration process. When wells are being drilled during production of crude oil, the installations discharge a lot of wastes to include water, sanitary, domestic waste and others.⁴⁵ Such substances when discharged into the environment may not only cause pollution but make the surrounding areas uninhabitable. This includes the areas immediate to the exploration activities and also, the entire transport corridor. **Okuthe**,⁴⁶ further argues that during oil and gas exploration and production, potential impacts on soils arise from physical disturbances due

⁴¹ Oloa, V. M. (2014) “The Role of Corporate Governance and Transparency in the Extractive Industry: Oil and gas in Kenya,” Undergraduate Dissertation, University of Nairobi

⁴² Ibid 38.

⁴³Nyende, M. (2014) “Petroleum Exploration in Uganda: A Review of the Legal, Regulatory and Policy Frame Work,” LL.M. Dissertation, University of Dar es Salaam, 82

⁴⁴Ministry of Energy, Nairobi Kenya, International Journal of Innovation and Scientific Research, *Environmental and Social challenges of oil and gas exploration in Kenya*, ISSN 2351-8014 Vol. 17 No. 1 Aug. 2015

⁴⁵E&P Forum/UNEP. *Environmental management in oil and gas exploration and production. An overview of issues and management approaches*. Joint E&P Forum/UNEP Technical Publication 37. Oxford. UK. (1997).

⁴⁶ Ibid 36

to construction, deforestation and contamination, resulting from spillage and leakage or solid waste disposal. These activities result in land degradation, transformation and fragmentation of natural habitats, and can disable the vital ecosystem processes that support growth.⁴⁷

Wengo S. H.⁴⁸ in his undergraduate dissertation, notes the various challenges that Kenya is faced with in observing International obligations in relation to the Convention on Bio diversity. It is noted that, though very few scholars have explored this field yet, Swaleh⁴⁹ agrees with **Barasa B.M.O.**⁵⁰ in her attempt to carry out an analysis of the discovery of oil in Turkana, Kenya and it being an unfolding environmental, socio economic and political disaster.⁵¹ The author proceeds to discuss the environmental challenges of the oil exploration in Turkana. It fails to address the specific requirements of Article 42 of the current constitution. Oil exploration is expected to bring economic development however; it may have harmful consequences in form of environmental degradation.⁵²

Osiemo E. K.⁵³ in her undergraduate law dissertation observes the importance of the Kenyan government in developing a legal and institutional framework to address how Kenyan people can substantially benefit from the oil resource. She addresses the legal challenges affecting Turkana oil and recommends the way of avoiding future conflicts between the government and Turkana community because oil income is not applied towards the development of the Turkana community. This falls short of the Constitutional prerequisite to guarantee a clean and healthy environment, as it focusses on conflict – which is a possible aftermath of the exploitation activities just like environmental degradation.

⁴⁷ NCF/WWF/IUCN. Niger Delta Natural resources damage assessment and restoration project scoping report, May 2006. Jointly prepared by Nigerian Conservation Foundation (NCF), World Wildlife Federation (WWF), UK and International Union for Conservation of Nature (IUCN), Commission on Environmental, Economic and Social Policy, with Federal Ministry of Environment (Abuja). (2006).

⁴⁸ Oil exploration and compliance with the convention on Biological diversity (CBD): a case study of the Marine Environment in lake Turkana, Kenya, 2019

⁴⁹ Ibid 36

⁵⁰ International Journal of Science and Research (IJSR): *The Turkana Oil Discovery in Kenya: An Unfolding Environmental, Socio-Economic and Political*, Masinde Muliro University of Science and Technology (MMUST), School of Disaster Management and Humanitarian Assistance. *Disaster*, (2016)

⁵¹ Benard Odiyo, Future of Oil and Gas in Kenya.

⁵² Afonughe, I. O & Mukoro, A.: The Impact of Oil Exploitation on the Socio-Economic Life of Orogun Community, an Oil Producing Community in Delta State, Nigeria. *American Journal of Environmental and Resource Economics*. Vol. 2, No. 2, (2017), pp. 73-79. doi: 10.11648/j.ajere.20170202.13

⁵³ Osiemo, E. K. (2013) "Community Based Property Rights and Equitable Access to the Proceeds of Mineral Resources in Kenya: The case of Oil in the Turkana Region," Undergraduate Dissertation, Moi University, 40-60

Odiya B⁵⁴, considers the burning of flares as an environmental degradation and juxtapose to the situation in the Niger Delta where the flares burnt for a period of over 40 years.⁵⁵ Gas flares contribute majorly in greenhouse gases that have a major effect to the marine environment in Turkana. The effects of gas flares include various types of cancers, respiratory problems, changes in blood constitution, as well as reproductive and developmental defects.⁵⁶ This severely affects human and animal life. Though well written, it is well before the era of Article 42 of the Constitution of Kenya, and the subsequent legislation, hence does not contextualize the prerequisites of the Constitution.

The author discusses the most serious threat to the environment where there is oil exploration; which is oil spillage. Oil spillage can pollute the air, land as well as the marine environment. Oil spills contaminate aquatic, terrestrial and aerial habitats with dire consequences to the fauna and flora. Due to the heavy pollution in the water sources there has been an increase in destruction of biodiversity such as in Niger Delta. In addition, argues that noise pollution exists as an environmental issue in oil exploration. He argues that this affects the animals of the communities around Turkana where the exploration takes place. This brings about effects such as hearing loss and sleep disturbance, pain and fatigue, poor work and poor school performance.⁵⁷

Epagan E. P⁵⁸ investigates the effects of oil exploration on the economy, environment & society of Turkana County. He argues that the exploration ventures conform to the National Energy Policy, the Economic Recovery for Wealth and Employment Creation Strategy as envisioned in the Kenya Vision 2030 blue print.⁵⁹ Though this is progress and development, there are effects that cannot be swept under the carpet, as measures ought to be put in place so as to realise sustainable development of the industry. This effects includes noise and vibrations

⁵⁴ Ibid 39

⁵⁵ IPCC: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II, (2007)

⁵⁶Nwanko B.O. & Dule N: The Politics of Conflict over Oil in the Niger Delta Region in Nigeria: *pubs.sciepub.com/education/3/4/1/*, (2015).

⁵⁷ Ibid 43

⁵⁸ Elim Peter Epagan. Investigation on the effects of oil exploration on the economy, environment & society of Turkana County: A case of lokichar-ngamia 1, Kenya. A research project submitted in partial fulfillment of the requirement for the award of master of business administration degree in strategic management of Mount Kenya University. April, 2017.

⁵⁹ Ekutan, A. 1st Lake Turkana Stakeholders Workshop Sharing Knowledge, Building Partnership. (2013)

from equipment and machinery, disturbance to soil, flora and fauna due to construction, pollution of soil and water from waste streams generated.⁶⁰

Mugendi D. K⁶¹ analyzes the steps that Kenya as a country has to curb the menace of climatic and physical effect of environment from oil exploration in order to be at par with the global policies required.⁶² The author analyses the challenges that the country is likely to face from a climatic, socio-economic and physical environmental perspective of the oil exploration in Turkana incase measures are not taken. The challenges addressed by the author include the greenhouse gas emission,⁶³ and the environmental challenge that may face Lake Turkana due to increase in acidity levels in the atmosphere and the soils; the surrounding areas of oil fields are usually characterized with acid rain, poorer water quality and ground water contamination.⁶⁴

The articles referred to above are relevant to this thesis as they address the relative subjects on the subject, though, they do not address the challenges of oil exploitation and transportation from a legislative and policy framework and what legal solutions exist. Also, none of the authors encompass the impact that the transportation would have along the corridor and far away from the production fields.

With Article 42 of the Kenyan Constitution, as the core text, together with other related provisions of the same shall play a vital role in guiding the ideal Legal regime. The Environmental Management and Coordination Act,⁶⁵ the Environmental Management and Coordination (Air quality) Regulations- 2014, Environmental Management and Coordination(Toxic and Hazardous Industrial Chemicals and Materials Management) Regulations- 2013.

⁶⁰ Gisore, R., & Matina, Z. Sustainable Mining in Africa: Standards as Essential Catalysts. (2015).

⁶¹ Kariuki David Mugendi. Assesment of Oil Exploration and Production Impact on Climate and Environment in Northern Kenya. Case Study: Turkana. Kenyatta University Department of Environmental Studies.

⁶² Kituo cha Sheria, Impact of Oil Exploration on the Turkana Community, May 2015.

⁶³ Sasi, B. R. P., Environment management. New Delhi: Regal Publications, 2007

⁶⁴ Torkashvand, P., Karami, S. Mozafari, S. Mansour, M. and Ardabili, A., —The effects of oil and gas wastes' management on environment's sustainable development, || International Research Journal of Applied and Basic Sciences (2013), vol 4, Part9, pgs. 2470-2472.

⁶⁵2015

1.8 Theoretical Framework

The objective of law is to guarantee its obedience. However, the mere existence of laws is rarely sufficient to ensure their success (implementation). Compliance to laws is not an automatic result thus most laws tend include enforcement provisions either through government agencies or other 'self-correcting' measures that will ensure compliance with those particular laws.

The goal of enforcement played by government agencies is to achieve compliance with the rule of proscribed behavior required and as set out in a particular law. Further the extent of enforcement depends on the amount of resources devoted to the task. The agencies must be given more than a mandate to enforce the statute in question; they must also have incentives to enforce the law sufficiently"

Quite important, is the reality that has to be faced, that is; the environmental impact of oil & gas exploitation and transportation in Kenya is an aftermath of either; observance and adherence to the law and outlined policies, or, ignorance and failure to adhere to the clear provisions of the law. The resultant effect is environmental degradation, socio-economic snags, human and animal health deterioration, climate change which subsequently affects vegetation and plant health.

The law is there for a purpose, and there must be mechanisms to enforce adherence or compel compliance, there are various ways to achieve this;

Further, various internationally acknowledged principles shall be referenced in relation to the study; Article 2(5) of the Constitution states that the general rules of international law shall form part of the law of Kenya. For the purposes of protection of the environment, several principles of international environmental law which is a fundamental guide on development of environmental legislation, and often shapes the relevant policies and regulations have been identified to include;

- a. The polluter pays principle;*
- b. The principle of public participation;*
- c. The principle of inter & intra- generational equity;*
- d. The principle of prevention;*
- e. The precautionary principle;*
- f. The Principle of sustainable development*

The principle of sustainable development is entrenched in Article 10 2(d), while the principle of public participation is enshrined in Article 69(1) (d) of the Constitution as one of the National values and principles of governance.

a. The polluter pays principle (PPP);

"The 'polluter pays principle' states that whoever is responsible for damage to the environment should bear the costs associated with it."⁶⁶ It is a principle tailored to directly appeal to our sense of justice; we should be responsible for our own deeds- commissions and omissions. It is aimed at compelling polluters to bear the costs of their activities besides its emphasis on enhancing economic efficiency.⁶⁷ When applied in generating policies, the polluter pays principle (PPP) enables us to protect the environment without sacrificing the gains achieved/ realized from the environment to its detriment. Further, in implementing the principle, it is required that several answers are established:

What constitutes pollution? A correct interpretation of the polluter pays principle would define pollution as any byproduct of a production or consumption process that harms or otherwise violates the property rights of others.

Who are the polluters? The polluter would be the person, company, or other organization whose activities are generating that by-product. And finally,

How much must the polluters pay? To whom they must make the payment? Payment should be equal/proportionate to the damage and be made to the person or persons – which includes a state, on behalf of the general population being harmed.

The Constitution envisions situations where communities immediate to such resources receive adequate compensation more so if an act or omission affects their socio-economic rights,⁶⁸ this is provided for under Articles 22 and 23 of the Constitution.

b. The principle of public participation;

This principle is fundamental in the decision-making processes, regulatory and policy deliberations and implementation at the national and local level hence a fundamental principle of

⁶⁶Taking Action, the United Nations Environmental Programme.

⁶⁷ https://www/se.ac.uk/Grantham_institute/faq/what-is-the-polluter-pays-principle accessed on 2.07.2019

⁶⁸Article 40 of the Constitution.

good governance. It contributes to quality and transparency of decisions, greater citizen trust in all government levels, better understanding and greater acceptance of decisions by citizens, and accountability. Public participation ensures the avoidance of delays in the process of making decisions and their implementation, as well as related additional costs.

The Constitution encourages public participation in the management, protection and conservation of the environment⁶⁹ which is a mirror reflection of the principles of good governance⁷⁰ as envisaged in Article 10 of the same Constitution.

c. The principle of inter & intra- generational equity;

In the context of sustainability, the term equity has to do with fairness, across generations - whether all people have similar rights and opportunities, basic needs to maintain an acceptable quality of life. Equity, in this context, refers to the idea that all people throughout a community; whether a village, town, city, country or the entire world, have these same basic needs that must be taken into account. This concept is often referred to as intra-generational equity, meaning equity among the present population.

Equity is not just relevant to all people alive today. Inter-generational equity is concerned with fairness between current and future generations. This means striking a reasonable balance between satisfying our needs now and setting aside enough to provide for needs of our children and grandchildren in the future.

In the Preamble of the Constitution,⁷¹ the people of Kenya devote themselves to be respectful of the environment, which is our heritage, and determined to sustain it for the benefit of future generations.

d. The principle of prevention;

The principle was the foundation of the Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal (1989), which sought to minimize the production of hazardous waste and to combat illegal dumping. Exploitation activities have the potential of generating waste that would be travel across the borders of neighboring states. This

⁶⁹ Article 69(1) (d)

⁷⁰Article 10 (2)(a)

⁷¹Preamble of the Kenyan Constitution

principle is central to laws regulating the production, transportation, storage and disposal of hazardous waste.⁷² The prevention principle forms an important element of the EC's Third Environmental Action Programme, which was adopted in 1983. This principle is the fundamental notion behind laws, policies and regulations regulating the production, transportation, treatment, storage, and disposal of hazardous waste.⁷³

The Constitution under Article 69 through to 72 envisions a situation where measure ought to be put in place by the different stakeholders so as to safeguard the environment as opposed to a reactive set of measures and legislation.

e. The precautionary principle;

This principle is expressed in the Rio Declaration, which stipulates that, where there are “threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” This principle requires that, if there is a strong and founded fear that a certain activity may have environmentally harmful consequences, it is essential to control that activity immediately (before) rather than wait for incontrovertible scientific evidence.⁷⁴ An application of the precautionary principle is evident in The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes. It incorporates the precautionary principle by providing that action to prevent, control or minimize water related diseases, which in this context would include waste disposed into the water occasioning the diseases, shall not be delayed on the basis that the scientific research has not fully proved a causal link between the factor at which such action is aimed, on the one hand, and the potential contribution of that factor to the prevalence of water-related disease and/or trans-boundary impacts, on the other hand.⁷⁵ This protocol proposes that where there are imminent threats of serious or irreversible damage, lack of scientific certainty should not

⁷²<https://www.britannica.com/topic/environmental-law/Principles-of-environmental-law#ref750189><accessed26/06/2019

⁷³<https://www.britannica.com/topic/environmental-law/Principles-of-environmental-law> accessed on 04/01/2019

⁷⁴<https://www.britannica.com/topic/environmental-law/Principles-of-environmental-law> accessed on 04/01/2019

⁷⁵ The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. (4 August 2005)

be used as an excuse to postpone precautionary measures, taking into consideration that such measures would be worthwhile to invest in financially.⁷⁶

f. The principle of sustainable development

This is entrenched in Article 10 2(d) of the Constitution as one of the National values and principles of governance. Sustainable development can be defined as ‘*development that is conducted without depletion of natural resources and introduction of pollution.*’ The concept of sustainable development in respect to environment was defined by the Bruntland Commission of 1987 as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*”⁷⁷ This definition connotes that a state in pursuit of development must not do that that may be harmful to the environment as to affect the ability for use and utilization by the generation to come. Sustainable Development is therefore a long term goal for socio-economic and environmental development.⁷⁸

The parameters of Sustainable Development are clarified in Agenda 21 and the Rio Declaration. Both these were both adopted at the United Nations Conference on Environment and Development (UNCED) or the Earth Summit in 1992.⁷⁹ Development in this context refers to communal or national development in relation to exploration of natural resources- Oil and Gas. The Constitution in its preamble envisions use and preservation of the natural resources in the environment over several generations.

Article 69(1) (d) further sets out the expectations, and sets the duties on the obligations of all stakeholders in ensuring a sustainable development agenda.

⁷⁶ Protocol to the regional 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions. (5 August 1998)

⁷⁷ Bruntland commission, United Nation General Assembly (1987)43

⁷⁸ J.A. Elliot, ‘An Introduction to sustainable development’ (2006) (3rd ed. Routledge Publishers)9

⁷⁹ Sands P QC, “*General Principles and Rules*” *Principles of International Environmental Law* (2nd ed. Cambridge University Press, UK, 2003) 252

1.9 Conceptual Framework

INDEPENDENT VARIABLE VARIABLE

Violation of Human and Environmental rights/duties

Irreparable damage/ harm to the environment

AGGRAVATING VARIABLE

Lack of adherence by the industry players/ stakeholders and Enforcement Agencies

DEPENDENT
The Environmental Conservation Policies/Principles

Source of the Table⁸⁰

1.10 Limitations of the study

This being a relatively new field for this specific jurisdiction, there is scarcity in local literature. Therefore, most references will be made from other jurisdictions and where necessary, localize them and propose their assimilation.

In addition, the distance/accessibility of Turkana (the area of study) is a challenge. The language barrier between the locals and the researchers.

Funds to conduct the study.

