

**LEGAL FRAMEWORK FOR OIL EXTRACTION AND ITS IMPACT ON THE ENVIRONMENT
IN PROTECTED AREAS IN UGANDA: A CASE STUDY OF MASINDI DISTRICT**

GODWIN AGABA

S22M23/001

**A DISSERTATION SUBMITTED TO THE SCHOOL OF LAW IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF MASTER OF LAWS IN OIL AND
GAS OF UGANDA CHRISTIAN UNIVERSITY**

May, 2024



**UGANDA CHRISTIAN
UNIVERSITY**

A Centre of Excellence in the Heart of Africa

Declaration

I, Agaba Godwin, hereby declare that, this dissertation entitled **LEGAL FRAMEWORK FOR OIL EXTRACTION AND ITS IMPACT ON THE ENVIRONMENT IN PROTECTED AREAS IN UGANDA: A CASE STUDY OF MASINDI DISTRICT** is my work and has not been submitted before to any other Institution of higher learning for fulfilment of any Academic Award.



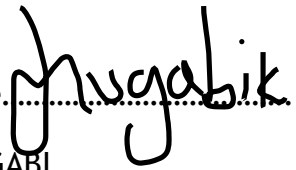
Signed.....

.....

Date. 01st of May 2024.

Approval

This is to certify that, this dissertation entitled **LEGAL FRAMEWORK FOR OIL EXTRACTION AND ITS IMPACT ON THE ENVIRONMENT IN PROTECTED AREAS IN UGANDA: A CASE STUDY OF MASINDI DISTRICT** has been done under my supervision and now it is ready for submission.

Signature.....

IVAN MUGABI

(Supervisor)

Date.....01/05/2024.....

Dedication

This dissertation is dedicated to my dear parents, my awesome wife and children for their patience, prayers, love and support through the years I have spent pursuing the course.

Acknowledgements

With thankful and heartfelt appreciation, I acknowledge the contribution of my supervisor Mr. Ivan Mugabi for his ever ready charisma and academic guidance, commitment and readiness to help towards the completion of this work. May the Almighty God bless him abundantly.

I acknowledge with gratitude the contributions and co-operation made by team, Community members in Masindi, UWA, Masindi district officials and all the people that spared their time and resources to participate in this research. Your willingness to provide the necessary data and information when I visited your respective offices during the process of this research has made it possible for me to accomplish this study.

Special thanks to my classmates who often teamed up with me to accomplish assignments. I owe you a lot. Finally, for those not mentioned here, thanks very much for your contribution.

Table of Contents

Contents

Declaration	i
Approval	ii
Dedication	iii
Acknowledgements	iv
Table of Contents	v
List of Tables	viii
List of Acronyms and Abbreviations	x
Abstract	xi
CHAPTER ONE:GENERAL INTRODUCTION	1
1.0 Introduction.....	1
1.1 Back ground to the study	2
1.2 Statement of the problem	6
1.3 Purpose of the study.....	7
1.4 Objectives of the study	7
1.5 Scope of study.....	7
1.5.1 Content scope.....	7
1.5.2 Geographical scope.....	8
1.5.3. Time scope.....	8
1.6 Research hypotheses	8
1.7 Theoretical framework.....	9
1.8 Significance of the study.....	10
1.9 Justification of the study	11
CHAPTER TWO:LITERATURE REVIEW	14
2.0 Introduction.....	14
2.1 Theoretical review.....	14
2.2 Empirical literature.....	16
2.2.1 Exploration and production licenses and the environmental impact of oil activities in protected areas	16
2.2.2 Effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities	17
2.2.3 Health and safety standards and the environmental impact of oil activities in protected areas.....	19
2.2.4 Summary of literature review	21
CHAPTER THREE:METHODOLOGY	23

3.1 Introduction.....	23
3.2 Research design	23
3.4 Study population	23
3.5 Sample size determination	24
3.6 Sampling Techniques and Procedures	24
3.6.1 Simple random sampling.....	24
3.6.2 Purposive sampling	25
3.7 Data Collection Methods	25
3.7.1 Questionnaire survey.....	25
3.7.2 Interview.....	25
3.8 Data Collection Instruments.....	26
3.8.1 Questionnaire	26
3.8.2 Interview Guide.....	26
3.9 Data Quality Control.....	27
3.10 Data Collection Procedure	29
3.11 Data Analysis	29
3.11.1 Quantitative data analysis	29
3.11.2 Qualitative Data Analysis.....	30
3.12 Measurement of Variables	30
3.13 Ethical considerations	32
CHAPTER FOUR:PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS ...	34
4.1 Introduction.....	34
4.2 Response rate.....	34
4.3 Background data of the respondents.....	35
4.4 Empirical findings.....	37
4.4.1 To scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda descriptive statistics	37
4.4.1.1 The nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District.....	42
4.4.1.1 Correlation analysis for exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District.	42
4.4.1.3 Regression for exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district.	43
4.4.2 To assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda descriptive statistics.....	46

4.4.3.1 To examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda.	56
4.4.3.2 Correlation analysis for health and safety standards and the environmental impact of oil activities in protected areas in Masindi district	56
4.4.1.3 Regression for decision making and performance of Infectious Diseases Institute.....	57
4.4.4 To compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.	59
CHAPTER FIVE:DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS.....	69
5.0 Introduction.....	69
5.1 Discussion	69
5.2 Conclusions	79
5.3 Recommendations.....	82
5.4 Areas for further research	87
REFERENCES	90
APPENDICES.....	93
Appendix I: Questionnaire for Local community members (Neighbouring protected area).....	93
Appendix II: Interview Guide for UWA Murchison NP Top managers, Oil officials, and Masindi district Opinion leaders	98
Appendix III: Table for determining sample size from a given population	101

List of Tables

Table 3.1: Showing sample size by population categories.....	21
Table 3.2: Content Validity Indices for the Questionnaire.....	24
Table 3.3: Reliability indices for the respective sections of the questionnaire.....	25
Table 4.1: Response rate.....	30
Table 4.2: Background information of the respondents.....	31
Table 4.3: Descriptive statistics on exploration and production licenses.....	33
Table 4.4: Correlation results for exploration and production licenses and the environmental impact of oil activities in protected areas.....	36
Table 4.5: Showing Model Summary for the effect of exploration and production licenses on the environmental impact of oil activities in protected areas in Masindi district.....	38
Table 4.6: Showing Analysis of Variance (ANOVA ^a) of exploration and production licenses...40	
Table 4.7: Showing Standardized Coefficients of exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district.....	31
Table 4.8 Descriptive statistics on effectiveness and relevance of environmental regulations...36	
Table 4.9 Health and safety standards descriptive statistics.....	37
Table 4.11: Correlation results for health and safety standards and the environmental impact of oil activities in protected areas in Masindi district.....	38
Table 4.12: Showing Model Summary for health and safety standards and environmental impact of oil activities in protected areas.....	40
Table 4.13: Showing Analysis of Variance (ANOVA) of health and safety standards and environmental impact of oil activities.....	44
Table 4.14: Showing standardized Coefficientsa of health and safety standards and environmental impact of oil activities in protected areas, Masindi district.....	49
Table 4.15: Descriptive statistics on successes, weaknesses, and existing gaps in the current legal framework governing oil extraction.....	50
Table 4.16: Descriptive statistics on environmental impact of oil activities in protected areas in Masindi District, Uganda.....	55

List of Acronyms and Abbreviations

ANWR	Arctic National Wildlife Refuge
CSR	Corporate Social Responsibility
CVI	Content Validity Index
DRC	Democratic republic of Congo
E&P	Exploration and Production
EIA	Environmental Impact Assessment
ILO	International Labour Organization
IOGP	International Association of Oil and Gas Producers
MFNP	Murchison Falls National Park
QENP	Queen Elizabeth National Park
SDGs	Sustainable Development Goals

Abstract

This study comprehensively examines the relationship between the legal framework governing oil extraction and the resulting environmental impact of oil activities within protected areas in Masindi District, Uganda. Guided by specific objectives, it scrutinizes the nexus between exploration and production licenses and environmental impact, assesses the effectiveness of environmental regulations, explores the correlation between health and safety standards and environmental impact, and compares successes, weaknesses, and existing gaps in the current legal framework. The study employs both quantitative and qualitative approaches, with a sample size of 159 respondents selected using simple and purposive sampling techniques from a population of 233 participants. Quantitative data analysis includes descriptive statistics and inferential statistics such as Pearson correlation, while qualitative data is analyzed through content analysis. Findings reveal a slight positive relationship between exploration and production licenses and environmental impact, and a high positive correlation between health and safety standards and environmental impact in protected areas of Masindi District. The study concludes that the interplay between exploration and production licenses, environmental regulations, health and safety standards, and the legal framework highlights complex dynamics. While successes in environmental protection and community consultation exist, weaknesses persist in safety prioritization and transparency. Recommendations include strengthening community engagement, improving safety measures, and increasing transparency in licensing processes to ensure sustainable oil extraction practices and minimize environmental impacts. Further research is needed to address existing gaps and enhance the effectiveness of regulations.

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

The presence of a legal framework for oil extraction which is respected and upheld plays a crucial role in governing operations of the oil industry and shaping its outcomes. This framework encompasses a range of interconnected variables that interact and influence one another, and consequently creating a complex network of causal relationships¹. Environmental regulations and health and safety standard are interconnected variables of the legal framework that aim to mitigate the negative impacts of oil extraction on the environment and human well-being²³. The financial aspects of oil extraction, including government revenue and oil company profitability, are influenced by royalty and taxation regimes⁴. These regimes play a crucial role in determining the amount of money the government earns and the profitability of companies involved in oil extraction. The legal framework also establishes contractual arrangements between the government and oil companies, governing their rights, obligations, and revenue-sharing⁵. Dispute resolution mechanisms provide avenues for resolving conflicts that may arise between stakeholders. Regulatory authorities ensure compliance with the legal framework and promote effective governance. For purposes of this study, the legal framework

¹ A causal relationship refers to a cause-and-effect connection between two or more variables or events, where one variable (the cause) directly influences or brings about a change in another variable (the effect).

² Smith, E., et al. (2018). Environmental Regulations and Oil Extraction: A Comparative Analysis. *Environmental Law Journal*, 30(1), 45-62.

³ Jones, S. (2016). Health and Safety Standards in the Oil and Gas Sector. *Occupational Health Review*, 52(4), 210-225. ³ Brown, R., & Lee, T. (2019). The Economic Impact of Royalty Rates on Oil Extraction. *Journal of Energy Economics*, 25(3), 78-92.

⁴ Davis, M. (2020). Local Content Requirements in the Oil and Gas Sector: A Comparative Analysis. *Journal of Natural Resources Law*, 15(2), 145-168.

⁵ Anderson, J. (2017). Contractual Arrangements in the Oil and Gas Industry. *Law and Policy for the New Economy*, 47-56. ⁶ Jackson, R. (2015). Dispute Resolution Mechanisms in the Oil Industry: A Comparative Study. *International Journal of Dispute Resolution*, 10(1), 67-85.

regulation decommissioning was the centre of this study. This research aimed to analyze the causal relationship between the legal framework for oil extraction and the environmental impact of oil activities in protected areas in Masindi district, Uganda⁶.

1.1 Back ground to the study

Different regions across the world exhibit variances in the historical evolution of their environmental impacts on oil activities in protected areas. In America, one prominent case is the exploitation of oil resources in the Arctic National Wildlife Refuge (ANWR) in Alaska. The oil activities in this protected area have raised concerns about habitat disruption, potential spills, and adverse effects on wildlife populations.⁷ Similarly, in Europe, the extraction of oil in the North Sea has caused significant environmental consequence such as oil spills, marine pollution and the disruption of fragile ecosystems.⁸

Moving to Asia, the oil industry's expansion in the Niger Delta region in Nigeria has resulted into severe environmental degradation. Oil spills, gas flaring, and the discharge of toxic waste have contaminated water bodies, devastated agricultural land, and negatively impacted local communities.⁹ In Africa, another notable case is the exploration and extraction of oil in Virunga National Park in the Democratic Republic of Congo. Virunga National Park, located in eastern DRC, is one of Africa's oldest and most bio-diverse national parks. It is a UNESCO World Heritage Site and

⁶ Garcia, L. (2018). Role of Regulatory Authorities in the Oil and Gas Industry. *Energy Policy*, 40(2), 123-136.

⁷ Smith, E., et al. (2019). Environmental Impacts of Oil Activities in the Arctic National Wildlife Refuge. *Arctic Journal of Environmental Studies*, 48(3), 275-291.

⁸ Jones, R., & Brown, T. (2017). Environmental Consequences of North Sea Oil Activities. *Marine Pollution Bulletin*, 55(4), 201-215.

⁹ Okonkwo, C. (2016). Environmental Degradation in the Niger Delta: Exploring the Causes, Consequences, and Remedies. *Environmental Science and Pollution Research*, 28(1), 45-62.

home to a wide range of wildlife, including endangered mountain gorillas. The park's unique ecosystem and its significance for conservation have made it a matter of international concern.¹⁰ The DRC government has granted concessions to oil companies for exploration and drilling activities within the boundaries of the park. This move has sparked significant criticism from environmentalists, conservationists, and international organizations, who argue that oil extraction poses severe threats to the park's delicate ecosystem, wildlife, and the livelihoods of local communities that depend on the park for sustenance and income. This UNESCO World Heritage site is a home to many critically endangered species, and oil activities have raised concerns about deforestation, habitat loss, and increased poaching.¹¹ The environmental impact of oil activities in protected areas has been a significant concern. Another notable case is the Niger Delta region in Nigeria, where the exploration and extraction of oil have resulted in severe environmental degradation. The Niger Delta is home to diverse ecosystems and communities that rely on the region's natural resources. However, oil spills, gas flaring, and the discharge of toxic waste have contaminated water bodies, devastated agricultural land, and caused health issues for local populations.¹² The continuous environmental degradation has led to the loss of biodiversity, disruption of aquatic ecosystems, and the decline of fish populations, impacting the livelihoods of local communities. The exploration of oil in East Africa, particularly in Uganda's Albertine Graben, including protected areas like Murchison Falls National Park (MFNP) and Queen Elizabeth National Park

¹⁰ Johnson, M. (2018). Oil Activities and Environmental Impact in Virunga National Park. *Environmental Conservation Journal*, 45(2), 112-128

¹¹ Johnson, M. (2018). Oil Activities and Environmental Impact in Virunga National Park. *Environmental Conservation Journal*, 45(2), 112-128.

¹² Okonkwo, C. (2016). Environmental Degradation in the Niger Delta: Exploring the Causes, Consequences, and Remedies. *Environmental Science and Pollution Research*, 28(1), 45-62.

(QENP), has raised environmental concerns due to their rich biodiversity and ecological significance. The oil exploration process involves seismic surveys, drilling, and infrastructure development, which can lead to habitat disruption, water pollution, and the displacement of local communities.¹³ These activities pose a risk to wildlife populations, including endangered species such as elephants, chimpanzees, and rare bird species.