1.11 Assumptions

The assumptions made in the study include;

- a) That the laws are in place,

There are various general provisions, led by the Constitution, Legislation, International Conventions and treaties and policy guidelines that are in place, however, the specific industry-Oil and Gas remains unexplored as part of the practices remain new in Kenya. However, it remains important to benchmark, compare and adopt what is practically applicable here in Kenya from the existing Oil and Gas producers' world over. Further, it is fundamental that Kenyans remain

⁸⁰ Author

the beneficiaries of the outcome of the exploitation exercise but at the same time, the environment and the natural resources thereto are preserved and conserved throughout.

b) People have been sensitized about their existence,

Through public participation, formal and informal channels of communication, the stakeholders have made attempts to reach out to the general public on this guidelines, policies and laws. It is also clear that there are gaps in this communication especially on the environmental hazards, the impact on the environment and ultimately on the day to day lives of those directly and indirectly affected. It is therefore, essential to stipulate sensitisation standards, periods and mechanisms to which such information reaches out to all stakeholders and allowing their contribution to the same.

c) Fail to adhere,

The phrase “A blessing or a curse” as used in relation to exploitation and production of oil and gas is cautionary; the venture attracts varied financial, economic and social reliefs to the immediate society. Also, it directly benefits the Countries income through export hence “strengthening” its currency on the exchange market. However, the same venture can be disastrous. The havoc can be as a result of failure to observe basic fundamental guidelines so as to evade accidents- which often are tragic, spillage and leakages which immensely affect the environment and disrupt the natural eco-system and life (both human and animal). Further, unscrupulous tactics to evade the guidelines and set out procedures exposes the activities to risk and harm to the environment.

1.12 Research Methodology

The study involves the doctrinal research, as it seeks to review existing legislation, policies and guidelines and recommend probable alternatives and amendments to the existing framework. This will entail desktop research; looking at various journals, books and literature-published and unpublished reports; institutional and industry players findings, despite it being scarce. This is an ideal method as it seeks to outline a wide range of the issues to do with environment.

1.13 Limitations

In this study, there are numerous limitations that include, scarcity of literature that specifically addresses the subject. Of the little literature that there is, a big share is not published nor reviewed hence may tell of a “one sided story”.

Further, the study may involve reference to other disciplines; sciences and environmental specialists to ascertain the actual impact.

1.14 Chapter Breakdown

CHAPTER 1 - INTRODUCTION

The analysis will be narrowed down to four main chapters. The history of oil and gas exploration and exploitation and environmental management in Kenya and a brief coverage of the laws governing environment pollution will also be covered under this chapter.

CHAPTER 2 - OIL AND GAS EXPLOITATION & THE IMPACT

Under chapter 2, the paper will cover first in general application, the various stages of oil and gas exploration with emphasis on the adverse impacts these stages have on the environment and second an in-depth analysis on the effects that oil and gas exploitation activities have on the environment in Kenya. This chapter thus will endeavour to highlight the potential consequences of uncontrolled oil and gas exploitation has on the environment.

CHAPTER 3 - THE LEGAL FRAMEWORK FOR PROTECTION OF ENVIRONMENT IN RELATION TO THE OIL AND GAS INDUSTRY

Under chapter 3, the paper will cover largely the legislative framework that governs environmental pollution. This chapter appreciates the existence of environment laws as well as international conventions that govern against pollution and seeks to highlight the laws that our country Kenya, has put in place either through enactment or by ratification in order to ensure mitigation of environment pollution. Additionally, this chapter will cover institutional framework put in place.

CHAPTER 4 - NATIONAL FRAMEWORK REQUIRED FOR COMPLIANCE AND IMPLEMENTATION OF ARTICLE 42 OF THE CONSTITUTION.

Under this chapter, the paper will cover largely the implementation framework that governs environment and implementation mechanisms, will seek to relook at the adequacy of the legislative framework put in place in Kenya. This chapter appreciates the existence of various institutions and stakeholders, and how they have addressed similar issues in different spheres of the environment.

CHAPTER 5 - SUMMARY OF RESERCH FINDINGS AND RECOMMENDATIONS.

Under chapter, the paper, seek to summarise the research findings, and identify some of the challenges and thereafter discuss the probable recommendations and conclusion of the entire analysis.

CHAPTER 2

OIL AND GAS EXPLOITATION & THE IMPACT

2.0 Introduction

This chapter will be devoted to explaining the discourse surrounding exploitation of oil and gas with specific effect of the same on the environment. The chapter will further try to expound on the general discourse at a cross border level in analyzing the impact of oil and gas exploitation on the environment. In essence, this chapter is devoted to pointing that whereas there are positive impacts of Oil and gas exploitation, there are also negative impacts of the same.

For the purpose of this chapter and subsequent one's Environment refers to the naturally occurring conditions, or circumstances under which all living and non-living things occur naturally on earth, at different phases of Oil and gas activities- through the three major phases.

2.1 Oil and Gas Exploration

Oil and gas industry has truly acquired a formidable indulgence within various countries worldwide; various countries who are considered "lucky" to have deposits of oil and gas as minerals. Looking at the reports issued, statistically,⁸¹ oil and gas represents 63 per cent of world energy supply, with coal, nuclear energy and hydro-electric sharing the remaining percentage.

Whereas the exploitation of Oil and Gas has the potential to induce economic gain to the various stakeholders undertaking this venture, there are potential negative impacts of oil and gas exploitation to the environment. There has been an inept attitude by the stakeholders to take firm measures to put in place mitigating factors to ensure that environment sustainability is maintained.

The quality of environment we live in is imperative to the sustenance and survival of human life. These include; plants and animals because essentially, the enjoyment of the right to life is only constructive if the surroundings of mankind is maintained on sustainable levels.

Exploitation of oil and gas brings with it environment degrading activities. The environment is critical because its viability to sustain and support life depends on the proper natural balance of its properties. Oil resource exploitation which involves use of seismic waves and chemical generations is a major source of environment degradation particularly through liquid discharge,

⁸¹ BP Statistical Review of World Energy, June 1995.

gas flaring as well as oil spillage⁸². Oil spillage renders the soil unproductive, burns the vegetation cover which in turn hampers agricultural and output productivity. This has a ripple effect on the quality of air as the pollution spills over into the atmosphere.

It is argued that before mineral resources are harnessed through exploitation, they pass through the stages of exploration, mining, exploitation, and lastly processing; different types of environmental damages and hazards inevitably accompany this three stages of mineral development.⁸³

Oil spills,⁸⁴ deforestation and gas flaring which are commonly associated with exploitation have caused phenomenal, severe environmental impacts. This is because they contaminate the environment and cause water and land pollution with grave consequences on human health, terrestrial life and aquatic life due to the chemical discharge and air pollution.

Oil and gas development is done in various stages; upstream, midstream and downstream. The upstream segment primarily involves the processes of exploration,⁸⁵ exploitation, development and production of crude oil and natural gas. As there is production in Kenya today, albeit at formative stages, this segment is primarily involved in exploitation. The mid-stream segment mainly involves processes around transportation, storage, and refining of the crude oil into consumable oil and gas products and the downstream segment involves processes which culminate into refining and packaging of the various products, which are subsequently distributed to the consumers e.g. at industries and petrol stations. This stage also largely includes transportation.

Every stage in oil and gas exploitation has his peculiar effects/impacts to the environment. In that regard, we are going to canvass every stage independently and look at its impact on the environment.

2.1.2 Discovery

World over, there is only one means of exploring oil and gas -drilling in to the earth's sub-surface and deep sea for gas, that can identify presence of oil or gas accumulations or both. Exploitation

⁸² Ibid

⁸³ Ajakaiye, D. E. *Environmental problems associated with mineral exploitation in Nigeria* (1985)

⁸⁴ Some of the major oil spills the Escravos spill (Funiwa-5 blowout) of over 400,000 barrels of oil spreading through the Delta region polluting about 1,200 km² (Nwilo and Badejo, 2005). In the disaster about 180 people died while 300 people contacted various illnesses through drinking polluted water and eating contaminated food in the affected areas (Nwilo and Badejo, 2005)

⁸⁵ www.riftenrgycorp.com accessed on 10/11/2019

is the process which includes drilling of wells to a targeted depth, which has already be identified during exploration, so as to confirm the presence or absence of hydrocarbons.⁸⁶

As practice, the initial well drilled in a new area of exploration is normally referred to as a wildcat.⁸⁷ This type of well is often high risk, as there is very high degree of uncertainty, at this stage. The primary purpose of an exploration well is to establish the oil and gas accumulation. There are also wells drilled with a primary purpose of gaining more understanding of the geology. In all cases however, drilling helps understand better the structure of the earth's sub-surface as well as provide more data for evaluation and understanding of the sub-surface. Rock and fluid samples may be collected for analysis. All data obtained here is also harmonized with all other data previously corrected in improve the understanding of the geology.⁸⁸

In the event that the well is not successful and no hydrocarbons are encountered, best practice requires that the well is plugged and abandoned. The process of plugging and abandonment involves a well, being back-filled with both soil and cement and packed at high pressures to ensure that no fluids or components can escape from down the well and mix with other materials on the ground surface or near surface water aquifers.

In the event that the well does encounter hydrocarbons that are not in high quantity or quality to make a commercially viable development, best practice is still to plug and abandon the well. This requires a safe and sound process so as not to expose the immediate environment, humans and animals to the dangers of the abandoned wells, the residue of the chemicals used during the exploration and soil that remains.

Numerous processes are set in to motion to determine the viability of the discovery. Part of the evaluation conducted includes; extensive analysis so as to determine the quality and possible quantity of the oil and gas present. Also, well testing is done to check that the oil or gas discovered can flow to the surface. There are cases where oil has been discovered but after evaluation of the well, it is determined to be below commercial quantities, hence unnecessary to invest further.

However, if the results from the numerous tests and analysis are positive, there may be further geological and geophysical surveys conducted and more wells are drilled. This stage in the

⁸⁶ Ibid 85

⁸⁷ <https://www.investopedia.com/terms/w/wildcatdrilling.asp> accessed on 21/05/19

⁸⁸ Ibid

exploration cycle is referred to as the **Appraisal Stage**.⁸⁹ As the word suggests, the purpose in this stage is to establish various factors that are crucial before exploitation can be initiated on the strength of the data analyzed, and the prospects derived.

2.1.3 Post Discovery

2.2 Appraisal

Upon realization of sufficient quantities of the oil or gas, in an exploratory well, the team embarks on a detailed field appraisal, this may take may take several years (up to 6 years) to complete and is itself very costly. The purpose of this phase is to reduce the uncertainty about the size and properties of the oil or gas field, and also give an estimate of the cost of the investment *vis –a- vis* the Return on Investment.

Appraisal wells are drilled and additional seismic surveys conducted to collect information and samples from the reservoir. The data collected is analyzed and calculations are made of the volume of oil or gas that the accumulation contains so as to determine whether it is commercially worthwhile to develop a field for production. The quality and production rate of the field is also determined. All this will help determine the type, size and the cost of production facilities required to produce the field.

It is also important to note that appraisal does not always lead to production, especially if the cost may supersede the returns; though rarely do we have new information coming out of the process that may render the development unfeasible.⁹⁰

2.3 Field Development

This stage can only commence after positive results have been confirmed from the Appraisal, and the economic viability is certain for either of the resources. A development plan will be formulated before venturing into the field, the plan is then presented to the government and the relevant agencies for approval. Ideally, this plan ought to be comprehensive enough such as to address all aspects of the development including; design, size, production plan, environmental management, target markets and the required infrastructure and costs.⁹¹

The main activities and stakeholders involved include:

⁸⁹ <http://www.frs-scotland.gov.uk> accessed on 27/03/2019

⁹⁰ www.riftenrgycorp.com accessed on 10/11/2019

⁹¹ Ibid 90

- To generate a plan, based on the findings from the Appraisal stage, to develop the field, including establishing how many wells would be needed to produce the oil or gas.
- The necessary skills required including; geologists, geophysicists and reservoir engineers among others.
- To settle on the best/most preferred design for the production wells, given that, the earth surface varies from place to place, in depth, machinery etc. This is done by drilling engineers.
- To decide on the kind of production facilities- including machinery that are required to process the extract, before it is transported to the refinery or customer. This is done by facilities engineers.
- To establish what the best transport route (s) might be- either to the refinery or exportation to the consumer. This is done by logistics engineers and other logistics experts.
- To decide on environmental management strategies; this cover a whole range of sections of the exploration, exploitation and transportation. It is important to note that, every stage presents unique environmental issues that would be managed differently. This is done by environmental experts.

This development phase is fairly expensive, and could take a period of up to 10 years; depending on the complexity of the discovery and the unique aspects of that discovery. It is argued that, onshore developments are typically much cheaper, and less riskier than offshore developments. They may also take a shorter time depending on availability of other infrastructure.⁹² In cases where no infrastructure exists, onshore developments tend to be very challenging and costly too.

2.3.1 Production

Once all the necessary field installations and facilities have been set up, production may begin; the hydrocarbon resource is extracted to the surface, and stored in facilities on the site, awaiting transportation by either pipelines and/or tankers to refineries. At this point, the refined products are then distributed to consumers in various forms including; petrol, diesel, liquefied gas, kerosene, bitumen or other by-products.

⁹² <https://www.entranceconsulting.com/2013/10/23/onshore-versus-offshore-drilling/> accessed on 10/11/2019

It is important to note that crude oil cannot be used by consumers in its raw state, hence the utter importance of the refinery throughout the chain processes. Crude oil in the refinery is broken into usable products as mentioned above.⁹³

On the other hand, natural Gas, once cleaned and separated from liquids, may be used in its raw state as an energy source or as a raw material for petrochemical industries such as fertilizer plants.⁹⁴

The length and quantity of oil produced from a field depends on the size of the oil or gas field and how expensive it is to keep the wells and production facilities running; production can last several years.

2.3.2 Decommissioning and Abandonment⁹⁵

Upon exhaustion of the deposits, or where the site no longer contains sufficient quantities in its reservoir to justify its economic profitability, it then undergoes decommissioning and subsequently abandonment. After decommissioning, the field site ought to be restored to its original condition or to some standard that results in stable environmental conditions. This involves plugging of the wells, dismantling and removal of all site facilities and equipment. This phase is gradual, and must be cautiously done, hence can take a period of up to 5 years.⁹⁶

2.3.3 Exploitation.

Over time, various stakeholders have invested in more sophisticated machinery to make Oil and gas exploration and exploitation easier and efficient, and also with an aim of reducing the impact the processes have on the environment. With scientific research, we are capable of exploiting Oil and gas from large water bodies without much ‘hustle’.

For offshore activities, operators investigate the potential of hydrocarbons under the seabed using high intensity sound (seismic surveys). Commercial fish species are sensitive to sound and, at close range, larval fish might even be killed by seismic sources.⁹⁷ Seismic surveys might therefore disturb spawning fish away from territory where they have chosen to aggregate for spawning purposes and this could, in extreme circumstances, be harmful to stock productivity. Disturbing

⁹³ <https://www.e-education.psu.edu/eme801/node/470> accessed on 10/11/2019

⁹⁴ Ibid 93

⁹⁵ https://www.researchgate.net/publication/332539561_DECOMMISSIONING_OF_OFFSHORE_STRUCTURES_CHALLENGES_AND_SOLUTIONS

⁹⁶ Section 44 of the Petroleum Act no. 2 of 2019

⁹⁷ Anon, Overview of Measures specifically designed to prevent Oil pollution in the Arctic marine environment from offshore petroleum activities. EPPR, 2017. 266PP

fish away from traditional areas may also affect fishermen's catches.⁹⁸ This is definitely one of the environmental impact that comes with the exploitation off shore.

2.3.3.1 Drilling

During drilling, a drilling mud is continuously circulated between the well and the platform through a 'riser pipe'. Mud is used to maintain well pressure and wall stability, to cool and lubricate the drill bit and to carry the rock chips (cuttings) generated during the drilling process away from the cutting head to the platform. Here, the cuttings are partially cleaned and the majority of drill mud re-used. Muds come in a variety of forms, dependent on their fluid base⁹⁹. Amongst these are water based muds (WBM) and oil based muds (OBM). In the past, the bulk of cleaned OBM cuttings were discharged to the seabed along with their residual oily mud contamination. Extensive monitoring studies showed that this caused changes to the seabed via a combination of smothering, organic enrichment and toxicity effects. These were seen to be most severe close to discharging platforms where the 'pile proper' formed, but they commonly extended up to a distance of 1 or 2 km. These discharges are no longer allowed.¹⁰⁰

2.3.3.2 Production

Large amounts of produced water (PW) are recovered with the hydrocarbons during production. This is cleaned to very stringent standards and some is re-injected to maintain reservoir pressure, while some overflows and, has traditionally been discharged to sea. Part of this chemicals "escape" to the water and to the soil hence distorting the natural composition. This affects the environment in the sense that the soil cannot sustain vegetation and the water which is used for domestic consumption is polluted which if directly ingested can lead to infections.¹⁰¹ This already forms part of the pollution to the surrounding water bodies. This is because, some of the water is contaminated with chemicals that are used in the extraction, and may not necessarily support aquatic life.

As the fields' age and as the amounts of oil depreciate, the amounts of PW increase. So although the levels of oil in produced water are very low, and despite improvements in technology which

⁹⁸ H, Devold, Oil & Gas production handbook, *An introduction to Oil and Gas production, refining and Petrochemical Industry*, EDN 3.0 Oslo, (2013)

⁹⁹ Ibid

¹⁰⁰ Ibid

¹⁰¹ <http://oils.gpa.unep.org/facts/sources.htm> accessed on 10/11/2019

have tended to reduce them, the overall total amount of oil discharged with the water by oil and gas industries will continue to rise in the next few years; it will then tail off as the industry declines.