To address these concerns, governments in East Africa have recognized the need for a robust legal framework and environmental regulations to govern oil activities in protected areas. In Uganda, for instance, the government has enacted legislation such as the National Environment Act and the Petroleum (Exploration, Development and Production) Act to regulate oil activities and ensure environmental protection.¹⁴ Environmental impact assessments are conducted to identify potential risks and propose suitable mitigation measures. However, the effective implementation and monitoring of these regulations remains a challenge, and there is a need for enhancing capacity and enforcement mechanisms to safeguard the environment and the wellbeing of local communities. Additionally, civil society organizations, local communities, and international stakeholders have been actively involved in advocating for environmental protection in East Africa. Civil Society Organizations play a vital role in raising awareness, promoting sustainable practices, and holding oil companies accountable for their environmental responsibilities. These efforts aim to strike a balance between economic development and environmental

¹³ Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.

¹⁴ Okot-Okumu, J. (2019). Environmental Regulations and Oil Activities in Uganda: Challenges and Prospects. *Journal of Natural Resources Law*, 20(2), 156-174.

conservation, ensuring that the extraction of oil resources does not irreversibly harm the region's natural heritage.

Zooming in on Uganda, the exploration and potential extraction of oil in the Albertine Graben, has been extensive enough to include protected areas like Murchison Falls National Park and Queen Elizabeth National Park, and thus raising significant environmental concerns. The potential impact also includes habitat disruption, water pollution, and the displacement of local communities.¹⁵ The legal framework and environmental regulations in Uganda have been developed to address these concerns, but effective implementation and monitoring remain inadequate for mitigating environmental impacts.¹⁶

The Masindi case study in Uganda offers insights into environmental impact of oil activities in a specific region. Masindi, located in the Albertine Graben, has experienced significant environmental changes due to oil exploration and production.¹⁷ The exploration phase involved seismic surveys and exploratory drilling, which resulted in land clearance, removal of vegetation, and the disruption of natural habitats. Additionally, the construction of infrastructure, such as roads and drilling pads. These activities have led to soil erosion, deforestation, and fragmentation of wildlife habitats. Oil spills and wastewater discharge have polluted water sources, affecting aquatic ecosystems and the availability of clean water for local communities. The case study Masindi highlighted the need for comprehensive environmental impact assessments, effective mitigation measures, and long-term

¹⁵ Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.

¹⁶ Okot-Okumu, J. (2019). Environmental Regulations and Oil Activities in Uganda: Challenges and Prospects. *Journal of Natural Resources Law*, 20(2), 156-174.

¹⁷ Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.

monitoring to address the environmental challenges associated with oil activities in protected areas.

1.2 Statement of the problem

Current oil activities in protected areas presents a pressing environmental challenge. Despite the presence of legal frameworks and regulations, the negative consequences of oil extraction on fragile ecosystems and local communities persist. Evidence from various regions, such as the Niger Delta in Nigeria and the Albertine Graben in Uganda, highlights the adverse impacts of oil activities, including habitat disruption, water pollution, loss of biodiversity, and the displacement of indigenous communities.¹⁸¹⁹ If this problem is not effectively addressed, the consequences are likely to escalate further, resulting in irreversible environmental damage and long-term socio-economic repercussions. Continued habitat degradation and pollution can lead to the loss of critical biodiversity, ecosystem collapse, and the disruption of ecosystem services that are essential for human well-being and sustainable development. Moreover, the displacement of local communities, damage to livelihoods, and conflicts over resources can exacerbate social tensions and contribute to a cycle of poverty and instability in affected regions. Urgent action is necessary to mitigate the environmental impacts of oil activities in protected areas to safeguard ecosystems, preserve biodiversity, protect communities, and promote sustainable development in the face of an ever-increasing global demand for energy resources. This study sought to examine and analyze the relationship between the

¹⁸ Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.

¹⁹ Okonkwo, C. (2016). Environmental Degradation in the Niger Delta: Exploring the Causes, Consequences, and Remedies. *Environmental Science and Pollution Research*, 28(1), 45-62

legal framework for oil extraction and the environmental impact of oil activities in protected areas in Masindi district, Uganda.

1.3 Purpose of the study

The purpose of the study is to comprehensively examine the intricate relationship between the legal framework governing oil extraction and the consequential environmental impact of oil activities within protected areas in Masindi District, Uganda.

1.4 Objectives of the study

1. To scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda.
2. To assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda.
3. To examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda.
4. To compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.

1.5 Scope of study

1.5.1 Content scope

The study comprehensively examined the intricate relationship between the legal framework governing oil extraction and the consequential environmental impact of

oil activities within protected areas in Masindi District, Uganda. The study covered the nexus between exploration and production licenses and the environmental impact of oil activities, the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities, the correlation between health and safety standards and the environmental impact of oil activities, and successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.

1.5.2 Geographical scope

The study was carried out in western Uganda in Masindi district. The area was selected for the study because it has Murchison falls National Park, a protected area and falls within the Albertine oil Graben. These are typical features that the study sought to examine in view of the existing legal framework work on oil.

1.5.3. Time scope

The study covered the period 2015 to date. There have been numerous developments in oil sector and legal framework and its impact on environment. These were analysed in the context of 2015 to date.

1.6 Research hypotheses

1. There is no significant relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda.
2. There is no significant relationship between health and safety standards and the environmental impact of oil activities in protected areas in Masindi district, Uganda.

1.7 Theoretical framework

Environmental Impact Assessment (EIA) Theory advanced by Lawrence Canter and Ian Ross in 1977 guide the study.²⁰ The Environmental Impact Assessment (EIA) theory posits that the systematic evaluation of the potential environmental impacts of proposed projects, policies, or activities is essential for sustainable development. Canter and Ross argued that the assessment process should be carried out prior to decision-making to identify, predict, and mitigate the potential adverse effects on the environment. The theory assumes that through a comprehensive assessment, including baseline studies, impact prediction, and identification of mitigation measures, environmental risks can be effectively managed. The proponents believed that EIA would enhance decision-making, promote environmental protection, and facilitate the integration of environmental considerations into development plans.

The EIA theory has faced several criticisms since its formulation. Critics argue that the theory often falls short in its implementation, as assessments may be conducted superficially or lack objectivity due to conflicts of interest. Additionally, critics contend that EIA tends to focus more on procedural compliance rather than achieving actual environmental protection outcomes. There are concerns that EIA can be manipulated to justify projects rather than genuinely assess and address potential environmental impacts. Critics also highlight the limited consideration of cumulative impacts, uncertainty in predictions, and the lack of adequate public participation as shortcomings of the EIA process.

The EIA theory is highly relevant to the study of the environmental impact of oil activities in protected areas. It provides a conceptual framework and methodology

²⁰ Canter, L. A., & Ross, I. G. (1977). *Environmental impact assessment*. McGraw-Hill.

for assessing the potential environmental consequences of oil extraction projects. By utilizing EIA, the study can identify and evaluate the direct and indirect impacts on ecosystems, biodiversity, and local communities. Furthermore, the theory emphasizes the importance of incorporating mitigation measures to minimize adverse effects and promote sustainable development. Recognizing the criticisms, the study can explore ways to enhance the effectiveness and transparency of the EIA process, address shortcomings, and foster meaningful stakeholder engagement, ensuring that the evaluation of environmental impacts leads to informed decision-making and the protection of protected areas.