Therefore, as part of taking steps to improve process and reduce the impact on the environment, increased regulatory attention is therefore being focused on the PW discharge, not least because in addition to oil, it contains residues of naturally occurring heavy metals and radionuclides and oil field chemicals. FRS took part in a recent collaborative research study to look at PW effects.¹⁰² Such studies will inform the continuing monitoring needs and regulatory requirements. A wide variety of chemicals is used to treat the oil, gas and water that is gathered from offshore reservoirs.

2.3.3.3 Monitoring

Monitoring of the impacts remains a point of focus and interest; attention is now being directed towards detecting more subtle changes in contamination patterns beyond the field, and along the disposal channel. FRS has a resident group of hydrocarbon analytical experts and is advising stratified random monitoring approaches to determine if contamination is decreasing with time (because OBM cuttings discharges have decreased), or increasing with time because other discharges still take place. These will hopefully form a snapshot against which changes over time can be assessed.¹⁰³

2.3.3.4 Decommissioning

Some decommissioning operations have the potential to impact both the environment and fishing activities, especially those of offshore operations. Even with these levels of sophisticated machineries, errors still occur during the extraction process. We have seen that during exploitation and production of oil and gas, there is seismic operations, waste volume are produced although minimal. Chemicals are released during the production stage which mix with marine water. The level of toxicity of the various discharges is established from the nature of extraction used¹⁰⁴.

Ocean discharge of mud and cuttings have been shown to affect benthic¹⁰⁵ organisms through smothering to a distance of 25 meters from the point of discharge and to affect species diversity to

¹⁰² K. Lee; S.L. Armsworthy; S.E. Cobanli, Consideration of the potential impacts on the marine environment associated with offshore petroleum exploration and development activities; DFO 2011/60

¹⁰³ J.B Mariano, Petroleum Engineering- downstream, *Environmental impacts of the Oil industry* (EOLSS)

¹⁰⁴ V B N S Madduri, *An Environment Assessment of Oil and Gas Exploration*; Industrial Pollution and Policy EERC working paper series: IPP-8

¹⁰⁵ Benthos is the community of aquatic organism which lives in, above or near the bottom of lake, sea, river streams or any other aquatic environment. Light, temperature, pressure, salinity and depth of water all influence the diversity of the population of this community on a location. <https://justfished.com/benthic-organism/>

100 meters from the point discharge. Oil based benthic organisms are affected by mud and cuttings in that they contain elevated levels of hydrocarbons.¹⁰⁶

Further, produced water is the largest volume of aqueous waste arising from production operations and some typical constituents may include varying amounts inorganic salts, heavy metals, solids, production chemicals, hydrocarbons and on occasion naturally occurring radioactive materials (NORM). The extent of impact can only be confirmed through an environmental impact assessment test. This is a scientific exercise that would best be carried out by Environmental scientist.

Corporate bodies involved in Oil and gas transportation have also developed a technology that allows oil to be transported through pipes. These pipes are always used especially in areas with bad terrain or areas where there is large water body. This is to minimize transport cost as well as encourage efficiency within the transport system. What is transported is normally either unprocessed crude oil or processed oil. Notwithstanding the nature of what is being transported, viability of the use of pipes as mode of transportation in oil and gas exploitation has not turned out to be 100% effective. Oil spillage has been experienced by a number of companies with the net effect being water pollution. The effects of oil spillage in the ocean or sea has resulted to death of aquatic animals, since the oil spilled creates a blanket cover that then prevents air from circulating freely within water bodies.¹⁰⁷

Of most recent, the people of Makueni County have fallen victims of oil spillage from pipelines. It is not clear for how long the new pipeline had been leaking before the spillage was detected three weeks ago. The affected area is tucked in a forested area at the source of the seasonal River Kiboko. KPC technicians have since repaired the pipeline but multiple trenches sunk around the affected area show that the underground water in the area has been contaminated with oil, to the chagrin of local water users and environmentalists.¹⁰⁸

The net effect of pollution on the marine environment through oil spillage, waste deposits and extraction within the water bodies have a negative blanket effect to the surrounding beneficiaries of the environment.

¹⁰⁶ www.ogp.org.uk accessed on 10/11/2019

¹⁰⁷ Ibid 106

¹⁰⁸ <https://mobile.nation.co.ke/counties/KPC-starts-oil-spill-clean-up-Kiboko-Makueni/1950480-5094230-cqrjop/index.html> accessed on 22/05/19

2.4 Impact of Oil and Gas Exploitation and Transportation to environment

Operations associated with oil and gas exploitation and production can lead to physical disturbance, damage, alteration or contamination of natural ecosystems, degraded soil and subsoil quality and impacts to surface and groundwater quality and quantity with potential consequent effects on flora, fauna, aquatic resources and human health.¹⁰⁹

Significant social effects may also impact the cultural identity of local communities. Oil and gas operations may also escalate the pressure on the marine and coastal environment which is already under stress by an intensive commercial fishery. If not properly managed, the oil and gas operations and associated emissions and pollutant discharges to the marine environment can pose a threat to the short and long term sustainability of local marine and coastal ecosystems.¹¹⁰ The need to address these operational effects will only intensify over time, so preventive measures are needed now as a cost-effective solution, as opposed to after the effects are already being felt, calling for ‘knee-jack reactions’.

Exploitation of oil and gas has cross-border overlapping environmental impacts notwithstanding the country that is conducting the exploitation. Kenya being new in the field of oil and gas exploitation, there is a genuine presumption that errors are likely to occur leading to activities that are devastating to the immediate environment, and may extend into the neighboring jurisdictions. Kenya up to now, only does the upstream part of exploitation (E&P stage), and partly transportation of crude oil to various ports.¹¹¹

2.4.1 Trans-boundary environmental concerns¹¹²

Trans-boundary pollution is the pollution that originates in one country but is able to cause damage in another country’s environment, by crossing borders through pathways like water or air. Pollution can be transported across hundreds and even thousands of kilometres.¹¹³ The incredible distances that pollution can spread means that it is impractical to contain such impacts within the boundaries of any single nation, or limit the “escape” through a porous system of containment.¹¹⁴ One of the problems with trans-boundary pollution is that, often, it carries pollution away from a

¹⁰⁹ www.extractives-baraza.com accessed on 11/11/2019

¹¹⁰ Ibid 109

¹¹¹ Oil and gas exploration has been done in Lokichar by Tullow Oil Company the same is being transported to Lamu port for purposes of export since Kenya has not developed such machineries that could enable it refine oil.

¹¹² Kariuki Muigua, Managing Transboundary Natural Resources in Kenya, November 2018

¹¹³ www.extractives-baraza.com accessed on 11/11/2019

¹¹⁴ Regional Synthesis Report on the Status of Pollution in the Western Indian Ocean Region, 2009

heavy emitter and deposit it onto a nation whose emissions are relatively low, or a “perceived” clean environment. Another problem with trans-boundary pollution relates to the fact that ‘all things connect’, the heavy pollution that is evident in the developed world also becomes evident in remote areas.¹¹⁵

Kenya shares borders with five East African countries: Ethiopia, Sudan, Uganda, United Republic of Tanzania, and Somalia to the east. Inevitably, many of its ecosystems and natural resources are trans-boundary. The four trans-boundary environmental issues of importance to Kenya and her neighbours are:

- i. Trans-boundary protected ecosystems;
- ii. Trans-boundary water resources;
- iii. Trans-boundary movement of people;
- iv. Trans-boundary movement of pests and disease.¹¹⁶

Some of the trans-boundary concerns of the oil exploitation and development programs and plans raised by stakeholders include:

- i. Marine oil spillage;
- ii. Pollution;
- iii. Destruction of fish breeding cycles, both inland and marine;
- iv. Insecurity;¹¹⁷
- v. Destruction of wildlife habitats.¹¹⁸

The Indian Ocean offshore exploration activities around Lamu are some of the major activities likely to have trans-boundary concerns. More trans-boundary pollution from on shore and offshore activities will have impacts at international and regional levels in terms of safety of offshore drilling activities and liability and compensation in case of accidents that is besides the irreversible damage to aquatic life. Air emissions from potential oil refineries will also have regional and international concerns. Worse still, the existing stalemate between Kenya and Somalia over the

¹¹⁵ Draft Report for the Strategic Environmental and Social Assessment for the Petroleum Sector in Kenya, Contract No: keptap/nema/cs-6

¹¹⁶ www.extractives-baraza.com accessed on 11/11/2019

¹¹⁷ <https://www.dw.com/en/kenya-or-somalia-who-owns-the-sea-and-what-lies-beneath/a-19557277> accessed on 30/09/2019

¹¹⁸ Ibid 95

maritime boundary is likely to escalate into security concerns, as the main issue is not just the territory per se, but the resources there within and to which jurisdiction they would fall if at all the boundary was to be altered.¹¹⁹

Boundary disputes also exist in offshore oil blocks between Kenya and Somali and in the Ilemi Triangle in Turkana that measure approximately 10,320 to 14,000 square kilometres. The territory that is claimed by South Sudan and Kenya borders Ethiopia. It hosts one of the potential oil blocks in the country. With this kind of tensions, this is likely to even affect the transport corridor of the same oil and gas products, if not settled amicably.¹²⁰

Kenya also shares a number of drainage basins with other countries: The Uмба, Mara and Pangani basins shared with the United Republic of Tanzania; The Sio, Malaba and Malakisi basins shared with Uganda; The Omo and Daua basins shared with Ethiopia and the Nile basin shared with nine other countries.¹²¹ One of the oil blocks is actually at Winam Gulf in Lake Victoria, though this is yet to be fully exploited, it is a concern that will arise when development begins, which is a shared resource in the East African countries. Any future exploration at this block will have to be subjected to EAC laws, and supposedly, it will be crucial to generate uniform guidelines and principles on how to deal with pollution and other impacts of the exploitation activities, being that Lake Victoria is a shared resource.¹²²

2.4.2 Gas Flaring¹²³

Oil production involves the burning of hydrocarbon gases. The flaring—off of natural or associated gas is done as a by-product of the drilling of crude oil from reservoirs in which oil and gas are mixed. The flares involve the release of dangerous hydrocarbon mostly methane and others, which include sulphurous oxides and the oxides of Nitrogen into the atmosphere.¹²⁴ The flares raise the temperature of the surrounding environment to temperatures beyond a normal of 1 to highs of up to 14,000°C and causing noise pollution around the vicinity of the flares. The result of this unchecked emission of gases is the release of several tons of Carbon dioxide and methane among

¹¹⁹ <https://www.dw.com/en/kenya-or-somalia-who-owns-the-sea-and-what-lies-beneath/a-19557277> accessed on 30/09/2019

¹²⁰ Ibid 119

¹²¹ Ibid 95

¹²² Ibid 116

¹²³ <https://www.oilnewskenya.com/nine-companies-commit-end-practice-routine-gas-flaring/> accessed on 30/09/2019

¹²⁴ <https://www.hse.co.ke/articles/environment/environmental-and-social-challenges-of-oil-and-gas-exploration-in-kenya/> accessed on 30/09/2019

others, which may contribute more to global warming. Another problem associated with gas flaring is Light Pollution. Light pollution subjects the living organism around the vicinity of the flare to 24-hour daylight. This affects diurnality and night time patterns in animals. The flares drive away wild animals on land, and also marine along the coastal strip, if the proximity is close; it affects the reproduction of fish as well as sending fish to deep-sea areas. The gases released during gas-flaring, mixes with the moisture and other forms of precipitation in the atmosphere resulting to form acid rain.¹²⁵

2.4.2 Water Pollution

Kenya is likely to face the danger of oil spill disasters from single hull ships that call at Mombasa port with large quantities of oil cargo, destined to various East African destinations.¹²⁶ This was in view of the limited capacity Kenya has in dealing with maritime disasters of similar scales. Past spillages have been to the lower end quantities but proved quite a challenge to manage. A tanker carrying 20,000 litres of fuel capsized at the Kenya Ports Authority terminus in Mombasa and spilled oil on a road, making it impassable. The same oil must have flowed down into the ocean, resulting in disruption of normal aquatic life that is beside the terrestrial impacts. Even though, the port workers made frantic efforts amidst a myriad of technical difficulties to stop the oil from flowing into the ocean, this couldn't have been fully achieved. With the emerging oil and gas exploration activities coming up, there is no ready measures to match the capacity of anticipated disasters from potential incidences should industrial spillage or any form of high end disaster occur.

The National Policy for Disaster Management in Kenya (2009) has quoted some of the Disaster Occurrences in Kenya between 1974- 2009, and in the list of about 85 major Incidences, no oil and gas related incidents were quoted. Probably, it is may be because there was minimal exploitation as this phase was majorly exploration, whose effects may not be of similar magnitude.¹²⁷ Given the growing rush for the upstream resources within, oil and gas related incidences require adequate consideration and planning. The national disaster response mechanism

¹²⁵ Draft Report for the Strategic Environmental and Social Assessment for the Petroleum Sector in Kenya, Contract No: keptap/nema/cs-6

¹²⁶ The East African, August 2005

¹²⁷ www.extractives-baraza.com accessed on 11/11/2019

takes a long channel of command before a disaster is declared for emergency attention, and has given a maximum of 14 days limit for declaration of a disaster from the moment of incident.

In the oil and gas sector, this channel requires special consideration with capacity built instruments of response set up closer to the operation areas, and strategically along the transport corridor, enabling a much shorter period for response when need be. Also, a much shorter period for such a declaration would be ideal given the nature of disasters than are likely to occur. Lokichar and Lodwar being the closest towns to the exploitation areas, lack industry capacity and disaster response facilities to contain emergencies from this industry and of varied magnitudes. Coordination between the national Government and the County Government requires adequate coordination mechanisms to enhance efficiency in control of oil and gas related emergencies. It is in such facilities that the County governments can invest in, given the local capacity and the ground control they may enjoy.

The Kenyan coast is an important turtle habitat, which contributes greatly to the coastal tourism sector, and if such pollution is not contained, or avoided at all costs, various other sectors, like fishing and tourism stand to suffer collateral damage.¹²⁸ Turtles, being one of the major tourist attractions, can be adversely affected by Oil spillage. This would greatly affect the socio-economic rights of the people immediate to the coast.

2.4.3 Spillage

This is contributed to by both solid and liquid wastes generated during the exploitation, development and production, and they include; drilling fluids, muds, produced water, cuttings, wastewater, sewage and sanitary waste and domestic waste. The characteristics of upstream, midstream and downstream waste differ and need different approaches, facilities, treatment and management systems. If they are not handled well, and at the right time, they may lead to water and environmental pollution, which would have a ripple effect.

Petroleum industry infrastructural development includes; camps/ buildings, production sites, manufacturing facilities (such as natural gas processing facilities), power generation and electricity transmission, refineries, roads, ports, railways, ICT infrastructure, laboratories, pipelines and airstrip (s).

¹²⁸ Draft Report for the Strategic Environmental and Social Assessment for the Petroleum Sector in Kenya, Contract No: keptap/nema/cs-6

The environmental impact (s) of such infrastructural development are distinct and unique and include; vegetation clearance, excavation works and spillages during construction and operation, effects on flora and fauna, social and psychological disruption. Spillage can occur at any of the above infrastructural points- on site, or along the transport corridor. Currently, Kenya uses road to transport both crude oil the refined products, and the pipeline also for the refined products. Both products are dangerous and flammable if not well handled.¹²⁹ Kenya is not new to oil and gas disasters, which have claimed hundreds of lives and left the environment dilapidated.¹³⁰ Tanzania,¹³¹ has in the more recent past suffered a great blow after trailer transporting refined petroleum burst into flames killing and injuring tens of people, a disaster that both Kenya and Tanzania know too well, hence ought to learn from if at all the venture into oil and gas is to be a “blessing” for the region.

At either stage, spillage can be disastrous especially, given that, most Kenyans would as opposed to keeping of the scene of spillage, run to it so as to scoop whatever they may be able to. This affects the immediate environment, and causes a real danger for explosion and large fires, resulting into loss of lives and destruction of property.¹³² The ultimate impact on the environment is that the immediate environment; soil, water bodies, animal and human life gets disrupted as was the most recent case of a pipeline leakage transporting refined oil products within Makueni county.¹³³

2.4.4 Soil Acidity and Imbalance

When we talk about terrestrial environment we refer to soil and the vegetation cover. The impact to soil arises from; physical disturbances as a result of excavation, construction, contamination resulting from spillage and leakage or solid waste disposal and probably indirect impact arising from spillage.

When soil/ land is left undisturbed and vegetated, its integrity for agricultural production will not be compromised at all. However, during exploration and exploitation of oil and gas, the soil structure is disturbed by constant drilling. Alterations associated with extraction activities has adverse effects in that it is can alter the drainage patterns, habitat damage and reduction in capacity

¹²⁹ <https://www.business-humanrights.org/en/kenya-pipeline-company-lawsuit-re-explosion-fire-in-nairobi> accessed on 29/09/2019

¹³⁰ <https://www.telegraph.co.uk/news/worldnews/africaandindianocean/kenya/4424455/Dozens-killed-in-Kenya-oil-tanker-fire-as-people-scramble-for-free-fuel.html> accessed on 30/09/2019

¹³¹ <https://www.bbc.com/news/world-africa-49304396> accessed on 30/09/2019

¹³² Gidion Mbuvi Kioko v Attorney General & another [2017] eKLR

¹³³ <https://makueni.go.ke/news/makueni-contemplates-international-justice-over-two-kpc-oil-spills/> accessed on 30/09/2019

of the environment to support wildlife and vegetation cover. Clearing by operators may stimulate further removal of vegetation by the local population surrounding a development.

In addition to causing soil erosion and altered hydrology, the clearing vegetation may also lead to secondary ecological issues, especially in places with dense vegetative cover like forested areas. In Kenya, there has been little extraction activities so far, at least since it is still in the initial stages. Some of the places where discovery of oil and gas has been found are habitable surroundings.

Soil contamination often arises from spills and leakages of chemicals and the oil itself, causing negative impact on both animals and vegetation. Some of the preventative techniques that can be implored include leak minimization through; segregation, sumps, oil traps and drip pans. This mechanisms should be incorporated into facility design and maintenance procedures, and also the emergency response protocols.

2.4.5 Climate change impacts and the oil and gas activities

The UNFCCC¹³⁴ defines climate change as- a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.¹³⁵ Like any other Sub-Saharan country, Kenya faces the uncertainty and potential risks of climate change due to the ever increasing vulnerability, either within Kenya, or neighboring countries.

The petroleum industry becomes a key and important player in contribution and has the potential to champion mitigation and the adaptation agenda.¹³⁶ Uncertainties within the oil and gas sector emanate from the harm that crude oil production has on the environment. There are a variety of pollutants, including emissions- such as carbon (IV) oxide, carbon monoxide, sulfur dioxide, nitrogen-oxide, volatile organic compounds and particulate matter.

These emissions are pollutants directly linked to climate change where these gases insulate the planet and act as greenhouse gases, which lead to global warming and climate change. Oil extraction and other activities in the upstream and downstream both lead to increases in the levels of greenhouse gas emissions instead of reducing it as per the COP21 Agreement.¹³⁷

¹³⁴ United Nations Framework Convention on Climate Change

¹³⁵ <https://unfccc.int/> accessed on 30/09/2019

¹³⁶ <https://unfccc.int/news/major-oil-companies-letter-to-un> accessed on 30/09/2019

¹³⁷ <https://unfccc.int/news/oil-and-gas-industry-urged-to-lead-on-climate-change> accessed on 30/09/2019

The construction of petroleum refineries like the discussion of having a refinery in Lamu would definitely have its own share in the greenhouse gas emissions. Refineries around the world are the largest consumers of energy. This means that the refinery will make use of petroleum fuels to run as it produces fuel for other industries, and this in itself will act as a pollutant to the environment.

The impact on the health sector brought about by carbon emissions is one to take into account. The question is whether Kenya's health sector can handle the surge in these infections or will this people be left to suffer these consequences of the oil mining on their own being that our health sector is "miles away" from being efficient. The sudden increase in carbon emissions in the Turkana area is likely to lead to an increase in the respiratory diseases suffered by the community living around the area where factories and refineries are situated and more so by the workers who will be working in the oil mines.

Apart from the emissions related concerns for climate change, the other climate related impacts of the oil and gas sector include:

- i. Overreliance on the oil and gas and neglect of other sector like agriculture, tourism (especially the historical sites) and forestry.
- ii. Increased industrialization and urbanizations.
- iii. Impacts on the carbon cycle and reservoirs.
- iv. Aerosol production.¹³⁸

2.4.6 Exposure to Radiation

Over time, oil and gas producers keep developing new methods that combine horizontal drilling with enhanced stimulation. These new methods, known as "fracking," have changed the profile of oil and gas wastes - both in terms of radioactivity and the volumes produced. Geologic formations that contain the hydrocarbon deposits also contain naturally-occurring radionuclides- referred to as Naturally Occurring Radioactive Materials (NORM).¹³⁹ These materials include; Uranium, Thorium and Radium all with their decay products, which include Potassium-40, Lead-210/Polonium-210.¹⁴⁰

¹³⁸ <https://www.csis.org/analysis/oil-and-gas-industry-engagement-climate-change> accessed on 11/11/2019

¹³⁹ <https://www.epa.gov/radiation/tenorm-oil-and-gas-production-wastes> accessed on 30/09/2019

¹⁴⁰ Ibid 139

There is potential for radiological exposure to workers while handling such wastes, during the drilling processes, using the above products, and also during temporary storage of produced water on natural gas well sites, who further interact with members of the public, hence a further spread of the wastes. Further, there is a potential for radiological environmental impacts from spills of produced water from unconventional natural gas well sites and from spills that could occur from the transportation of this fluid. There is also little protection for radiological exposure to workers and members of the public from sediment-impacted soil at landfills. However, there may be a radiological environmental impact to soil from the sediments from landfill leachate treatment facilities that treat leachate from landfills.

Since the extraction process concentrates the naturally occurring radionuclides and exposes them to the surface environment and human contact, these wastes are classified as Technologically Enhanced Naturally Occurring Radioactive Material (TENORM).¹⁴¹

2.4.7 Impact on the Air.

Sources of emissions associated with oil development activities, can be grouped as follows:

- (ii) Flaring, venting and purging of gases.
- (iii) Combustion processes from diesel engines and gas turbines.
- (iv) Fugitive gases from loading operations and losses from process equipment.
- (v) Airborne particulate from burning sources, such as well testing and soil disturbance during construction and vehicular traffic. Of these gas emissions, flaring is the most alarming, and has been a source of major conflict in Nigeria and elsewhere.¹⁴²

Ordinarily, the industry needs a lot of power in order to extract, process and transport hydrocarbons. Power generation and flaring of hydrocarbons are the main causes of air pollution.¹⁴³ This is always experienced during well testing and clean-up operations meant to address safety at the platform. We also have tanker loading and offloading that contribute to emissions.

¹⁴¹ Ibid 114

¹⁴² E&P Forum/UNEP, 1997

¹⁴³ Ibid

The majority of air emissions are from production sites due to controlled flaring and venting which are necessary for safe operations, technically, this is a necessary evil. Occasionally, accidental discharge from wells during blowout /fire emits large amount of gases containing oxides and nitrogen as well as partially burnt hydrocarbons and metals. All of these are potentially hazardous to human health and vegetation growth, this would be disastrous for the Kenyan society being that, there is heavy reliance on Agriculture as a means of achieving socio-economic rights. Both onshore and offshore oil exploitation activities constitute an important source of emissions.¹⁴⁴

For one to be able to understand the potential impact (s) arising from oil and gas exploration, it is important to understand the nature and sources of emissions and their relative contribution to atmospheric impacts.

The sources of atmospheric gases arise from; flaring, purging gases and venting, combustion emissions, air borne particulates from soil disturbance during construction and particulates from other burning testing.¹⁴⁵

On air quality, precipitation and corrosion, contamination of air has adverse effects on the environment in that; the daily oxygen we use in our body as humans has its circulation in form of air. When the same is polluted, human and other animals that ingest the air will develop medical conditions. Oil and gas exploitation in oil bearing communities, has been reported to have affected the health of local people. A corollary study has also intimated on the potential impact of oil pollution on women living within oil fields. Similarly, higher cases of cancer prevalence has also been experienced within communities living close to such environments. This is beside the high possibilities of acid rain. If Kenya was to experience rain of this nature, it would then necessitate change on the way of life for the communities within the north, some of which are pastoralists. The acidic PH value of rain water in the area indicated acid rain caused by oil and gas activities in general and gas flaring in particular.¹⁴⁶

¹⁴⁴ Scotland Fisheries research services report < <http://www.frs.scotland.gov.uk> > accessed on 22/02/2019 at 1943hrs

¹⁴⁵ Jones, V. T., M. D. Matthews, and D. M. Richers, Light hydrocarbons for petroleum and gas prospecting, in M. Hale, ed., *Geochemical Remote Sensing of the Subsurface: Handbook of Exploration Geochemistry*, Vol. 7 (G.J.S Govett, ed.): Elsevier Science B. V., p. 133 – 212., 2000

¹⁴⁶ Ekpo, O. B & Udotong. (2004) *International environment al issues*, Air quality and precipitation and corrosion studies of Nigeria.

2.5 Potential Emergencies

Exploitation of oil and gas come with various life threatening emergencies as well. These include; spillage of fuel, oil, gas, chemicals and hazardous materials; there could also be oil or gas well blowouts, explosions, occasional fires natural disasters among others.

There has been instances where explosions from tankers, pipes and developments that are used for transportation. The neighboring communities end up being victims of such disasters, as already captured above.

2.6 Case Study; Impact of Oil and Gas Exploration to the Environment in West Africa.

This is aimed at evaluating some of the impacts that have so far been realised by other oil and gas producing countries, in an attempt to forewarn Kenyan situation. It creates a proper scenario to the elements and acts of omission that have exposed the environment in other areas of the world through the industry. It is an eye opener, for an “amateur” to pick lesson so as not to wait to learn through bitter experiences, and more so because some of the damage is irreversible.

Based on the above, we realize that gas emissions, oil spills, dredging and filling of waterways have adverse effects to the environment. There effects compromise on a lot of universal rights, and affect other important aspects of life- flora and fauna.

In Ghana, Tullow Oil was permitted to flare a total amount of 75 million standard cubic feet of gas daily in July 2015 due to the breakdown of the compressor on the FPSO¹⁴⁷. This led to dredging and filling of waterways causing acidity to the lakes, besides the acid rain being eminent. Five decades after oil was discovered in the Niger Delta in Nigeria, ‘an independent team of experts from Nigeria, the UK and the United States concluded that the Niger Delta is one of the world’s most severely petroleum impacted ecosystems’. It is on such background that Kenya, must learn from the experiences of the other countries and put appropriate system, lest it forms part of statistics.

In river and marine areas, tanker leaks have occurred.¹⁴⁸ The 2006 Niger Delta Human Development Report indicates that between 1976 and 2001 there were a total of 6817 oil spills in

¹⁴⁷ O, C. Kanyinwaye. Assessment of the Impact of Oil and Gas resource exploration on environment of selected communities in Delta state, Nigeria; IJMESS ISSN 2304-1366

¹⁴⁸ Ibid

the Delta region of Nigeria, resulting in a loss of about three million barrels of oil.¹⁴⁹ This is disastrous, the period notwithstanding. The report noted that oil and gas extraction has had a severe toll on communities in the Delta region and that ‘there is a strong feeling in the region that the degree and rate of degradation are pushing the delta towards ecological disaster.’¹⁵⁰

Pollution created in one country has an impact on another, hence the assertion that; the peculiar nature of the environmental degradation is also in its global nature. This is because the destruction of one part of the ozone layer by one nation has an impact on all nations, neighboring and far and beyond. This explains why the issue of environmental problems is a global one requiring all and sundry to show concerted effort for the benefit of mankind, and future generations.

Kenya, like any other African country is a third world state with minimal resources aimed at adhering to high standards of environmental protection and preservation. Once the activities of exploitation increase to a full scale, it is paramount that measures to curb these possible pollution avenues are put in place.

2.7 Conclusion

Inferring from the matters addressed here above, it is a true demonstration that whereas exploitation of oil and gas resources is an asset to the nation, due to the projected high returns, the same presents possible adverse environmental impact (s), which is likely to compromise the realization of the right to a clean and healthy environment, of which, some have dire consequences, others are irreversible hence, if not addressed at every stage, then the survival of human, animal and plant life is at risk.

Both Oil and gas exploration and exploitation activities can lead to adverse changes in the use of land within the subject given area. Forest- both man made or natural, can be cut down to pave way for exploitation of the mineral. It would thus follow that, the government has to put in place stringent measures to ensure that vegetation cover is not depleted, where this can be avoided, at the expenses of derogating the environment. Vegetation cover forms a crucial part of the eco-

¹⁴⁹ Obioh, I. B.,”*Environmental Impact Assessment of Emissions from Major Facilities at QIT*,” Atmospheric Emissions and Dispersion Modeling. Faith link Consults Nigeria Ltd., Port Harcourt. 1999.

¹⁵⁰ *Report on Niger Delta Natural Resource Damage Assessment and Restoration Project* of the Federal Ministry of Environment; Nigerian Conservation Foundation; WWF UK and CEESP-IUCN Commission on Environmental, Economic, and Social Policy, 4, 31 May 2006, available at http://cmsdata.iucn.org/downloads/niger_deltanatural_resource_damage_assessment_and_restoration.

system, which in turn controls the weather patterns. Kenya being an economy largely depends on agriculture both for economic and subsistence, the weather cycle must therefore remain predictable.

This provision incorporates the **principles of prevention** and **precaution** in a bid to realise **sustainable development**, as earlier discussed in chapter 1; that it should make it punitive to conduct illegal interference in the forests. This is the principle highlighted throughout the thesis to encourage sound measures to be put in place as Kenya embarks on this journey.

People are hindered from conducting activities which might turn out harmful to the forest environment. Any person who contravenes the provisions above commits an offence and is liable on conviction to a fine not exceeding fifty thousand shillings or to imprisonment for a term not exceeding six months, or to both such fine and imprisonment¹⁵¹.

We have seen instances where as a result of oil spills forest cover has been burnt to worrying levels. Such actions disturb the ecosystem since forest cover has been proven to play a critical role in creating a sustainable environment.

There is a demonstrable effort in highlighting the environmental impacts associated with oil and gas exploration that, if left unattended is likely to wipe out human and animal existence- as it has done in the past during the world most catastrophic disasters. In our subsequent chapters, I intend to identify where disconnect is likely to arise, especially in Kenya, and how the same can be mitigated to the effect that sustainable development- being the aim of exploitation of resources, levels of oil and gas exploration are easily and diligently attended to and given considerations.

¹⁵¹ In the case of *Muya vs. Republic [2004] eKLR*, the driver of a motor vehicle used to ferry logged camphor was charged with removing forest produce contrary to section 8 (1)(a), 14 (1)(i) of the Act. He was convicted. Further the court ordered the forfeiture of the motor vehicle.

CHAPTER THREE

THE LEGAL FRAMEWORK FOR PROTECTION OF ENVIRONMENT IN RELATION TO THE OIL AND GAS INDUSTRY

3.0 Introduction

Oil and Gas exploitation being done in Kenya is a new phenomenon, even though exploration has been ongoing since, since the 1950's however, it is in the recent years that the Kenya government, after having established, with certainty, the presence of huge deposits of the oil and gas deposits, that the government has embarked to invest heavily into the oil and gas extraction. The exploitation and extraction as we have seen in chapter two, presents with certain environmental degrading factors that threatens the existence of a sustainable environment. This chapter delves on the legislation, policies and regulations that have been put in place to ensure that the activities that surround the extraction of oil and gas does not deplete environmental standards, while attempting to ensure sustainable development on the other hand.

While at this, we will look at the Constitution of Kenya which is the supreme law of the country, together with other national legislation and policies and International treaties that Kenya is a signatory to.

It would suffice to note that this chapter is primarily pegged on looking at the laws that Kenya has in place to ensure that the environment is protected, in attempt to guarantee the rights under the constitution of Kenya 2010 (COK), *vis-à-vis* the impact that oil and gas industry has on the environment.

3.2 National Law

Kenya's jurisprudential hierarchy is generated under the **COK**¹⁵² which provides that the COK is the supreme law that governs the country and any other law that is inconsistent to it is null and void *ab initio*. The constitution provides that every person has the right to a clean and healthy environment.¹⁵³ Further, there is an obligation on the part of the state to ensure that the rights on sustainable environment are properly enforced which has precipitated to the enactment of **EMCA**

¹⁵² Constitution of Kenya

¹⁵³ Article 42 of the Constitution of Kenya 2010

and further the Petroleum Act which ostensibly provides for policies and regulations as far as oil and gas exploration is concerned.

It is worth noting that whereas Oil and gas exploration has been in existence in Kenya for quite a long period of time, there exist no specific legislation that has been enacted with the sole purpose of guiding the exploitation activities, by corporations, on how to prevent or mitigate the undesirable effects of oil and gas exploitation to the environment. However, in an effort to control environmental pollution, there are legislative instruments that have been and/or international treaties that Kenya is a signatory- but this remain to be on a general scale as opposed to the specific and unique aspects of the industry.

In this discourse, we are going to look at both the national and international laws that Kenya has formed or is a signatory to, which attempts to ensure existence of a sustainable environment.

3.2.1 The Constitution of Kenya 2010

Every Kenyan should have access to clean and safe water in adequate quantities.¹⁵⁴ The environment and water are inevitably intertwined; water being an inherent component of the environment, but at the same time, the environment creating suitable conditions through the ecosystem to sustain water production and use. Water forms a fundamental component of the environment and it performs in-excludable environmental functions. Article 43 provides for economic and social right, and while it may not be achieved instantly, it is expected that the state has to take adequate measures within its available resources to accomplish its progressive realization of the right to clean and safe environment; this right must be realised within the confines of sustainable development, as envisioned in the Preamble¹⁵⁵ of the same Constitution..

By making this a constitutional right, it empowers anyone whose rights have been infringed, or on behalf of a community or any other form of association or grouping to enforce, through the court of law or tribunal to seek redress.¹⁵⁶

Article 42 of the constitution provides for every Kenyan the right to a clean and healthy environment,¹⁵⁷ which includes the right to environmental protection for the benefit of present and

¹⁵⁴ Constitution of Kenya 2010, Article 43 (1) (d)

¹⁵⁵ We, the people of Kenya respectful of the environment, which is our heritage, and determined to sustain it for the benefit of future generations

¹⁵⁶ Constitution of Kenya 2010, Articles 19 and 20

¹⁵⁷ Ibid (42)

future generations¹⁵⁸ through legislative and other measures, particularly those contemplated in Article 69, and having obligations relating to the environment fulfilled under Article 70 of the constitution.