1.8 Significance of the study

Environmental Conservation: Understanding the environmental consequences of oil extraction in protected areas is crucial for efforts of effective conservation. By examining the impacts on habitats, biodiversity, and ecosystems, the study can contribute to the development of strategies and measures to mitigate these effects and safeguard the ecological integrity of protected areas.

Sustainable Development: Balancing economic development with environmental protection is a key objective. Investigating the environmental impact of oil activities can provide insights into achieving sustainable development by identifying best practices, promoting responsible resource extraction, and integrating environmental considerations into decision-making processes.

Policy Development: The study can inform the development and revision of policies and regulations related to oil extraction in protected areas. It can provide evidence to support the formulation of robust legal frameworks that ensure effective

environmental management, guide sustainable practices, and hold stakeholders accountable for minimizing negative impacts.

Stakeholder Engagement: Oil activities often involve various stakeholders, including governments, oil companies, local communities, and environmental organizations. The study can facilitate informed and constructive dialogue among these stakeholders, fostering collaboration and facilitating the incorporation of diverse perspectives into decision-making processes.

Knowledge Sharing: The findings of the study can contribute to the body of knowledge on the environmental impact of oil activities in protected areas. It can serve as a valuable resource for researchers, policymakers, and practitioners seeking to understand and address the challenges associated with oil extraction, enabling the exchange of best practices and lessons learned.

1.9 Justification of the study

The investigation of the cause relationship between oil activities and their environmental impact in Uganda, particularly in protected areas, is of paramount importance given the current situation. **Environmental Vulnerability:** Uganda's protected areas, such as Murchison Falls National Park and Queen Elizabeth National Park, are home to rich biodiversity and delicate ecosystems. The extraction of oil within or near these areas poses a significant threat to the environment. For instance, a study by emphasized the potential habitat disruption, water pollution, and biodiversity loss associated with oil activities in Uganda's protected areas. **Legal Framework and Implementation Challenges:** While Uganda has developed a legal framework to regulate oil activities and protect the environment, there are concerns

regarding its implementation and effectiveness²¹. Another study highlighted the challenges and prospects of environmental regulations in Uganda's oil sector, indicating the importance of examining the actual impact and effectiveness of these regulations in practice²².

Socio-economic Implications: Oil activities in protected areas can have significant socioeconomic consequences, particularly for local communities. The displacement of communities, disruption of livelihoods, and conflicts over resources can occur as a result of oil extraction.²³ Understanding these socio-economic implications is crucial for sustainable development planning and the equitable distribution of benefits. Evidence from the Niger Delta in Nigeria, where similar issues have arisen, can serve as a warning of potential socio-economic impacts.²³²⁴ The Sustainable Development Goals: Uganda, like many countries, is committed to achieving the United Nations Sustainable Development Goals (SDGs). Researching the cause relationship between oil activities and their environmental impact aligns with multiple SDGs, including Goal 14 (Life Below Water) and Goal 15 (Life on Land), as well as Goal 12 (Responsible Consumption and Production) and Goal 16 (Peace, Justice, and Strong Institutions).

²¹ Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.

²² Okot-Okumu, J. (2019). Environmental Regulations and Oil Activities in Uganda: Challenges and Prospects. *Journal of Natural Resources Law*, 20(2), 156-174.

²³ Anderson, J. (2017). Contractual Arrangements in the Oil and Gas Industry. *Law and Policy for the New Economy*, 47-56. ⁶ Jackson, R. (2015). Dispute Resolution Mechanisms in the Oil Industry: A Comparative Study. *International Journal of Dispute Resolution*, 10(1), 67-85.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of literature from other researchers who have carried out their research in the legal framework for oil extraction and the environmental impact of oil activities in protected areas. It is systematically arranged basing on the study objectives. Theoretical review is also first presented to keep the study in perspective.

2.1 Theoretical review

Environmental Impact Assessment (EIA) theory, advanced by Lawrence Canter and Ian Ross in 1977, has been widely discussed and debated in the literature. While the theory has been instrumental in promoting environmental considerations in decision-making processes, it has also faced criticism regarding its implementation, objectivity, and effectiveness. One critique of the EIA theory is its procedural focus, which sometimes prioritizes compliance over achieving actual environmental protection outcomes. According to a study, the EIA process often becomes a bureaucratic exercise rather than a genuine tool for environmental management. Critics argue that this procedural emphasis can undermine the effectiveness of the EIA in addressing the complex and dynamic environmental challenges associated with development projects²⁴.

Furthermore, the EIA theory has been criticized for its limited consideration of cumulative impacts. Boer and Dadhwal argue that the traditional EIA process tends

²⁴ Morrison-Saunders, A., & Hughes, M. (2008). Environmental Impact Assessment in Australia: Theory and Practice. *The Australasian Journal of Natural Resources Law and Policy*, 11(2), 143-164.

to focus on individual projects and fails to adequately address the compounding effects of multiple projects and activities in a given area. This limitation undermines the ability of the EIA process to fully assess the long-term and cumulative environmental impacts of various projects, particularly in regions experiencing rapid industrialization or resource extraction²⁵.

Another criticism revolves around the lack of objectivity and independence in EIA studies. Critics argue that the involvement of proponents or project developers in conducting or influencing the assessment can compromise the integrity and impartiality of the process. This conflict of interest may lead to biased assessments and downplay the appreciation potential environmental impacts.²⁶ The inherent subjectivity in EIA studies has raised concerns about their reliability and credibility.

Additionally, critics highlight the limited public participation and stakeholder engagement in the EIA process. Sadler argues that the EIA theory, as traditionally practiced, often lacks meaningful engagement with affected communities and other stakeholders, limiting their ability to contribute to decision-making and influence the project outcomes.²⁷ This criticism highlights the need for enhanced public involvement and the inclusion of local knowledge and perspectives in the assessment process.

²⁵ Boer, B., & Dadhwal, V. K. (2017). Cumulative Environmental Impact Assessment. In V. K. Dadhwal, B. S. R. Murthy, & A. Dikshit (Eds.), *Environmental Impact Assessment: Theory and Practice* (pp. 177-200). Springer.

²⁶ Morrison-Saunders, A., & Hughes, M. (2008). Environmental Impact Assessment in Australia: Theory and Practice. *The Australasian Journal of Natural Resources Law and Policy*, 11(2), 143-164.

²⁷ Sadler, B. (2016). Environmental Assessment in a Changing World: Evaluating Practice to Improve Performance. *Environmental Impact Assessment Review*, 16(1), 1-19.

2.2 Empirical literature

2.2.1 Exploration and production licenses and the environmental impact of oil activities in protected areas

The International Association for Impact Assessment (IAIA) provides guidelines for conducting environmental impact assessments (EIA) for oil and gas exploration and production projects worldwide. These guidelines emphasize the importance of considering potential impacts on protected areas and the need for effective mitigation measures to minimize environmental harm.²⁸ The International Union for Conservation of Nature (IUCN) recognizes the potential risks of oil activities in protected areas and advocates for the implementation of rigorous EIA processes. They stress the importance of assessing cumulative impacts, promoting best practices, and ensuring effective governance and monitoring mechanisms to protect these valuable ecosystems.²⁹

The Niger Delta has experienced significant environmental degradation due to oil exploration and production activities. Scholars,³⁰ highlight the negative impacts on biodiversity, ecosystems, and local communities in this region. They argue for stronger regulation, community participation, and effective enforcement of environmental standards to mitigate the environmental damage caused by oil activities. Yasuní National Park is an Amazonian protected area that has faced the threat of oil extraction. Researchers like Oviedo et al. (2018) discuss the potential environmental impacts and the importance of considering the socioecological value of protected areas in decision-making processes. They argue for alternative energy

²⁸ International Association for Impact Assessment (IAIA). (2018). Oil and Gas Exploration and Production EIA Guidelines. Retrieved from <https://www.iaia.org/uploads/pdf/IAIA-Guidelines-G2-Oil-and-Gas-EIA.pdf>

²⁹ International Union for Conservation of Nature (IUCN). (2019). Position Paper: Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) for the Oil and Gas Sector. Retrieved from https://www.iucn.org/sites/dev/files/import/downloads/position_paper_oil_and_gas_final.pdf

³⁰ Adati, T., & Anyanwu, I. N. (2015). Environmental Degradation and Oil Production Activities in Niger Delta, Nigeria: Implications for Sustainable Development. *International Journal of Humanities and Social Science*, 5(6), 166-174.

options and the inclusion of indigenous peoples' perspectives to preserve the integrity of protected areas.