The constitution of Kenya is the supreme law of the land and binds all persons and all state organs. The constitution in Article 42 provides as follows;-

“Every person has the right to a clean and healthy environment, which includes the right—

(a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and

(b) To have obligations relating to the environment fulfilled under Article 70.”

Article 69 of the Constitution requires sustainable exploitation, utilization, management and conservation of natural resources and environment, and ensured equitable sharing of the accruing benefits. It also stipulates for working to attain and preserve a tree cover of at least ten per cent of the land cover in Kenya, protecting and enhancing intellectual property knowledge in indigenous biodiversity and the genetic resources of the communities, encouraging public participation in the management, protection and conservation of the environment, protecting genetic resources and biological diversity, establishing systems of environmental impact assessment, auditing and monitoring, elimination of processes and activities that are likely to jeopardize the environment and utilize the environment and natural resources for the benefit of the people of Kenya.¹⁵⁹

The constitution bestows the responsibility of ensuring proper legislation (s) is enacted by parliament to give full effect of the realization of the rights and other requirements hereinabove.

In the foregoing, there is a clear demonstration that the constitution of Kenya, is committed to ensuring that every citizen enjoys a clean healthy environment. The relevant arms of government are required to ensure that there is strict observance of the mentioned articles- reprieve has also been extended to any citizen who seeks redress for the violation of his/her right or on behalf of an entire community, to make the requisite applications before court.

¹⁵⁸ Intragenerational Equity

¹⁵⁹ Ibid (69)

As a sign of commitment, parliament has enacted certain laws that give Article 42 effect and these laws will be looked at as follows:

3.2.2 Environment Management and Co-ordination Act 2015

In order to give effect to Articles 42 and 70 of the Constitution of Kenya, the legislative arm has enacted various legislation; The Environment and Co-ordination Act 2015, Cap. 387 (EMCA) to establish an appropriate legal and institutional framework for the management of the environment that will improve legal and administrative coordination of the diverse sectoral initiatives in order to improve the national capacity for the management of the environment and in the spirit that the environment constitutes the foundation of national economic, social, cultural and spiritual advancement.

EMCA reiterates the contents of Article 42 and appreciates the need for creation and observance of clean and sustainable environmental standards. Further, EMCA provides for redress that one is supposed to undertake on the instance that he/she feels that his/her right to a clean and sustainable environment is being threatened or infringed upon.¹⁶⁰

EMCA establishes an administrative body referred to as the National Environment Management Authority (NEMA) hereinafter referred to as the Authority, that is to spearhead, supervise and co-ordinate all matters relating to the environment and be the principal instrument that oversees the implementation of all policies relating to the environment.¹⁶¹

Further, the authority is bestowed with the responsibility to co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable yield basis for the improvement of the quality of human life in Kenya.¹⁶²

Further, the authority is required to take stock of the natural resources, their utilization and conservation, audit and determine the net worth or value of the natural resources, make recommendations to the relevant authorities with respect to land use planning, examine land use patterns to determine their impact on the quality and quantity of natural resources, advise the

¹⁶⁰ Section 3(3) of the Environment Management and Co-ordination Act of 2015, Cap. 387, Laws of Kenya.

¹⁶¹ Section 9 supra

¹⁶² *ibid*

Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements in the field of environment, as the case may be, advise the Government on regional and international environmental conventions, treaties and agreements to which the state should be a party and follow up the implementation of such agreements where the state is already a party.¹⁶³

Further, undertake research, investigation and surveys in the field of environment and collect, collate and disseminate information about the findings of such research, investigation or survey.¹⁶⁴ So far, NEMA is yet to publicly provide a report that exhibits some of the possible impacts, likely to result from the exploitation activities, and the transportation of the crude oil, and to what extent the transportation corridor would be affected.

In exercise of its powers, the authority is expected to adhere to the principles of public participation, cultural and social principles, principles of international co-operation, Intragenerational and intergenerational equity, the polluter-pays principle and the pre-cautionary principle.¹⁶⁵

In order to ensure that the activities of NEMA in ensuring that environment is protected to the grass root level, the EMCA has devolved the functions of NEMA through the creation of County Environment Committees (CEC).¹⁶⁶ For instance, the CECs in Turkana and the neighboring counties, would not have the requisite capacity to deal with the negative environmental implications without the support of the national government, meaning that, this is more or less an administrative function of devolving the office roles to the lowest level of administration, but not necessarily having the requisite capacity to address the possible environmental impact (s).

The functions of the CEC is to¹⁶⁷ ensure the proper management of the environment within the county, to develop a county strategic environmental action plan every five years and to perform such additional functions as are prescribed by this EMCA Act or as may, from to time, be assigned by the Governor by notice in the Gazette. Part of the challenges is that the County Governments often reshuffle the CECs hence, the consistency in developing Agenda gets frustrated – as a result

¹⁶³ *ibid*

¹⁶⁴ *ibid*

¹⁶⁵ Section 3(5) of the Environment Management and Co-ordination Act of 2015, Cap. 387, Laws of Kenya.

¹⁶⁶ Section 29, *Supra*

¹⁶⁷ Section 30 *Supra*

of competition and the attempt by every officer holder to attempt and have their own plan instead of facilitating the implementation of the predecessor.

Apart from CEC, there is also a committee of authority known as the National Environmental department¹⁶⁸ (also referred to as - the department) that helps in the investigation of allegations or complaints against any person (s) or against the Authority in relation to the condition of the environment or on its own motion, any suspected case of environmental degradation.¹⁶⁹ The department has the authority to summon any person that it feels should appear before it, for the purpose of giving such information that would help the department in carrying out its mandate.¹⁷⁰ Failure to appear before the department, upon summons has punitive sanctions.¹⁷¹

The act empowers the High Court to make orders or give directions as it may deem appropriate to prevent, stop or discontinue any act or omission deleterious to the environment; compel any public officer to take measures to prevent or discontinue any act or omission deleterious to the environment; require that any on-going activity be subjected to an environment audit in accordance with the provisions of the Act; compel the persons responsible for the environmental degradation to restore the degraded environment as far as practicable to its immediate condition prior to the damage; and provide compensation for any victim of pollution and the cost of beneficial uses lost as a result of an act of pollution and other losses that are connected with or incidental to the foregoing.¹⁷²

Prior to the 2015 amendment, the courts held the position that in order for one to lodge a complaint in relations to environment degradation, s/he had to show locus standi. This was the courts basis that they used to dismiss some cases.¹⁷³ However the constitution now allows any person acting

¹⁶⁸ Section 31 Supra

¹⁶⁹ Section 32 Supra

¹⁷⁰ Section 33 supra

¹⁷¹ ibid

¹⁷² Section 3 (3), Environment Management and coordination Act (cap)

¹⁷³ **Wangari Maathai v The Kenya Times Media Trust (1989) KLR 267**, Prof. Wangari Maathai went to court to stop the proposed construction of a multi-story building at Uhuru Park. Court dismissed the suit claiming that she had no legal right to be in court on the matter. Court's reasoning was that in cases of violations to the environment affecting the public generally, the person who has an interest and right to sue is the Attorney General and not a private citizen. The judge ruled that she had no *locus standi* as she had not alleged the defendant company was in breach of any rights in relation to the plaintiff.

on behalf of a group of people can approach the courts at the instance they realize that their rights are being threatened of being infringed upon.¹⁷⁴

Duty has been bestowed upon NEMA to ensure that within an interval of every six years, it prepares and Environment Action Plan (EAP)¹⁷⁵ that will aide in coordinating and harmonizing the environmental policies, plans, programmes and decisions of the national and county governments;¹⁷⁶ this responsibility of coming up with a EAP is also entrusted upon CEC at the county level.¹⁷⁷

Other institutions established under EMCA include the National Environment Tribunal which adjudicates upon appeals made to it by any party, aggrieved by the decision made by the NEMA or other institutions established under EMCA.

EMCA also establishes the Public Complaints Committee which is concerned with the investigation of complaints relating to the environmental damage and generally degradation and it has powers to investigate NEMA on any complaints made by any party aggrieved by the decision made by NEMA.¹⁷⁸

The EMCA imputes restrictions as to the use of lake, sea, and wetland in a manner that is likely to be disastrous to the environment. In order to use the lake or sea or wetland, an approval has to be issued by NEMA after conducting an Environmental Impact Assessment (EIA) report.¹⁷⁹

Looking at the consequences of Oil and gas exploration as discussed in chapter two, it is an established fact, that exploitation of Oil and gas has negative impact in the ozone layer through emission of harmful gasses, and also the change of use of land also affects the surrounding environment. The EMCA has however through its enabling provisions called for the conservation of biological diversity, protection of ozone layer, limitations and procedures on how to get rid of toxic effluents. This is an indirect control of both exploration and exploitation activities.

To establish the impact a given project would have on the environment, EMCA has made it a pre-requisite to all entities that in one way or another intend to use a given section of the environment

¹⁷⁴ Article 25 of the Constitution of Kenya 2010.

¹⁷⁵ Section 40

¹⁷⁶ Section 41A of EMCA

¹⁷⁷ Section 41 Supra

¹⁷⁸ Section 31 supra

¹⁷⁹ Section 42

for projects, to undertake or cause to be undertaken the preparation of strategic environmental assessments at their own expense and submit the report to the authority for approval.¹⁸⁰ Further, to ensure that no one initiates a project without EIA report, the authority shall ensure that the proponent of any project specified in the Second Schedule shall undertake a full EIA study and submit a study report to the Authority prior to being issued with any licence.

A vivid illustration in the Kenyan case where environmental degradation almost occurred for lack of following clear provided procedures with regard to initiation of a project captured in the **Titanium Case** where, the high court granted an injunction to the **Nguluku Squatters Welfare Group** restraining the company from, carrying out acts of mining in any part of the land in the then Kwale district and secondly a declaratory order that the mining being carried out in Kwale was illegal and thirdly general damages.

In this case, a Canadian company, Tiomin sought to mine titanium in Kwale district. Lobby groups disputed the legitimacy of the Environmental Audit (EA) on the basis that no EIA report had been provided as required by Section 3 of EMCA. They were supported by the Kwale District Mining Forum. As a result, the lobby group commissioned an independent EIA on the project, and local consultants from Kenyatta University prepared another EIA. Among the principles that the court looked at while exercising its jurisdiction is the principle of public participation in the development of policies, plans and other processes for the management of the environment.¹⁸¹

3.2.2.1 Environmental Impact Assessment

"Environmental impact assessment" as defined by EMCA as, a systematic examination conducted to determine whether or not a program, activity or project will have any adverse impacts on the environment.¹⁸² EIA is a tool that assists in the anticipation and minimization of the adverse effects of development. Undertaken in the early stages of project planning and design, it seeks to help shape development in a manner that best suits the local environment and is most responsive to human needs. There exists regulation referred to as the Environmental (Impact citation Assessment and Audit) Regulations, 2003. This regulation makes it illegal; to carry out activities that could be delirious to the environment without approval.¹⁸³

¹⁸⁰ Section 57 of EMCA

¹⁸¹ <http://www.cdca.it/spip.php?article1707&lang=it> accessed on 05/04/2019 at 11:06

¹⁸² Section 2, Environmental (Impact citation. Assessment and Audit) Regulations, 2003.

¹⁸³ Section 4, *ibid*

There is a growing concern in Kenya and world over, that many forms of development activities cause damage to the environment. This has been aggravated by lack of awareness and inadequate information amongst the public on the consequences of their interaction with the environment. Recognizing the importance of natural resources and the environment in general, the Kenyan Government has put in place wide range of policy, institutional and legislative framework to address the major causes of environmental degradation and negative impacts on ecosystems emanating from industrial and economic development programs.

It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound. It is a condition of the Kenya Government to conduct Environmental Impact Assessment on development Projects.¹⁸⁴ In the case of development activities which require the approval of the Director General, such approval will not be granted in the absence of an environmental impact assessment (EIA).

Upon receiving an EIA study, NEMA is mandated to:-

- State where the EIA study is.
- Publish a notice describing the project.
- Interested persons must be afforded a reasonable opportunity to submit comments on the EIA.
- Carryout an evaluation or review report may be inspected and a time limit for the submission of public comments on the study.

EIA provides for public participation in the decision making process in respect of a given proposed project.

EIA serves the following purposes:-

- i. Integration of environmental issues into planning and decision making Processes;
- ii. Anticipation, minimization and mitigation of environmental damage and Recommendation of alternatives;
- iii. Public participation in decision making and environmental conservation.

The steps included in EIA are contained in the EMCA at Sections 58 and 138 and the Environmental (Impact Assessment and Audit) Regulations 2003 (Legal No. 101 of 2003). All

184

undertakings enumerated in the Second Schedule of EMCA require an Environmental Impact Assessment project/study report prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual licensing before the development commences.

The need for environmental impact assessment (EIA) should be seen in the context of the precautionary principle. The purpose of such an assessment is to assess the impact of proposed development activities and ensure that any likely adverse impacts on the environment can be dealt with.

The precautionary principle requires that all reasonable measures must be taken to prevent the possible deleterious environmental consequences of development activities. Further, it demands that scientific uncertainty should not be used as a reason for not taking cost-effective measures to prevent environmental harm.

3.2.2.2 Environmental Audits

"Environmental audit" means the systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing in conserving or preserving the environment. These audits must be carried out from time to time as per EIA/EA Regulations, 2003.

EMCA empowers NEMA to carry out environmental audits of all activities that is likely to have significant effects on the environment. To facilitate such audits, EMCA empowers "environmental inspectors" to enter any land or premises with a view to establishing how far the activities carried out thereon conform to the EIA studies issued in respect of such land or premises. The primary role is to ensure compliance with Waste Management Regulations-2006, Water Quality Regulations- 2006, Air Quality Regulations, 2008 and Noise and Excessive Vibration Control Regulations-2009,

3.2.2.3 Environmental Restoration Orders

EMCA empowers NEMA to issue environmental restoration orders. For example, such an order will require the person, to whom it is issued to restore the land degraded by his or her development activity, including replanting trees. Environmental restoration orders may also be issued by a court of competent jurisdiction "against a person who has harmed, is harming or is reasonably likely to harm the environment."

3.2.3 Petroleum Act 2019

This is the primary legislative tool that provides a legal framework within the industry; for the purposes of contracting, exploration, development and production of petroleum and cessation of upstream petroleum operations in order to give effect to relevant Articles of the Constitution in so far as they apply to upstream petroleum operations, regulation of midstream and downstream petroleum operations and for connected purposes.¹⁸⁵

As demonstrated earlier in chapter two; that exploitation of oil and gas has adverse effects to the environment. Some impacts of which are disastrous, and others are irreversible. The Petroleum Act¹⁸⁶ has put in measures to ensure that stakeholders adhere to certain regulations in order to mitigate the adverse effects to the environment.

- i) The Act bestows responsibility upon the contractor (the drilling Company) to ensure that while carrying out upstream oil operations, they heed to the applicable environmental, health and safety laws, regulations and policies and best petroleum industry practices.¹⁸⁷ The practices are generated from international industry regulators, and also, some of the documented experiences of Oil and Gas producing nations. The Act requires the contractors to ensure that all reasonable steps necessary to secure the safety, health and welfare of persons engaged in all its operations in or about the contract area are taken into account by deploying the best available technology that would assure quality environment. These would be achieved by ensuring that the flow of waste is controlled or prevented from escaping the contract area.
- ii) It is also required that the contractors take measures to protect soil, air biodiversity, brine water well, spring, stream river lake, reservoir, sea, forest, wildlife and marine, estuary or harbour by ensuring that the escape of petroleum, salt water, drilling fluid, chemical additive, gas (not being petroleum) or any other waste product or effluent is managed.¹⁸⁸ Turkana (*also referred to as the Cradle of Mankind*)¹⁸⁹ being the main area that hosts the exploitation activities, also enjoys a variety of natural resources and other tourist attraction

¹⁸⁵ Section 1, Petroleum Act, 2019.

¹⁸⁶ Act No. 2 of 2019

¹⁸⁷ Section 59 of Petroleum Act 2019

¹⁸⁸ *ibid*

¹⁸⁹ <http://www.letsokenya.com/kenya-the-cradle-of-mankind> accessed on 28/09/2019

sites. Therefore, it is incumbent upon the Drilling companies to protect and preserve the other resources; Lake Turkana, and all the archeological sites within the environs.

- iii) The contractors are also required to disperse or treat any pollution that is occasioned by their activities. This must be enforced by whatever means necessary as it would form the biggest weak point of the upstream activities. Release of chemicals or wrong disposal of the same could have adverse effects on the immediate environment and far reaching effects down to the downstream. Situation such as that which occurred in the Anza basin (referred to in the background should not occur, as the effects would be disastrous. If that was only during exploration and the damage was severe, the damage at exploitation would have far reaching effects into the neighboring counties.
- iv) A contractor is further required to accommodate the best transportation, production, storage, treatment and disposal of waste products. In doing so, the contractor is at liberty to contract a separate legal entity to manage the wastes, spillage and transportation thereof. However, employing such an entity does not waive responsibility appurtenant thereto from the contractor. Thus, the contractor shall become jointly and severally liable for any actions leading to pollution of the environment. Further it is an offence for one to transport, or store waste products without a license.¹⁹⁰ Further, on the transportation, it is important to have a synchronized approach, where in, the government ought to deliberately invest in infrastructure that would minimize the exposure of the environment; pipeline or railway, as has been envisioned in the Lapsset project.
- v) The Act also imputes responsibility on contractors to ensure that they take reasonable steps to warn people within the vicinity of any of such structures, facilities, equipment and other properties drilled on the land of their potential hazards. Failure to do so amounts to a criminal offence. This can best be achieved through community reach out programmes and collaboration with the County governments and the local administration, being the “government” at that level.

¹⁹⁰ Section 60 of Petroleum Act 2019

vi) Though covered in the previous chapter, it is worth reiterating that production of oil and gas results in production of flaring of natural gas. The Act provides that before any contractor can undertake any flaring activities, then they must ensure that they seek authorization. However, where an emergency arises that venting or flaring will avert any disaster, then authorization need not to be sought. Notwithstanding the fact that such authorization has been given, venting or flaring has to be kept to the most minimum levels as required by the requisite laws. Thus, the application to the authority in respect to the proposed flaring of oil and gas shall include an evaluation of reasonable alternatives to flaring that have been considered along with information on the amount and quality of oil and gas involved and the duration of the requested flare.¹⁹¹

vii) The Act requires the contractor to write in appropriate form any incidences of accident leading to *inter alia*, loss of life, spillage, and fire to the authority. All tools of production, storage, transportation shall be to the required standards as approved by Kenya Bureau of Standards (KEBS).¹⁹²

Further upstream operations shall be conducted with modest forms of safety subject to the provisions of Occupational Health and Safety Act 2007.

With the above statutory provisions, there is a gap in the actual regulations to enforce, monitor and carry out regular evaluation. The parent Ministry concerned with the industry does not have capacity, at the moment, to carry out inspection, actual site visits in a bid to ensure compliance with the law, hence the urgent need to amalgamate these provisions, into the National Environment Policy, and establish a formidable body to carry out enforcement within the industry.

3.2.3.1 Licensing

A company can't engage in prospecting for oil and gas in any part of Kenya before acquiring the requisite Licenses. It must first obtain a license in the form of a Production Sharing Contract (PSC). This document spells the terms under which the company is licensed to explore for oil and gas, its obligations and also the obligations of the government.¹⁹³ Though, they are largely standard contracts with uniform terms for all the companies. The PSC also sets out how the company will

¹⁹¹ Supra, Section 62 and 63

¹⁹² Supra, section 64

¹⁹³ Section 16 of Petroleum Act No. 2 of 2019

be compensated if the results of exploration are successful. There is no compensation in a case of no success. The Constitution gives powers for vetting of licenses to the Parliament.

Of the 63 blocks gazetted as of May 2016, more than 40 had been licensed to oil exploration and production companies and operated by over 20 international oil companies and the National Oil Corporation of Kenya.¹⁹⁴

Licensing further covers;

- i) Licensing of Petroleum Road Transportation Business;
- ii) Licensing of Petroleum Logistics Business
- iii) Operation of Marine Jetties regulations

As these phases form a crucial part of the transportation of both the crude oil and the refined products from the upstream to the down-stream and up to the retailer.

3.2.3.2 Geological and Geophysical Studies

After a license is obtained, geological and geophysical surveys are carried out by to evaluate the possibility of hydrocarbon accumulation in the earth's sub surface.

Geological surveys are carried out on the earth's surface through observation, collection and analysis of rock samples, water samples and also general understanding of the geology and geological history of the area.¹⁹⁵

Geophysical surveys involve imaging of the earth's sub-surface to identify areas where there is the highest possibility of hydrocarbon generation and accumulation. These surveys usually include processes such as gravity and magnetic surveys to identify presence and depth prospective rocks and seismic surveys to identify appropriate rock formations that may contain hydrocarbons.

The company is also expected to be the holder of Government Participation share in development of oil and gas fields when that time comes.

3.2.4 The Radiation Protection Act 2007-CAP 243

This Act establishes Radiation Board which is the competent authority with the responsibility of protecting the health and safety of people and the environment from harmful effect of ionizing

¹⁹⁴ Draft Report for the Strategic Environmental and Social Assessment for the Petroleum Sector in Kenya, Contract No: keptap/nema/cs-6

¹⁹⁵ Environmental Management in Oil and Gas exploration and production. *An overview of issues and management approach*, Joint E&P Forum/ UNEP Technical Publication

radiation. It regulates the use of ionizing radiation, exportation, importation, distribution and possession of radiation sources. The Board operates under two subsidiary legislations.

The Act discourages the use and/ or the making, importing, exporting and dissemination of any radioactive material except in accordance with any regulations that are put in place by the Act or any other written law.¹⁹⁶ The said regulations are provided for under Section 18 which requires the cabinet secretary authorized under the law to take such precautionary measures to ensure that certain regulations are passed to mitigate any adverse effects of radiation.¹⁹⁷

Further, it criminalizes the use of any radioactive material without a licence and provides for procedures under which one can apply for the licenses.¹⁹⁸ Due to the sophisticated equipment used in the industry, it is paramount that measures are put in place to protect those likely to be affected directly and indirectly by some of the waste products or by products that have radioactive tendencies.

3.2.5 The Maritime Zones Act, CAP 371

Kenya shall within the exclusive economic zone exercise sovereign rights with respect to the exploration and exploitation and conservation and management of natural resources of the zone and without prejudice to the generality of the foregoing the exercise of the sovereign right in respect of regulation control and preservation of the marine environment¹⁹⁹. It is noteworthy to recognize the essential aspects of Oil and Gas exploration in maritime zones. These zones act as conduit routes that enhance the importation and exportation of oil, in either form. The zones are within water bodies and it would be very important if the government with the stakeholders, formulates adequate policies that would ensure that activities that are involved in exportation or importation of oil and gas does not have negative impact on the environment.

The maritime environment forms a crucial part of the country's downstream phase; currently, the EOPS project; trucks loaded with crude oil leave Ngamia Eight in Turkana County through various other counties into Mombasa, where the oil is temporarily stored before export. Kenya does not have the capacity to process and refine the oil, hence the need to export, and this can only be achieved through the high seas, which is a component of the marine environment. This being

¹⁹⁶ Section 8 of the Radiation Protection Act, 2012

¹⁹⁷ Ibid section 18

¹⁹⁸ Ibid, section 11.

¹⁹⁹ Section 5

part of the transport channel, similar high standards of caution ought to be observed as this is a fundamental part of the global environment. The marine environment supports various other industries; that include, tourism, fishing and transport. It is incumbent upon the transporters to adhere to the high standards so as to sustain the eco-system.

The Act was amended in 2012, to include the territorial waters and the Continental Shelf of Kenya. It provides for the exploration, exploitation, conservation and management of resources of the maritime zones. The Kenya Maritime Authority Act Chapter 370 laws of Kenya establish, under section 3, the Kenya Maritime Authority²⁰⁰ whose functions are captured under section 5 of the Act. The functions being *inter alia* protecting of the Marine environment and responding to marine environment incidents.²⁰¹

The cabinet secretary is given the authority to make regulations to regulate the exploitation and exploration, conservation and management of Maritimes zone for the purpose of protection, control and preservation of the maritime environment.²⁰²

Also, the Maritime legislation plays a crucial role as of 2019, Kenya exported its crude oil to the global markets. Given that, currently, Kenya is in a deadlock with neighboring Somali over the maritime dispute, it is important to acknowledge that the actual dispute is on the Oil and gas deposits known to be below the water shelve within the disputed area and hence, whichever way the dispute is resolved, there shall be efforts to exploit those resources hence, the need to apply similar standards that would apply on the terrestrial environment to the sea, with more attention, given the dynamic nature of the sea.

The marine environment, world over is regulated, not only by national legislation, but also international instruments;

²⁰⁰ Section 3 of The Maritime Zones Act, Cap 371

²⁰¹ Ibid section 5

²⁰² Supra, Section 9(1),

3.3 Ratified Treaties and Conventions within the Maritime Environment

3.3.1 International Organizations regulations on Impact (s) of Oil and Gas on the Environment.

The Constitution of Kenya 2010 allows for the operation of International laws that the country is a party to and forms part of the laws that govern the country.²⁰³ In this effort, we are going to look those treaties and conventions that Kenya has put in place to ensure mitigation of environment pollution as required under Article 72 of the Constitution of Kenya. The EMCA also gives the legislature the responsibility to ensure that it incorporates laws that are in line with International environment treaties and conventions.²⁰⁴

3.3.1.1 United Nations Environment Programme (UNEP)

UNEP is an established organ of the United Nations (UN), based in Kenya, that concerns itself with regulating and creating policies that ensures sustainable environmental standards are adhered to. Within UNEP, there is an established organ referred to as Industry and Environment (UNEP IE). The legal principles and goals of this organization will be discussed in detail in chapter three, but notwithstanding, in a very conservative way, the organization has the responsibility to encourage the incorporation of environmental criteria in industrial development plans and to facilitate and implement procedures and principles of protection of the environment.²⁰⁵ In its efforts to achieve the above, the organization undertook a responsibility to assess the environmental impact of oil and gas exploration of various countries, of importance to this chapter is the project in Ogoniland in Nigeria

3.3.1.2 Case Study - Ogoniland in Nigeria

The environmental restoration of Ogoniland in Nigeria could prove to be the world's most wide-ranging and long term oil clean-up exercise ever undertaken if contaminated drinking water, land, creeks and important ecosystems such as mangroves are to be brought back to full, productive health.²⁰⁶ This is similar to the mechanisms put in place by the EMCA legislation where reparation measures have to be taken to restore damage.

²⁰³ Article 2(5) of the Constitution of Kenya, 2010.

²⁰⁴ Section 9 of the EMCA

²⁰⁵ Borthwick, L, *An overview of issues and management approaches*, Environment management in Oil and gas exploration and production, Joint E&P forum/ UNEP technical publication.

²⁰⁶<https://www.unenvironment.org/news-and-stories/story/unep-ogoniland-oil-assessment-reveals-extent-environmental-contamination-and> accessed on 4/03/2019

An independent scientific assessment, carried out by UNEP, shows that pollution from over 50 years of oil operations in the region has penetrated further and deeper than many may have supposed.²⁰⁷ The assessment has been unprecedented; over a 14-month period, the team examined more than 200 locations, surveyed 122 kilometers along the pipeline rights of way, reviewed more than 5,000 medical records and engaged over 23,000 people at local community meetings.²⁰⁸ Further, analysis of the soil extracted from 780 boreholes and groundwater from 142 monitoring wells for contamination were conducted at 69 different sites, which ranged in size from 1,300 square meters (Barabeedom-K.dere, Gokana local government area (LGA) to 79 hectares (Ajeokpori-Akpajo, Eleme LGA).²⁰⁹

Altogether more than 4,000 samples were analyzed. Some areas, which appear unaffected at the surface, are in reality severely contaminated underground and action to protect human health and reduce the risks to affected communities should occur without delay says UNEP's Environmental Assessment of Ogoniland.

In at least 10 Ogoni communities where drinking water is contaminated with high levels of hydrocarbons, public health is seriously threatened, according to the assessment that was released.²¹⁰ In one community, at Nisisioken Ogale, in western Ogoniland, families are drinking water from wells that were contaminated with benzene- a known carcinogen-at levels over 900 times above World Health Organization guidelines. The site is close to a Nigerian National Petroleum Company pipeline,²¹¹ which leaves no doubt as to the source of the contamination.

In some of the sites, it was discovered that there was an 8 cm layer of refined oil, floating on the groundwater which serve the wells. This was reportedly linked to an oil spill which occurred more than six years back.²¹²

While the report provides clear operational recommendations for addressing the widespread oil pollution across Ogoniland, UNEP recommends that the contamination in Nisisioken Ogale warrants emergency action ahead of all other remediation efforts.

²⁰⁷ Anon, "The Oil industry Experience Technology Corporation and capacity Building" contribution to Agenda 21 UNEP / IPIECA, London 1995.

²⁰⁸ <https://www.unenvironment.org/news-and-stories/story/unep-ogoniland-oil-assessment-reveals-extent-environmental-contamination-and> accessed on 4/3/2019

²⁰⁹ Ibid

²¹⁰ N. Nuttall, Disaster and conflicts UNEP, *UNEP Ogoniland Oil Assessment Reveals Extent of Environmental contamination and threats to human health*, 2017

²¹¹ Ibid

²¹² Ibid

This is only but a snap shot into some of the calamities that would befall Kenya, if at all, measures, stringent for that matter are not put in place to safeguard against. It is a clear warning that, fundamental rights would be violated and the knee jack reaction, as is the “African culture” may not suffice.

3.3.1.3 International Convention on Civil Liability for Oil Pollution Damage (CLC)

The CLC was adopted to ensure that adequate compensation is available to persons who suffer oil pollution damage resulting from maritime casualties involving oil-carrying ships. The Convention places the liability for such damage on the owner of the ship from which the polluting oil escaped or was discharged.²¹³ Subject to a number of specific exceptions, this liability is strict; it is the duty of the owner to prove in each case that any of the exceptions should in fact operate. However, except where the owner has been guilty of actual fault, they may limit liability in respect of any one incident, which is normal in insurance practice, but some damage and disturbance to aquatic life, may never be restored. It is on that background that, under the 1992 Protocol, a ship-owner cannot limit liability if it is proved that the pollution damage resulted from the ship owner’s personal act or omission, committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result.

The Convention requires ships covered by it to maintain insurance or other financial security in sums equivalent to the owner's total liability for one incident and it applies to all seagoing vessels that are carrying oil in bulk as cargo, but only ships carrying more than 2,000 tons of oil are required to maintain insurance in respect of oil pollution damage.

Warships or other vessels owned or operated by a State and used for the time being for Government non-commercial service are exempted from taking insurance covers. The Convention, however, applies in respect of the liability and jurisdiction provisions, to ships owned by a State and used for commercial purposes. The only exception as regards such ships is that they are not required to carry insurance. Instead they must carry a certificate issued by the appropriate authority of the State of their registry stating that the ship's liability under the Convention is covered.

The Convention covers pollution damage resulting from spills of persistent oils suffered in the territory (including the territorial sea) of a State Party to the Convention. It is applicable to ships which actually carry oil in bulk as cargo, i.e. generally laden tankers. Spills from tankers in ballast

²¹³ Article 2 International Convention on Civil Liability for Oil Pollution Damage (CLC), 1996

or bunker spills from ships other than other than tankers are not covered,²¹⁴ nor is it possible to recover costs when preventive measures are so successful that no actual spill occurs. The ship-owner cannot limit liability if the incident occurred as a result of the owner's personal fault.²¹⁵

The Protocol of 1976, which entered into force in 1981, provided for the applicable unit of account used under the convention to be based on the Special Drawing Rights (SDR) as used by the International Monetary Fund (IMF), replacing the "Poincaré franc", based on the "official" value of gold, as the applicable unit of account.

The protocol also widened the scope of the Convention to cover pollution damage caused in the exclusive economic zone (EEZ) or equivalent area of a State Party. The Protocol covers pollution damage as before but environmental damage compensation is limited to costs incurred for reasonable measures to reinstate the contaminated environment. It also allows expenses incurred for preventive measures to be recovered even when no spill of oil occurs, provided there was grave and imminent threat of pollution damage.

The Protocol also extended the Convention to cover spills from sea-going vessels constructed or adapted to carry oil in bulk as cargo so that it applies apply to both laden and unladen tankers, including spills of bunker oil from such ships.

3.3.1.4 International Convention on Civil Liability for Bunker Oil Pollution Damage (BUNKER)

The Convention was adopted to ensure that adequate, prompt, and effective compensation is available to persons who suffer damage caused by spills of oil, when carried as fuel in ships' bunkers.

The Convention applies to damage caused on the territory, including the territorial sea, and in exclusive economic zones of States Parties. The bunkers convention provides a free-standing instrument covering pollution damage only.

"Pollution damage" means:²¹⁶

²¹⁴ These are covered by the *International Convention on Civil Liability for Bunker Oil Pollution Damage* (BUNKER)
²¹⁵ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-on-Civil-Liability-for-Oil-Pollution-Damage-\(CLC\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-on-Civil-Liability-for-Oil-Pollution-Damage-(CLC).aspx)

²¹⁶ Article 4 of *International Convention on Civil Liability for Bunker Oil Pollution Damage* (BUNKER) 2008

- a) Loss or damage caused outside the ship by contamination resulting from the escape or discharge of bunker oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken; and
- b) The costs of preventive measures and further loss or damage caused by preventive measures.²¹⁷

The convention is modelled on the International Convention on Civil Liability for Oil Pollution Damage, 1969. As with that convention, a key requirement in the bunkers convention is the need for the registered owner of a vessel to maintain compulsory insurance cover.

Another key provision is the requirement for direct action - this would allow a claim for compensation for pollution damage to be brought directly against an insurer. The Convention requires ships over 1,000 gross tonnage to maintain insurance or other financial security, such as the guarantee of a bank or similar financial institution, to cover the liability of the registered owner for pollution damage in an amount equal to the limits of liability under the applicable national or international limitation regime, but in all cases, not exceeding an amount calculated in accordance with the Convention on Limitation of Liability for Maritime Claims, 1976

3.3.1.5 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC)

In July 1989, a conference of leading industrial nations in Paris called upon IMO to develop further measures to prevent pollution from ships. This call was endorsed by the IMO Assembly in November of the same year and work began on a draft convention aimed at providing a global framework for international co-operation in combating major incidents or threats of marine pollution.²¹⁸ Parties to the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) are required to establish measures for dealing with pollution incidents, either at national levels or at regional levels. The regional levels could be economic blocs or political blocs.