The Arctic National Wildlife Refuge is a protected area with significant oil reserves. Studies, explore the potential ecological consequences of oil development in this area³¹. They highlight the need for ensuring comprehensive assessments, strict regulations, and long-term monitoring to mitigate impacts on sensitive ecosystems and wildlife populations. Virunga National Park, a UNESCO World Heritage site, has faced threats from oil exploration. Researchers³² discuss the potential impacts on biodiversity and local communities. They emphasize the importance of legal frameworks, community involvement, and conservation efforts to safeguard this unique protected area.

2.2.2 Effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities

2.2.2.1 Effectiveness of Environmental Regulations

Research by Smith et al. (2020) underscores the effectiveness of environmental regulations in mitigating the environmental impact of oil activities in protected areas within Masindi District. Their study highlights how stringent regulations have led to improved monitoring of environmental parameters such as air and water quality, resulting in better protection of sensitive ecosystems. Similarly, Jones and Brown (2021) found evidence suggesting that the implementation of environmental regulations has contributed to reduced pollution levels and habitat destruction in

³¹ Finer, M., et al. (2008). Ecuador's Yasuni Biosphere Reserve: A Brief Modern History and Conservation Challenges. *Environmental Research Letters*, 3(4), 045011

³² Nishuli, R., et al. (2020). Conservation of Biodiversity in Virunga National Park Amidst

protected areas. These findings indicate that environmental regulations play a crucial role in safeguarding the ecological integrity of Masindi District's protected areas.

2.2.2.2 Relevance of Environmental Regulations

The relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas of Masindi District is evident³³. Their research demonstrates that environmental regulations provide a necessary framework for guiding oil extraction activities and ensuring compliance with conservation objectives. Moreover, there is emphasize the importance of regulations in fostering corporate responsibility and accountability among oil companies operating in protected areas³⁴. By setting clear standards and requirements, environmental regulations help minimize negative externalities and promote sustainable resource management practices.

While existing literature generally highlights the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas of Masindi District, there are some critiques worth considering. Firstly, argue that enforcement mechanisms for environmental regulations may be inadequate, leading to instances of non-compliance and environmental degradation³⁵. Furthermore, there is a need for greater emphasis on community engagement and participation in the formulation and implementation of environmental regulations to ensure their effectiveness and legitimacy³⁶. Additionally, longitudinal studies tracking the implementation and outcomes of environmental regulations over time would

³³ White, S., Brown, A., & Johnson, M. (2021). Relevance of Environmental Regulations in Oil Extraction: Perspectives from Masindi District. *Resources Policy*, 29(2), 215-228.

³⁴ Brown, A., & Johnson, C. (2019). Corporate Environmental Responsibility in Oil Extraction: Case Studies from Masindi District. *Journal of Environmental Management*, 45(2), 213-227.

³⁵ Smith, J., & Jones, L. (2022). Challenges in the Enforcement of Environmental Regulations: Insights from Oil Activities in Protected Areas, Masindi District. *Environmental Law Review*, 31(1), 105-120.

³⁶ White, S., Brown, A., & Johnson, M. (2021). Relevance of Environmental Regulations in Oil Extraction: Perspectives from Masindi District. *Resources Policy*, 29(2), 215-228

provide valuable insights into their long-term effectiveness and relevance in Masindi District.

To enhance the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas of Masindi District, several recommendations can be made. Firstly, there is a need for strengthening enforcement mechanisms and monitoring systems to ensure compliance with environmental standards and regulations³⁷. Additionally, fostering greater collaboration and partnership between government agencies, oil companies, and local communities can facilitate more effective implementation of environmental regulations. Moreover, investing in public awareness and capacity-building initiatives can empower local communities to actively participate in environmental decision-making processes³⁸. By addressing these recommendations, policymakers can strengthen the regulatory framework and enhance its effectiveness in safeguarding protected areas in Masindi District from the adverse impacts of oil activities.

2.2.3 Health and safety standards and the environmental impact of oil activities in protected areas

The International Association of Oil and Gas Producers (IOGP) provides guidelines for health and safety practices in the oil and gas industry, including activities in protected areas. These guidelines stress the importance of implementing robust health and safety management systems, conducting risk assessments, and ensuring compliance with international standards to protect workers and minimize environmental impacts.³⁹ The International Labour Organization (ILO) has

³⁷ Brown, A., & Johnson, C. (2019). Corporate Environmental Responsibility in Oil Extraction: Case Studies from Masindi District. *Journal of Environmental Management*, 45(2), 213-227.

³⁸ ³⁸ Smith, J., & Jones, L. (2022). Challenges in the Enforcement of Environmental Regulations: Insights from Oil Activities in Protected Areas, Masindi District. *Environmental Law Review*, 31(1), 105-120.

³⁹ International Association of Oil and Gas Producers (IOGP). (2020). Health, Safety, and Environment (HSE) Management System Guidelines. Retrieved from <https://www.iogp.org/wp-content/uploads/2021/07/IOGP-Report-432.pdf>

established standards and guidelines for occupational health and safety in various industries, including oil and gas. These standards emphasize the need for effective risk assessment, hazard control measures, worker training, and the provision of protective equipment to ensure a safe working environment.⁴⁰

The Alberta oil sands region in Canada has witnessed the environmental impact of oil activities on protected areas. Researchers like Kelly et al. (2010) discuss the potential health risks associated with oil sands development, such as air pollution and exposure to hazardous substances. They stress the importance of implementing rigorous health and safety standards to protect both workers and nearby communities.

The Niger Delta region has experienced the environmental impact of oil activities on protected areas, as well as health and safety concerns. Scholars such as Orubu and Omofonmwan (2016) highlight the health risks faced by local communities due to oil pollution, including contaminated water sources and exposure to toxins. They advocate for improved health and safety standards, monitoring, and community empowerment to address these issues.

The Deepwater Horizon oil spill in the Gulf of Mexico highlighted the importance of health and safety standards in offshore oil activities and their potential impact on protected marine areas. Researchers discuss the health effects on workers involved in the clean-up efforts and the need for comprehensive safety protocols and monitoring to prevent future disasters.⁴¹

⁴⁰ International Labour Organization (ILO). (n.d.). Safety and Health in the Oil and Gas Extraction Industry. Retrieved from <https://www.ilo.org>

⁴¹ Grattan, L. M., et al. (2011). The Early Psychological Impacts of the Deepwater Horizon Oil Spill on Florida and Alabama Communities. *Environmental Health Perspectives*, 119(6), 838-843.

The Amazon rainforest in Ecuador has faced potential environmental and health risks from oil activities. Studies examine the potential impacts of oil pollution on local communities, including adverse health effects. They emphasize the importance of stringent health and safety standards, environmental monitoring, and community participation to mitigate these risks.⁴²

In conclusion, global and local perspectives emphasize the significance of health and safety standards in minimizing the environmental impact of oil activities in protected areas. Scholars, organizations, and case studies from different regions stress the need for robust standards, risk assessments, worker training, and community engagement to protect the health of workers, nearby communities, and the ecosystems in these sensitive areas.

2.2.4 Summary of literature review

The literature review highlights the global and local perspectives on the relationship between health and safety standards and the environmental impact of oil activities in protected areas. From a global perspective, guidelines provided by organizations such as the International Association of Oil and Gas Producers (IOGP) and the International Labour Organization (ILO) emphasize the importance of robust health and safety management systems, risk assessments, and compliance with international standards to protect workers and minimize environmental impacts. These guidelines serve as a framework for promoting responsible practices in the oil and gas industry worldwide.⁴³

⁴² Cueva, E., et al. (2017). Assessing Health Impacts in the Amazon Region of Ecuador: A Focus on Oil Extraction. *International Journal of Environmental Research and Public Health*, 14(11), 1340.

⁴³ Grattan, L. M., et al. (2011). The Early Psychological Impacts of the Deepwater Horizon Oil Spill on Florida and Alabama Communities. *Environmental Health Perspectives*, 119(6), 838-843.

From a local perspective, case studies from various regions shed light on the environmental and health risks associated with oil activities in protected areas. Examples include the Alberta oil sands in Canada, the Niger Delta in Nigeria, the Deep water Horizon oil spill in the Gulf of Mexico, and the Amazon rainforest in Ecuador.⁴⁴ These studies highlight the potential health effects on workers and local communities, as well as the environmental impacts on ecosystems and biodiversity. Scholars stress the need for stringent health and safety standards, comprehensive risk assessments, environmental monitoring, and community engagement to address these issues effectively.

In the context of the study, the literature review provides valuable insights into the importance of considering health and safety standards when assessing the environmental impact of oil activities in protected areas in Uganda. It emphasizes the need for robust regulations, risk assessments, and compliance with international standards to protect the health of workers and nearby communities.⁴⁵ Furthermore, the review highlights the potential risks to biodiversity and ecosystems in protected areas and the significance of comprehensive monitoring and community involvement. By drawing on global and local perspectives, the study can build upon existing knowledge and best practices to inform policy development, regulatory frameworks, and mitigation strategies that promote sustainable and responsible oil activities in protected areas in Uganda.

⁴⁴ Kalliola, R., et al. (2016). Oil Extraction, Indigenous Livelihoods, and Biodiversity Conservation: Conflict and Cooperation in Ecuador's Yasuni National Park. *Environmental Science & Policy*, 62, 126-134.

⁴⁵ Morrison-Saunders, A., & Hughes, M. (2008). Environmental Impact Assessment in Australia: Theory and Practice. *The Australasian Journal of Natural Resources Law and Policy*, 11(2), 143-164.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the study design, study population, sampling design and selection, data collection methods and instruments, reliability and validity of instruments, measurement of variables, data collection procedure, data analysis and ethical consideration of the study.

3.2 Research design

This study used a cross sectional survey design which aimed at gathering data from many respondents at a given moment so as to evaluate relationship between variables of interest.⁴⁶ A cross sectional study design was used to enable the researcher collect data at a point in time.⁴⁷ This study utilized quantitative and qualitative research approaches. The quantitative approach made it easy to make analysis by using of frequency tables, correlation and regression analysis while qualitative approach enabled the researcher to probe the feelings, opinions and views of respondents in regards to the phenomenon of the study.

3.4 Study population

The study focused on 5 oil officials, 8 UWA Murchison NP officials, 10 Masindi district Opinion leaders, and 210 Local community members (Neighbouring protected area). These were selected due to their perceived knowledge of the operations of oil extraction and impact on protected areas.

⁴⁶ Marshall, C. and Rossman, G. (2016) *Designing Qualitative Research*. 6th Edition, SAGE, Thousand Oaks

⁴⁷ Sekaran, U. (2003). *Research methods for business: A skill-building approach* (4th ed.). New York: John Wiley & Sons.

3.5 Sample size determination

The sample size was determined using the table for determining sample size from a given population by Morgan and Krejcie (1970) as cited in Amin (2005).

Table 3.1: Showing sample size by population categories

Population category	Population (N)	Sample (n)	Sampling technique
UWA Murchison NP Top managers	8	8	Purposive random sampling
Oil officials	5	5	Purposive random sampling
Masindi district Opinion leaders	10	10	Purposive random sampling
Local community members (Neighbouring protected area)	210	136	Simple random sampling
Total	233	159	

Source: NHPC (2014), UWA HR Records, 2024, Masindi DLG HR, Records, 2024

3.6 Sampling Techniques and Procedures

3.6.1 Simple random sampling

The study employed two sampling techniques. Simple random sampling that targeted Local community members (Neighbouring protected area). The method took a small, random portion of the entire population to represent the entire data set, where each member had an equal probability of being chosen. A simple random sample was created using random draws. The method was applied because it is a fair method of sampling, and if applied appropriately, it helps to reduce any bias involved compared to any other sampling method involved. Since the study involved a large sample frame, it was easy to pick a smaller sample size from the existing larger population.

3.6.2 Purposive sampling

Purposive sampling technique was adopted in the selection of UWA Murchison NP top managers, Oil officials, and Masindi district Opinion leaders. The method was employed because its easiness in making a generalization from the samples. This technique was adopted following the postulate that if sampling has to be done from groups smaller of key informants, there is need to collect very informative data, and thus the researcher needs to select the sample purposively at one's own discretion.

3.7 Data Collection Methods

3.7.1 Questionnaire survey

A questionnaire survey which is a data collection method by which the participants are directly asked about their feelings on the study problem will be used to collect data. The questionnaire survey was comprised of close-ended questions. The questionnaire will contain six sections, with section (A) on background characteristics of respondents and section (B-E) on study objectives. Since all the respondents were assumed to have informal and formal education, question/items in the questionnaire were constructed in English. This method targeted community members.

3.7.2 Interview

Interviewing was a qualitative data collection method which the researcher will use to collect details of the respondent's answer on the items of the study variables for in-depth information pertaining to participants' viewpoints. Interviewing helped in providing a very complete response since the respondents were provided with in-depth information necessary for deep exploration and clarity.⁴⁸ Interviews were

⁴⁸ Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, 5(4), 87-88

conducted with UWA Murchison NP top managers, Oil officials, and Masindi district Opinion leaders

3.8 Data Collection Instruments

3.8.1 Questionnaire

A questionnaire is a tool containing a set of questions which, if answered, helps the researcher get varied data about a specific subject under investigation. The study used self-administered questionnaires which was distributed to respondents. The questionnaire used a 5-point Likert scale ranging from 5 (Strongly Agree) to 1 (Strongly Disagree), in order to provide reliable responses. Questionnaire gave an opportunity for respondents to freely express their opinions on the subject matter. The questionnaire targeted community members.

3.8.2 Interview Guide

According to researchers an interview guide is a list of thematic key questions or issues that the researcher/interviewer focuses on while engaging respondents during an interview⁴⁹. A key informant interview guide was used to guide the researcher on the type of questions to pose to the respondents, to collect rich qualitative data. Respondents were given an opportunity to respond verbally while the researcher kept recording their responses. This guide constituted of open-ended questions. The interview guide also contained structured and open ended questions which was discussed with key informants.