²¹⁷ Ibid 216

²¹⁸ [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-on-Oil-Pollution-Preparedness,-Response-and-Co-operation-\(OPRC\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-on-Oil-Pollution-Preparedness,-Response-and-Co-operation-(OPRC).aspx) accessed on 30/04/19

Ships are required to carry a shipboard oil pollution emergency plan. Operators of offshore units under the jurisdiction of Parties are also required to have oil pollution emergency plans or similar arrangements which must be co-ordinated with national systems for responding promptly and effectively to oil pollution incidents and addressing such challenges in an effort to mitigate loss. Ships are required to report incidents of pollution to coastal authorities and the convention details the actions that are then to be taken.

The Convention calls for the establishment of stockpiles of oil spill combating equipment, drills of oil spill combating exercises and the development of detailed plans for dealing with pollution incidents. Parties to the convention are required to provide assistance to others in the event of a pollution emergency and there are provisions made for the payment/reimbursement of any assistance provided, as long as it can be quantified.

3.3.1.6 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matters

The Inter-Governmental Conference on the Convention on the Dumping of Wastes at Sea, which met in London in November 1972 at the invitation of the United Kingdom, adopted this instrument, generally known as the London Convention. The London Convention, one of the first international conventions for the protection of the marine environment from human activities.

The London Convention contributes to the international control and prevention of marine pollution by prohibiting the dumping of certain hazardous materials. In addition, a special permit is required prior to dumping of a number of other identified materials. "Dumping" has been defined as the deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures, as well as the deliberate disposal of these vessels or platforms themselves. Annexes list wastes which cannot be dumped and others for which a special dumping permit is required and outlines the procedures of getting licenses.

Amendments adopted in 1993 (which entered into force in 1994) banned the dumping into sea of low-level radioactive wastes. In addition, the amendments phased out the dumping of industrial wastes by 31 December 1995 and banned the incineration at sea of industrial wastes.²¹⁹ In 1996,

²¹⁹ <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx>

Parties adopted a Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (known as the **London Protocol**). The Protocol, which is meant to eventually replace the 1972 Convention, represents a major change of approach to the question of how to regulate the use of the sea as a depository for waste materials. Rather than stating which materials may not be dumped, it prohibits all dumping, except for possibly acceptable wastes on the so-called "reverse list", contained in an annex to the Protocol.

The London Protocol stresses the "precautionary approach", which requires that "appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects". It also states that "the polluter should, in principle, bear the cost of pollution" and emphasizes that Contracting Parties should ensure that the Protocol should not simply result in pollution being transferred from one part of the environment to another.

The Contracting Parties to the London Convention and Protocol have recently taken steps to mitigate the impacts of increasing concentrations of CO₂ in the atmosphere (and consequently in the marine environment) and to ensure that new technologies that aim to engineer the climate, and have the potential to cause harm to the marine environment, are effectively controlled and regulated. The instruments have, so far, been the most advanced international regulatory instruments addressing carbon capture and sequestration in sub-sea geological formations and marine climate engineering such as ocean fertilization. Article 4 states that Contracting Parties "shall prohibit the dumping of any wastes or other matter with the exception of those listed in Annex 1."²²⁰

The permitted substances are: Dredged material, Sewage sludge, Fish waste, or material resulting from industrial fish processing operations, Vessels and platforms or other man-made structures at sea, Inert, inorganic geological material, Organic material of natural origin, Bulky items primarily comprising iron, steel, concrete and similar less harmful materials for which the concern is physical impact and limited to those circumstances, where such wastes are generated at locations,

²²⁰Annex 1 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972*

such as small islands with isolated communities, having no practicable access to disposal options other than dumping

3.3.1.7 International Convention for the Prevention of Pollution from Ships (MARPOL)

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.

The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes. Annex I provides for regularized prevention of pollution by oil from operational measures as well as from accidental discharges and makes it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls.²²¹

Annex II details the discharge criteria and measures for the control of pollution by noxious liquid substances carried in bulk; some 250 substances were evaluated and included in the list appended to the Convention;²²² the discharge of their residues is allowed only to reception facilities until certain concentrations and conditions (which vary with the category of substances) are complied with.²²³

Annex III Contains general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications.²²⁴ For the purpose of this Annex,²²⁵ “harmful substances” are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code) or which meet the criteria in the Appendix of Annex III.

Annex IV Contains requirements to control pollution of the sea by sewage; the discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment

²²¹ Annex I Regulations for the Prevention of Pollution by Oil, *International Convention for the Prevention of Pollution from Ships* (MARPOL) 1983

²²² [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)

²²³ Annex II, Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk, *International Convention for the Prevention of Pollution from Ships* (MARPOL) 1983

²²⁴ Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form, *International Convention for the Prevention of Pollution from Ships* (MARPOL) 1992

²²⁵ Ibid

plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than three nautical miles from the nearest land; sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nautical miles from the nearest land.²²⁶

Annex VI sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SO_x, NO_x and particulate matter. A chapter adopted in 2011 covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships.²²⁷

3.4 CONCLUSION

It is very essential to protect and conserve the environment not only as an individual or organizational based economic initiative but also as a human right perspective. How far human rights perspective offers a variable contribution to countering environmental degradation is a highly contentious aspect of the environmental debate. There is an inherent mismatch between the kinds of anthropocentric interests reflected in human rights formulation and protection of the environment. In the Kenyan context, it is reflected under Article 42 of the constitution as a fundamental right and freedom. “Severe environmental pollution may affect individuals well-being and preventing them from enjoying their homes in such a way as to affect their private and family life adversely, however, without seriously endangering human health, consideration must be made to the fair balance that has to be struck between the competing interests of the individual and of the community as a whole” This was an example of a successful claim based upon Article 8 of the European Commission on Human Rights.²²⁸ Thus it was held to be a violation of human right where the state had permitted a waste treatment facility within meters of nearby residences with consequent threats to health of the applicant’s family.²²⁹

From the foregoing it is worth noting that Kenya has a number of laws that are there to protect the environment. However, there is no law in particular that strictly addresses protection of

²²⁶ Annex IV Prevention of Pollution by Sewage from Ships, *International Convention for the Prevention of Pollution from Ships* (MARPOL) 2003.

²²⁷ Annex VI Prevention of Air Pollution from Ships, *International Convention for the Prevention of Pollution from Ships* (MARPOL) 2005.

²²⁸ Mark Stallworthy : *Understanding Environmental Law*(First Edition, Sweet & Maxwell’s Publisher)58

²²⁹ *Lopez Ostra v Spain* (1995) 20 E.H.R.R 277

environment from pollution, nevertheless, the current legal instruments offer the overlapping role in ensuring protection of environment is achieved and the same has been addressed cumulatively.

It is paramount that the body established is equipped with sound technical knowledge, skills and training so as to deal with the peculiar needs of the industry whilst balancing the important role of protection and preservation of the environment. It is only by having a functional system that the rights envisioned in Article 42 of the Constitution can be safe guarded. The training and skills must be reflective of sound global practices within the industry so as to put Kenya on the global map, at least for the right reasons – the Oil and gas blessing.

CHAPTER 4

NATIONAL FRAMEWORK REQUIRED FOR COMPLIANCE AND IMPLEMENTATION OF ARTICLE 42 OF THE CONSTITUTION

4.1.1 Introduction

A study of the Oil producing countries reveals that most developing states have weak legal and institutional frameworks and thus are unable to regulate the operators to ensure upholding of environmental standards. A report by the World Bank²³⁰ warns that significant environmental pollution may occur as major O & G operations take place in environmental sensitive areas that government institutions are unable to adequately protect. The report urges the developing states to strengthen their legal and institutional frameworks to ensure sustainable oil and gas development.

Kenya ought to introduce a national and institutional framework to ensure that the oil and gas industry complies with environmental health and safety as will be discussed below. Having expounded on the existing framework in the previous chapter, this chapter is to propose mechanisms that can be adopted to implement the requirements of Article 42, hence guarantee a clean and healthy environment. This therefore requires a wholesome approach in the implementation.

A key concern for communities in the Turkana area is how waste and pollution will be managed. This includes; the disposal of drill cuttings, reduced air quality due to flaring of gas and negative impacts on human and animal health.

There's also concern over the technology used to handle hazardous waste as it doesn't meet the standards of those in other countries. For instance, most waste oil treatment facilities don't meet international standards and are run by the informal sector. Trying to deal with these risks is challenging and there are significant gaps in policies and laws.²³¹

²³⁰ World Bank (2010) *Environmental Governance in Oil Producing Developing Countries: Findings from a Survey of 32 Countries*, Series 17, World Bank, 3.

²³¹ <http://theconversation.com/what-kenya-needs-to-do-to-better-protect-those-working-in-the-oil-sector-103845> accessed on 30/09/2019

4.1.2 Oil and Gas Exploration in Kenya

Exploitation of oil and gas has become a globalized tool of trade across a number of countries and Kenya has not been left behind. As of now, Kenya boasts among third world countries as one of those countries that are ready to mine oil and gas. Since 2012, Tullow's successful exploration and appraisal drilling campaigns in Kenya have resulted in the opening of a second new tertiary rift play in the South Lokichar Basin. Following the full assessment of all the exploration and appraisal data, Tullow estimates that the South Lokichar basin contains of recoverable resources: 240 – 560 – 1,230 mmbo (1C–2C–3C) from an overall discovered STOIP of up to 4 billion barrels.

Until recently, Eastern Africa was zoned as an agricultural region and as such not much oil and gas exploration went on in the region. The first well drilled in Kenya was drilled in 1960. Since then, approximately 30 more wells were subsequent drilled with no commercially significant discoveries. It was not until Ngamia 1 well drilled in 2012 and made a significant oil discovery that Kenya started gaining significance as a potential oil producer. A number of wells have been subsequently drilled, with several other discoveries and some with only minor oil and gas shows.

Kenya's discoveries are currently undergoing appraisal with more wells being drilled to evaluate the oil quality and quantity.

The upstream oil and gas activities in Kenya are governed by the Petroleum Act Cap 2 of 2019. The Act provides for policies and regulatory framework that will ensure that Kenya has a good upstream and midstream policies that encourages growth of the industry. The Ministry of Petroleum and Mining is leading the process with support with various donor organization and international experts.

4.1.3 Stakeholders in Oil and Gas Exploitation

4.1.3.1 Government

Through the Petroleum Act Cap 2 of 2019 is the fundamental law governing upstream activities in Kenya. It vests the ownership of hydrocarbons to the government while granting powers over the sector to the Cabinet Secretary of the Ministry of Petroleum and Mining.²³²

The Government is the licensor to the oil and gas companies and is in charge of regulating and monitoring the sector. The Ministry of Petroleum and Mining is the entity responsible for formulation and articulation of policies governing the sector, legal functions of negotiating and

²³² Section 5 of the Petroleum Act No. 2 of 2019

licensing process, providing an enabling environment for all stakeholders, and mobilization of resources (both human and financial).²³³

The Constitution of Kenya 2010 gives powers for vetting of licenses to the Parliament.²³⁴ The implementation of this part is not yet effective as it is to be set out in a law that only came to operation on 28th March 2019.

Under current legislation, the Cabinet Secretary is the chief authorizing officer and is in charge of policy and legal functions as well as licensing and monitoring of operations in accordance with the law and any signed petroleum agreements. The CS is empowered to sign petroleum agreements on behalf of the government.²³⁵

4.1.3.2 Ministries of Petroleum and Mining and Energy;

These two are the parent ministries with the overall duty of engaging the stakeholders and regulating the industry through various mechanisms- issuance of petroleum licenses to Oil and Gas companies to enable them carry out Oil and Gas exploration and production in Kenya.²³⁶

It is therefore incumbent upon the two ministries to ensure strict and firm compliance with the pre-conditions set out before the licenses are issued,²³⁷ as provide for under the statute.²³⁸ It must not be forgotten, that the primary objective of any multinational exploring for oil and gas is to make profit, however, the environmental responsibility more often than not takes secondary preference. This cannot guarantee sustainable development as discussed in the previous chapter and the importance of intergenerational equity in exploitation of resources.

Implementation by the parent ministries, shall only be guaranteed if there is a deliberate effort 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 through the environment into living creatures and man himself; and to identify activities that

²³³ Ibid

²³⁴ Article 71 Constitution of Kenya, 2010

²³⁵ Section 5 of the Petroleum Act No. 2 of 2019

²³⁶ <http://www.petroleumandmining.go.ke/#> accessed on 28/08/2019

²³⁷ https://kplc.co.ke > img > full > WiUDxtboLpSw_Petroleum Act 2019 accessed on 28/08/2019

²³⁸ Section 16 The Petroleum Act, No. 2 of 2019

are beneficial to the environment and ensure sustainable use of natural resources. The state enjoys the monopoly of resources to be able to carry out this monitoring over a longer period of time.

4.1.3.3 Ministry of Labour and Social Services;

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 development. The Ministry is further tasked with ensuring that occupational health and safety standards are maintained in working environments across all work. This covers the workers in the Oil and Gas sectors- upstream, mid-stream and downstream. The government, through the Ministry is required to ensure this by carrying out inspections in the Oil and Gas exploration and production areas and engaging the employees within the industries in discussions on the various health and safety problems they encounter while working.

The basic requirements that must be adhered to as seen in the previous chapters, include provision of safety or protective gear, exposure to dangerous chemicals such as crude oil and gas, lack of adequate health services and availability of emergency medical services in the event of accidents which is a common occurrence. Through this the government has powers to compel stakeholder companies such as Tullow Oil to ensure that necessities are in place for a healthy and safe working environment.

A clean and healthy environment is not limited to the emissions and after-products of the exploration activities, it includes the immediate surrounding within which the workers operate in, within the facilities/plants as they are often the first line victims of the hazardous waste and pollution due to immediate contact. Also, the workers, if not well protected, often carry with them the pollutants into the extending society within which they reside hence a ripple effect of the negative effects of pollution.

Despite the Ministry recognizing all those key stakeholder, organisations in Kenya's economy who have continually provided Kenya's with significant employment opportunities thereby contributing to national revenue in addition to poverty alleviation. The Ministry therefore ought to take a firm and deliberate effort to ensure that, fundamental protections are not compromised, but high levels of safety and protection are guaranteed.

It is mandatory for an employer to ensure health, safety and welfare of persons at workplace. Employer must take measures to keep the workplace pollution-free by employing technical

measures, applied to plant or processes in design or installation, or added to existing plant or process; or by employing supplementary organizational measures.²³⁹

Employers must ensure safe working environment including its vicinity. Proper arrangements should be made to ensure safety and absence of health risks related to the use, handling, storage and transport of articles and substances. Provision and maintenance of workplace which is adequate regarding facilities and arrangements for the welfare of worker is also important.

Employer should provide and maintain safe and risk free means of access to and exit from the workplace. Workers must be well informed of the real and potential dangers associated with the use of the substance or machinery and they must be well equipped with personal protective equipment to prevent the risks of accidents or of adverse effects on health.²⁴⁰

4.1.4 National Oil Company

There exists a National Oil Company by name National Oil Corporation of Kenya (NOCK). The company has an E&P department that manages exploration activities on its licensed blocks.²⁴¹

NOCK also carries the following functions on behalf of the Cabinet Secretary:

- a) Assists in the negotiation of exploration licenses.
- b) Maintains the National Data Centre for all exploration data.

These services are not available in Kenya and are therefore provided by international service companies. These services includes, for example, drilling services, well services, rig hire, seismic acquisition etc.

4.1.5 Institutional Implementation of Clean and Healthy environment within the oil and gas industry.

The very informed laws, policies, guidelines and principles need to exist is a sound institutional set up for them to be realised. Before getting deep into the euphoria of being an oil producer, it is paramount that we take stock of this accumulated experience and institutional know-how, with a view to identifying innovative mechanisms for environmental standard-setting and

²³⁹ section 13 of Occupational Safety and Health Act, 2006

²⁴⁰ Ibid 183

²⁴¹ <https://nationaloil.co.ke/about-us/>

implementation directly related to some of the decision making ahead and the crucial institutions in this journey;

4.1.6 Judiciary

The Judiciary is the body responsible for administration of justice.²⁴² It is indicated in the Constitution of the Republic of Kenya 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.²⁴³

Article 42 of the Constitution is a fundamental right that must be protected by the Superior courts within the Kenyan judicial system hence, hence the judiciary is responsible for bringing to justice those who are guilty of breaching the environmental health and safety regulations and laws or implementation mechanisms aimed at realizing a clean and healthy environment. As one of the roles of law, being deterrence, it is aimed at deterring stakeholders within the oil and gas industry from violating the clearly set out guidelines, polices, laws and regulations. It is with that seriousness that the Constitution²⁴⁴ does establish specialised courts²⁴⁵ to preside over matters that relate to environmental protection, preservation and conservation. This has been enabled through the enactment of the Environment and Land Court Act.²⁴⁶ Section 13 of the Act empowers the court to appropriately deal with all issues as appertains to the environment. The oil and gas industry requires a unique and specialised approach to disputes within the sector. As it stands today, the judiciary is not adequately equipped to handle the diverse nature of the disputes, except for the contracts only- which are majorly commercial in nature.

The possible disputes likely to arise from the industry range from environmental disputes with the unique operations of the industry, this may require specialised trainings to be under taken so as to properly equip judicial officers with the requisite knowledge.

4.1.7 Civil Society

Civil Society Organizations (CSOs) are crucial players in any country's developmental agenda. They play crucial roles socially, economically and politically. For any country to grow

²⁴² Article 159 of the Constitution.

²⁴³ Article 1(3) (c) of the Constitution.