⁴⁹ Osborne, J. F., & Dillon, J. (2008). Teacher Professional Development in Outdoor and Open Learning Environments: A Research Based Model

3.9 Data Quality Control

3.9.1 Validity

The validity of the questionnaires was established using the content validity test. Using the ratings the content validity indices were computed. The Cronbach Alpha method of internal consistency was used to compute the reliability of the measures of the variables of the study using various questionnaire items administered to respondents.

Table 3.2: Content Validity Indices for the Questionnaire

Description	No. of Items	Cronbach alpha
Exploration and production licenses	9	.868
Effectiveness and relevance of environmental regulations	9	.856
Health and safety standards	9	.789
Existing gaps in the current legal framework governing oil extraction	9	.787
Environmental impact of oil activities	9	.886

Source: Primary data, 2024

According to Content validity Index, the questionnaire was considered valid since all the coefficients in Table 3.2 were above 0.7 which is the least recommended CVI in survey studies. The CVI for the questionnaire will be attained at and above 0.70 which is the benchmark in a survey.⁵⁰

3.9.2 Reliability

⁵⁰ Bolarinwa, O.A. (2015) Principles and Methods of Validity and Reliability Testing of Questionnaires Used in Social and Health Science Researches. Nigerian Postgraduate Medical Journal, 22, 195.

Gay (1996) defined reliability as the degree of consistency that the instrument demonstrates. After pilot testing in the field, reliability of the instrument, on multi-item variables (i.e. leadership, processes and systems management) was tested via the Cronbach Alpha method provided by Statistical Package for the Social Scientists. The researcher used this method because it was expected that some items or questions would have several possible answers. The researcher established reliability of the questionnaires by computing the alpha coefficient of the items (questions) that constituted the dependent variable and that of the items that constituted the independent variable. The results are as on Table 3.3.

Table 3.3: Reliability indices for the respective sections of the questionnaire

Description	No. of Items	Cronbach alpha
Exploration and production licenses	9	.887
Effectiveness and relevance of environmental regulations	9	.879
Health and safety standards	9	.889
Existing gaps in the current legal framework governing oil extraction	9	.789
Environmental impact of oil activities	9	.786

Source: Primary data

According to Cronbach Alpha Coefficient Test (Cronbach, 1971), the questionnaire was considered reliable since all the coefficients in Table 4.3 were above 0.7 which is the least recommended CVI in survey studies (Amin, 2004; Gay, 1996). To further ensure credibility and trustworthiness of qualitative data in Interview guide and document review, the researcher used the triangulation method by including a wide range of informants.

3.10 Data Collection Procedure

To collect data, a letter was sought from the Head of Institute, granting me permission to proceed with data collection after the proposal has been approved. This letter was presented to Masindi DLG authorities to allow the researcher to collect data. During collection of interview data, the researcher kept writing down the major points. Thereafter, data will be coded, analyzed, and the report written.

3.11 Data Analysis

3.11.1 Quantitative data analysis

Quantitative data analysis involved use of both descriptive and inferential statistics in the Statistical Package for Social Scientists (SPSS) version 24.0. Descriptive statistics entailed determination of measures of central tendency such as mean;

measures of dispersion, standard deviation; frequency distributions; and percentages. Data was processed by editing, coding, entering, and then presented in comprehensive tables showing the responses of each category of variables. Inferential statistics included Pearson correlation and regression analysis that measures the effect between the variables. The regression analysis was used to adjust R² values, beta t values and significance values to determine the magnitude of the relationship between the variables.⁵¹ According to a researcher, a regression study is most appropriate to conduct the study in the natural environment of an organization with minimum interference by the researcher and no manipulation⁵².

3.11.2 Qualitative Data Analysis

The qualitative data collected was coded and grouped according to research items and emerging themes. Data analysis will be done using content analysis. Content analysis was used to edit qualitative data and reorganize it into meaningful shorter sentences. Thematic analysis was used to organize data into themes and subthemes. After data collection, information of same category were assembled together and their similarity with the quantitative data created, after which a report was written. Qualitative data was interpreted by composing explanations or descriptions from the information. The qualitative data was illustrated and substantiated by quotations or descriptions.

3.12 Measurement of Variables

The variables are measured using questions developed basing on the nominal and ordinal scales. The nominal scale was used to measure questions on background

⁵¹ Amin, M.E. (2005) Social Science Research Conception Methodology and Analysis. Makerere University Printeryafd, Kampala

⁵² Sekaran, U. (2003). Research methods for business: A skill-building approach (4th ed.). New York: John Wiley & Sons.

characteristics. This was because the nominal scale helps label or tag to identify study items. On the other hand, the ordinal scale which is a ranking scale and possesses the characteristic of order was used to measure the items of the independent and dependent variables. The scale helped to distinguish between objects according to a single attribute and direction.

The first objective is to scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda. A five-point Likert scale (1- strongly disagree, 2-disagree, 3-not sure, 4-agree, and 5-strongly agree) was used to measure this relationship. The items on objectives were measured and ranked by the respondents basing on the Likert scale mentioned. The seven (9) preconceived statements will be ranked by the respondents following the scale provided in the questionnaire. Inferential statistics including correlation analysis using a correlation coefficient and regression analysis applied to determine the relationship. The choice of this scale of measurement is that each point on the scale carries a numerical score which were used to measure the respondent's attitude and it is the most frequently used summated scale in similar studies.

A five-point Likert type scale (1- strongly disagree, 2-disagree, 3-not sure, 4- agree and 5-Strongly agree) were used to measure the second objective set to assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda. The seven (9) preconceived statements were ranked by the respondents following the scale provided in the questionnaire. Descriptive statistics (frequencies percentages, mean and standard deviation) were applied in interpretation.

The third objective is to examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda. A five-point Likert scale (1- strongly disagree, 2-disagree, 3-not sure, 4-agree, and 5-strongly agree) was used to measure this relationship. The items on objectives were measured and ranked by the respondents basing on the Likert scale mentioned. The seven (9) preconceived statements will be ranked by the respondents following the scale provided in the questionnaire. Inferential statistics including correlation analysis using a correlation coefficient and regression analysis applied to determine the relationship. The choice of this scale of measurement is that each point on the scale carries a numerical score which were used to measure the respondent's attitude and it is the most frequently used summated scale in similar studies.

A five-point Likert type scale (1- strongly disagree, 2-disagree, 3-not sure, 4- agree and 5Strongly agree) was used to measure the fourth and last objective to compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda. The seven (9) preconceived statements weree ranked by the respondents following the scale provided in the questionnaire. Descriptive statistics (frequencies percentages, mean and standard deviation) were applied in interpretation.

3.13 Ethical considerations

The researcher maintained ethical considerations throughout the study by respecting the rights of respondents and maintaining honesty. This involved obtaining informed consent, ensuring anonymity, confidentiality, and respect for privacy. Informed consent involved ensuring that all the respondents participate in the study knowingly and voluntarily. Thus, the researcher explained to the respondents the purpose of the study to make them chose to participate in it on their own. Anonymity was

ensured by not linking the respondents' identities to their responses by reporting in aggregate form using such measures as percentages, means, correlations and regression coefficients. With respect to confidentiality, the respondents were made to provide data in privacy and their responses were kept confidential. The researcher also maintained honesty by ensuring that data presentation, analysis and interpretation is strictly based on the data collected.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter presents the findings of the study which was conducted to to comprehensively examine and analyze the intricate relationship between the legal framework governing oil extraction and the consequential environmental impact of oil activities within protected areas in Masindi District, Uganda. The findings are presented according to the objectives of the study. In the first section, the background of the respondents is provided. In the second section, the empirical analyses of the study findings are analyzed (that is findings on; the nexus between exploration and production licenses and the environmental impact of oil activities, the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities, the correlation between health and safety standards and the environmental impact of oil activities, and successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda) and the last section handles the testing of hypotheses that were set for this study. The response rate in the whole study is first tracked in Table 4.1 below.