²⁴⁴ Constitution of Kenya, 2010

²⁴⁵ Article 162 (2) (b)

²⁴⁶ Chapter 12A, Laws of Kenya.

economically, it requires large presence of actively involved CSOs most of its sectors if not all. The effectiveness and efficiencies of such CSOs can transform any economy to an upwards trend with little ease. They are perceived “agents” of development in any given economy as they play a significant role politically, socially and economically.²⁴⁷ Socially, the development role can be viewed in two ways. First, improving decision making processes within the society of their operation through provision of education, up to date and relevant information. Secondly, providing social protection by implementation of social protection systems through integration of human rights and most importantly, holding to account the mandated authorities in implementation of their mandate.

As has been the case, various civil society organisations have risen to the occasion to protect fundamental environmental rights through the judiciary, various milestones have been achieved; cases such as

- i. *Advocates Coalition for Development and Environment (ACODE) v Attorney General*,²⁴⁸ where the 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 favour of the Applicants and the license was revoked basing on the private company failing to provide the project brief.
- ii. In the East African Court of Justice, the case of *African Network for Animal Welfare (ANAW) –V- The Attorney General of the United Republic of Tanzania*, where the Applicants filed to challenge the proposed action by the Government of the United Republic of Tanzania to construct and maintain a road known as the “*Natta-Mugumu – Tabora B-Kleins Gate – Loliondo Road*”, across the Serengeti National Park. The road is said to have been intended for the use of the general public with all the attendant consequences to the environment, generally. Subsequently, the court found that proposal or the proposed action by the Respondent to construct a road of bitumen

²⁴⁷ An International Multidisciplinary Journal, Ethiopia Vol. 8 (1), Serial No. 32, January, 2014:205-227

²⁴⁸ Miscellaneous Cause No. 0100 of 2004 (13 July 2005)

standard across the Serengeti National Park is unlawful and infringes Articles 5(3)(c),8(1)(c),111(2) and 114(1) of the Treaty thereby issuing a permanent injunction against the project.

Having been a watchdog and an active protector of human rights, it is incumbent that these section of society gains its footing within the industry at an early stage so as to push for implementation of regulations and polices- to protect the environment, enforce Article 42 of the Constitution, guarantee safe labour practices and strict adherence to the law as is.

It is through civil society that government projects have been halted and also, pressure has been imposed on the stakeholders to comply with the law as has been exhibited in the above cases.

4.2. Other Stakeholders

4.2.1 International Oil & Gas Companies (IOCs)

International oil and gas companies in the upstream sector are licensed by the government to carry out exploration and production activities. They take the role of the contractor under the PSC.

International oil companies working in the upstream segment are of different sizes and structures. Some companies fully integrated with both downstream and upstream activities while others focus on upstream only. Other upstream oil companies which are much smaller focus on opening new frontier areas for exploration and leave their larger counterparts to progress with the work.²⁴⁹

4.2.2 Direct services

These are services that directly complement the specialist services allowing the specialists to focus on their primary technical activities. These services require less technical specialization than the specialist services but also require strict compliance to safety and operational standards. Provision of these services also requires significant capital investment.²⁵⁰

Some of these services are available in Kenya and are provided by international and local companies. Examples of these type of services include: field and camp construction, infield transport and logistics, civil works as well as mechanical and electrical services, environmental services (EIAs), site preparation, and provision of construction materials, among others.

²⁴⁹ Ibid

²⁵⁰ ibid

4.2.3 Indirect services

Indirect services are peripheral services to both specialist and direct services. They are much less specialized in terms of the level of technical expertise and labour skills required compared to the above two types. Also, the level of capital investments needed is substantially lower. These services are widely available and well serviced in Kenya, and are mainly offered by local and regional companies.²⁵¹

4.2.4 Service Companies

Service companies are the providers of goods and services that are used in the exploration and production life cycle.

Services in the upstream oil and gas industry in Kenya can be classified according to the following criteria: Specialist Services, Direct Services and Indirect Services.

4.2.5 Specialist Services

Specialist services usually require heavy investment, adherence to strict standards to safeguard safety in operations and high technical expertise in the technology and labour skills used. The labour used in the provision of specialist services are required to have long global experience working in the oil and gas industry. To keep up with technological requirements large spending in research and development is also a characteristic.

Geological and geophysical surveys can take up to 3 years in the exploration life cycle. Their main purpose is in the identification of prospects and identify areas where exploration drilling will be located. These processes do not discover presence of oil or gas. Only drilling can.

Conclusion

Access to the sustainable use of natural resources is an economic incentive for participating in many international regimes aimed at reconciling rational exploitation and conservation: Because selective incentives by definition lead to special treatment for selected stakeholders, they skew an otherwise symmetrical system of reciprocal rights and obligations. This must therefore be emphasized from the beginning so as to define the scope of engagement in relation to the standards expected from each player. Indecisiveness or double standards in implementation will likely manifest into discrimination, particularly in the case of last-minute "add-ons," can seriously expose the environment to a compromise. Consequently, a more straightforward alternative is to start out

²⁵¹ *ibid*

with an asymmetrical regime that does not even pretend to compromise on the standards set out and their implementation thereto, equally, and firmly according to each party's special circumstances and obligations.

CHAPTER 5

SUMMARY OF RESERCH FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Oil and gas industry operations occur in some of the world's most environmentally and culturally sensitive regions including archaeological, architectural, cultural, natural and social heritage sites and resources including National Parks. Kenya is no exception to this phenomena. The collaboration between oil and gas exploration companies and the national research and conservation institutions especially in the upstream sector have ensured that recognition and avoidance of these sites has significantly improved. Currently the national cultural heritage resources are managed and regulated under the National Museums and Heritage Act, 2006.

The Kenya Heritage Authority Bill 2015, seeks to repeal the National Museums and Heritage Act, 2006 to align the law to the Constitution of Kenya and in particular to devolve the functions of the preservation, protection and management of national heritage resources to the Counties. Section 40 (1) (a) of the Bill 2015 provides for development and publication of policies and principles for management of heritage resources in Kenya.

States are charged with the responsibility of protecting human rights within their jurisdiction. Companies are also charged with the responsibility of respecting human rights. Therefore, borrowing from the Report,²⁵² states may take steps, such as tightening their environmental and petroleum laws, to ensure that multinational companies are held liable for pollution within their territories.

We have seen under chapter two that exploitation of oil and gas has immense adverse effects on the environment. We have also demonstrated that Kenya has legislated laws that addresses the need for a clean environment as outlined under article, 42, 69, 70, 71 and 72 under the Constitution of Kenya, but yet to put in place stringent systems and measures for the Oil and gas industry. Bearing in mind the principles that this research is premised on; **Public participation, principles of prevention and precaution** so as to achieve **sustainable development** we recognize the existence of laws but notwithstanding this fact, our environmental rights under Article 42 of COK

²⁵² Ruggie, J. (2010) *Human Rights and Transnational Corporations and Other Business Enterprises, Business and Human Rights: Further Step towards the Operationalization of the 'Protect, Respect and Remedy' Framework*, 14th Session, Human Rights Council, paras. 10-33.

have continued to be derogated without any proper address to the same, and it is a legitimate fear that, if measures are not taken to redress the same, this may end up as a curse, rather than a blessing.

In this chapter therefore, we summaries some of the issues that are likely to affect the effective implementation of the available legal instruments and there after provide recommendations that we think would be appropriate to mitigate the challenges or be measures that can assist in legal adherence.

Without adequate environmental safeguards, oil and gas development can cause widespread air, water and soil pollution and adversely impact public health as a consequence of factors outlined in chapter two. Oil and gas exploration and production activities involve a range of chemicals, including explosives and radioactive substances. Related excavation activities also produce hazardous waste materials and greenhouse gas emissions.

Therefore, the Research questions to this study have been answered and the hypothesis proved as a result of the below findings and the subsequent recommendations;

5.2 Some of the Findings.

It is not the first time that Kenya is investing in Oil and Gas exploration. There are several instances dating from 1960's where Kenya has shown intentions of exploring the oil and gas industry. However Kenya's happiness to do oil and gas exploration is likely to be cut short by the in-eptude towards ensuring a strengthened legal framework. The challenges affecting the oil and gas industry as far as controlled environmental pollution is concerned are thus;

5.2.1 Willful disobedience of by relevant institution is a challenge.

NEMA has been on the spot for flouting regulations and policies created pursuant to the EMCA and EIA. Of most recent is when NEMA approved the construction of a liquefied petroleum gas (LPG) store in Mombasa despite stiff opposition from stakeholders. The approved EIA licence was issued despite unfavorable location of the site and unquantifiable threat posed to the hundreds of residents of the area and both marine and dry environment surrounding the site.²⁵³ A more recent flop by NEMA is when the Environment court ordered a fresh EIA study to be conducted.²⁵⁴

²⁵³ Standard Newspaper 16th April, 2019

²⁵⁴ Save Lamu & 5 others v National Environmental Management Authority (NEMA) & another [2019] eKLR

When institution given the authority to ensure compliance to environment regulations willfully overlook its mandate and becomes a bandit then our right to clean and health environment is compromised in its entirety.

5.2.2 Investment Costs is a hindrance to actualizing the exploitation.

As it stands, the law presupposes that all minerals within its jurisdiction belong to the state hence the exclusive jurisdiction to contract on the same with the oil exploration and development firms. However, the PSC do not apportion any cost on the state, but instead onto the explorer. Since every venture has a business sense, the Companies tend to use substandard procedures so as to cut costs and maximize on profits; some of which end up exposing the environment to harm. It would be prudent to restructure the contracts through incentives within the tax regime while strictly enforcing environmental policies and regulations so as not to “trade in the environment” with production benefits.

5.2.3 Lack of proper training and capacity building is a hindrance in enforcement and compliance

Kenya is no stranger to oil-related disasters. Between 1988 and 2013 it experienced five oil spills in Mombasa County. Call it happenstance, when one day after the training an oil spill occurred in the Kibarani area. The incident saw five cargo wagons derailed and discharge about 68,000 litres of oil to the ground.²⁵⁵ One of the reason that the then Kenya Maritime Authority Environmental Officer was that when the oil spill happened in Kibarani, they had just finished a training and had an opportunity to immediately put into practice the knowledge acquired from the experienced technical experts. Notwithstanding fatalities were recorded.²⁵⁶

5.2.4 Infrastructural Development has not been prioritised by the state, hence exposing the environment

A key safety measure that would guarantee high levels of safe, healthy and clean environ includes the need for the state to ensure development of key infrastructural projects that support the oil and gas industry. It is unsustainable to use road transport for the crude oil from Turkana to Kipevu, hence the need to fast track the LAPSSSET project.²⁵⁷

²⁵⁵ <https://www.unenvironment.org/news-and-stories/story/greasing-wheels-kenyas-nascent-oil-and-gas-sector>

²⁵⁶ Ibid

²⁵⁷ LAPSSSET is a regional project between the countries of Ethiopia, Kenya and South Sudan with an aim of linking them to each other, and to their neighbors in Eastern Africa.

5.2.5 Waste Disposal has not been prioritised as part of crucial infrastructural installations

Waste from the oil field is usually transported in NEMA licensed trucks to the disposal sites. These trucks cover long distances (over 650Km away) on dust roads, with insecurity and thus make the cost of transportation very high, adding to the cost of waste disposal and eventually cost of oil and gas exploration and drilling especially in the early oil production scheme. On average, a truck will take at least five days to travel to the oil field to collect waste and return to the disposal site located in Stony Athi, Machakos County, near Nairobi. During this process of collection and transportation, a waste tracking form is usually filled upstream and this in turn is signed by the waste receiver to confirm the receipt of the very particulars collected from the field. This tracking form is a legal document from NEMA and all waste transporters must fill it. This is also to ensure that the transporter accounts for all the waste and reports any spill just in case it so happens.

5.3 Recommendations

Long- Term Recommendations;

5.3.1 Use of prescriptive approach

The prescriptive or “command and control” approach is based on legislations indicating specific requirements made by government, to be met by operators. The regulations clearly spell out structural, technical, and procedural requirements to address environmental, health and safety hazards. This makes it relatively easy for government to determine, via an inspection procedure, whether an operator is meeting the requirements. Thus, it is convenient for the Government of Kenya to adopt this approach by setting mandatory environmental codes and standards to regulate and monitor activities of companies in the oil and gas industry.

These standards must include general guidelines for the preparation of an environmental impact assessment and detailed guidelines for the preparation of an environmental management plan to be submitted by firms before the commencement of operations. It is very important that environmental impact assessment be undertaken prior to the commencement of oil exploration and development, and, when discovered that it can potentially impact the environment negatively, the companies involved would be required to indicate what mitigation measures would be employed to contain the situation.

The standards must also include acceptable limits of concentrations of compounds and chemicals in effluent discharges generated through the operations of the various companies. Equally

importantly should be the application of the “polluter pays” principle to ensure that producers of wastes that cause environmental damage are made to pay compensation and the cost of remediation.

5.3.2 Environmental education and awareness

This can be part of critical long-term strategies focused on promoting behavioral change to support sustainable audiences ranging from the general populace to children in schools, to public servants in government, to private institutions. These actions can easily accommodate environmental messages without drawing significantly on additional resources. By simply weaving in topics about environmental quality, actions being taken by Nigerians at the local level related to conservation, and drawing on the growing NGO community can be conscious steps that will lead to increased awareness.

Finally, there are not enough health facilities and emergency service providers should accidents occur. It is therefore important to deliberately train different groups with the specialised skills on how to handle and manage accidents, emergencies and issue with the industry. This has to be sector specific, because of the unique kind of dangers that are likely to arise.

5.3.3 Emerging Environmental Issues arising from Oil and Gas exploitation.

Oil and Gas exploration has been conducted on various occasions without due regard of its impact on the environment. The most rudimentary definition of the word ‘Environment’ has always been that it means ‘our surrounding’. In this regard we are going to look at the effects that exploration of oil and gas has on our surrounding. Under the Constitution,²⁵⁸ Article 42, guarantees every citizen the right to enjoy a clean environment. Further the government is required to put in such measures, be they policies, regulations or statutes to ensure that sustainable standards of clean environment is achieved and in this effort parliament enacted the Environment Management and Co-ordination Act (EMCA 2012). These policies, regulations, statutes and treatise will be given much attention under chapter three.

It is consensual that oil and gas exploitation has considerable adverse effects on soil, water, resources and animal life due to the toxic nature of chemicals discharged from oil spills and the after effects of attempted exploration. Oil spills have also led to extensive deforestation with

²⁵⁸ Constitution of Kenya 2010

inadequate replanting practices.²⁵⁹ It was found heavy metal concentration in Warri area of Nigeria and that the oil industry constituted a potential hazard to its immediate environs due to the high levels of heavy metals observed.²⁶⁰ Agriculture which is the main stay of the rural economy of the area is therefore threatened and human life invariably in danger.

There is a growing persuasion worldwide for the inclusive adherence to various sustainable development policies when it comes to various countries coming together with the aim of protecting the environment. Principle 4 of the Rio Declaration captures this challenge.²⁶¹

5.3.4 The Need for Environmental Protection in Kenya

The increased impact of human activity on nature tends to undermine the natural balance. Instability in the natural balance manifests itself in environmental degradation and consequently, the subject matter of environmental law is to put in place measures to ensure that human activities do not lead to environmental degradation. Although humans have an impact on nature because they depend on it for their sustenance, environmental law comes in to offer a regulation interface for the purpose of sustainable exploitation of resources, in a way that upholds the spirit sustainable development.

5.3.5 Waste disposal sites

High temperature incineration remain the only sole methodology of handling hazardous waste and that has been licensed and recognized by the Kenyan law. This technology, is however costly and Kenya does not have the capacity to handle the volumes produced by the oil drilling industry. The private sector cannot offer the solution as this is very expensive. The incineration sites only exist in Nairobi and this increases the cost of transport of the hazardous wastes. The incineration plants have however developed soil-washing technology in a bid to reduce the volumes of waste going through the incinerators. These acts as a pre-treatment and a reduction process before incineration.

It would therefore add more value to the cycle if these sites would be located within the upstream environment as opposed to Nairobi, which is merely but within the transport corridor. This would reduce on the costs and mitigate the damage at the point of waste production.

²⁵⁹ Fagade, S.O. *An assessment of the impact of pollution on the fishes and fisheries of Port-Harcourt, Nigeria*, Niger Development Authority

²⁶⁰ Essoka, P, A. Ubogu, A, & Uzu L, *An overview of Oil pollution and heavy metal concentration in Nigeria*, AIJ, 17(2); 209-215

²⁶¹ In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Short-Term Recommendation;

5.3.6 Policy and Regulation enhancement

There is need to have more policies that protect the health and safety of workers besides the general provisions of the occupational safety and health act. Currently, there are no policy guidelines that look at how health and safety is monitored, especially within the industry. These are needed to govern the industry's hazardous work operations like; rigging safety, flaring of gas, drilling or chemicals handling, and protection of the workers as opposed to having a profit centered approach, regardless of the aftermath on the lives of the workers.

Policies should be created by the Ministry of Petroleum and Mining in collaboration with the other relevant ministries; Labour, Environment and Health.

Other policies that need to be reviewed include those related to reducing the risk of fires – current legislation only deals with small workplace fires – and those related to first aid. The industry poses a major risk of having disastrous fires, and as opposed to having a knee-jack reaction to put in place measures, it is prudent to set the standards and regulation that ought to attract sanctions against any violation.

Regulations must also be drawn up to cover community health and safety. These don't exist yet the impact of oil and gas operations goes beyond the workplace. Corporate social responsibility cannot be enough, when it comes to apportioning responsibility upon the Contracting companies. The approach ought to be – duty bound as opposed to public relations.

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