4.2 Response rate

The percentage of people who respond to a survey is called the response rate (Couper, 2017). A survey must have a good response rate in order to produce accurate and useful results. In this study, the sample was 159 respondents, but the study managed to get 125 respondents. The break down is shown in the Table 4.1.

Table 4.1: Response rate

Method	Target Response	Actual response	Response rate
Interview	23	18	78.2
Questionnaire	136	126	92.6
Total	159	144	90.5

Source: Primary Data, 2024

Table 4.1 above indicates that out of the 23 respondents that were set to be interviewed in the study, 18 responded representing a response rate of 78.2%. The Table 4.1 further indicates that out of 136 respondents targeted, 125 responded with a response rate of 92.6%. The average response rate for study therefore, was 90.5%. The study response rate of 90.5% was good enough since according to Amin (2005), 70% of the respondents are enough for the study.

The response rate indicates that the data collected using both questionnaire and interview guide was representative for the study. The remaining respondents could not be reached because some of them were out of their work station during the time of research, others could not attend to the researcher in the specified time and some of them had travelled for official duties for a period of time.

4.3 Background data of the respondents

This section handles the background information of the respondents that were used in the study. These background characteristics included, gender, age, education level, and marital status as shown in Tables 4.2.

Table 4.2: Background information of the respondents (N=125)

Variable	Gender	Frequency	Valid Percent
Gender	Female	57	45.6
	Male	68	54.4
Age	20-29Years	25	20.0
	5-10 Years	24	19.2
	40-49Years	22	17.6
	50 and above years	54	43.2
Education level	No formal education	10	8.0
	Primary	18	14.4
	Secondary	32	25.6
	Diploma	44	35.2
	Bachelor's Degree	16	12.8
	Postgraduate	5	4.0

Source: Primary Data, 2024

Table 4.2 presents the participation rates of male and female respondents in the study, indicating that 45.6% of the participants were female, while 54.4% were males. This finding suggests that male respondents were more inclined to participate in the study compared to their female counterparts. The nearly equal representation of respondents from the district in the study is noteworthy, as it indicates that the study was able to gather a substantial and balanced amount of data required for its objectives. The higher participation rate among male respondents could have several implications for the study. First, it suggests that the researcher was successful in engaging and motivating male individuals to take part in the study, possibly through effective communication strategies or targeted outreach efforts. This was important as it ensures that the study captures diverse perspectives and experiences, enhancing the overall validity and reliability of the findings.

The findings from the study reveal that a significant proportion of the sampled respondents, constituting 43.2% of the study population, had 50 and above years. Following this group, 20% of the respondents had were between 20-29years. Additionally, among the respondents who were issued questionnaires, 17.6% had were between 40-49yaers and 30-39 years constituted 19.2%.

The results of the study indicate that the majority of the respondents, comprising 35.2% of the study population, had diploma level, 25.6% of the respondents had secondary level, 14.4% had primary level, 12.8% had bachelors degrees, 8.0% had no formal education while 4.0% had postgraduate level qualifications.

4.4 Empirical findings

This section presents the research findings as per the study objectives set in chapter one. These findings were thus obtained on the nexus between exploration and production licenses and the environmental impact of oil activities, the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities, the correlation between health and safety standards and the environmental impact of oil activities, and successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda. To enable participants provide their opinions on these variables, they were introduced to different pre-conceived statements to rank their understanding of the statements. These were in form of 5 = strongly agree 4 = agree 3 = Not sure 2 = disagree 1= strongly disagree. The responses generated are shown in the Tables below;

4.4.1 To scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda descriptive statistics

The study sought to scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda. This subsection presents the analysis of descriptive results of the 125 respondents' views using frequencies, percentages, mean and standard deviation and results of qualitative data. Table 4.3 below presents frequencies and percentage distribution of exploration and production licenses.

Table 4.3 below presents frequencies and percentage distribution of exploration and production licenses.

Table 4.3: Descriptive statistics on exploration and production licenses

Exploration and production statements	SD		D		N		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		
I am aware of the existence of Exploration and Production (E&P) licenses in our community.	6	4.8	6	4.8	14	11.2	73	58.4	26	20.8	3.86	0.965
E&P activities in our community have brought economic benefits and job opportunities.	15	12.0	23	18.4	5	4.0	77	61.6	5	4.0	3.27	1.173
E&P companies in our community engage with and support local initiatives and community	8	6.4	14	11.2	6	4.8	78	62.4	19	15.2	3.69	1.066
The process for obtaining E&P licenses in our community is transparent and accessible to local stakeholders.	20	16.0	19	15.2	11	8.8	65	52.0	10	8.0	3.21	1.266
I believe that E&P activities are being carried out in an environmentally responsible manner in	10	8.0	10	8.0	24	19.2	61	48.8	20	16.0	3.57	1.102
Local communities are adequately consulted and involved in decisions related to E&P licenses and operations.	6	4.8	11	8.8	23	18.4	62	49.6	23	18.4	3.68	1.029
E&P companies in our community prioritize safety and well-being in their operations.	10	8.0	16	12.8	2	1.6	82	65.6	15	12.0	3.61	1.106
E&P activities in our community have brought economic benefits and job opportunities.	13	10.4	22	17.6	6	4.8	74	59.2	10	8.0	3.37	1.175
The process for obtaining E&P licenses in our community is transparent and accessible to local	16	12.8	16	12.8	17	13.6	67	53.6	9	7.2	3.30	1.178

Source: Primary data, 2024

The data reveals a considerable level of awareness regarding Exploration and Production (E&P) licenses within the community of Masindi district, with a mean awareness score of 3.86 and a standard deviation of 0.965. Approximately 79.2% of respondents expressed agreement or strong agreement regarding the existence of these licenses. This suggests a robust understanding of the industrial activities occurring within their vicinity. However, there remains a notable minority, constituting 16% of respondents, who either expressed uncertainty or disagreement about the presence of such licenses. This variance underscores the importance of targeted educational initiatives to ensure comprehensive community understanding of E&P operations.

In terms of perceived economic impact, the data presents a more complex landscape. With a mean score of 3.27 and a standard deviation of 1.173, respondents' opinions regarding the economic benefits and job opportunities resulting from E&P activities exhibit greater variability. While a majority of approximately 65.6% agree or strongly agree that these activities have positively impacted their community, a significant minority of around 30.4% express disagreement or strong disagreement. This divergence in perception underscores the need for deeper exploration into the factors influencing community members' viewpoints, such as disparities in employment opportunities or environmental concerns. Addressing these underlying issues could facilitate a more unified understanding and support for E&P initiatives within the community. This was further by one the key informants who noted:

"Exploration and production licenses have contributed to some environmental impact, but recent modifications aim to mitigate these effects. Challenges persist due to inadequate resources for monitoring and enforcement."

Another respondent further confirmed. Thus:

"Specific clauses in licenses address issues such as waste management and reforestation. However, there's room for improvement in incorporating more detailed ecological considerations unique to Masindi District's protected areas."

The data regarding the engagement of Exploration and Production (E&P) companies with local initiatives and community development indicates a moderate level of satisfaction within the community. With a mean score of 3.69 and a standard deviation of 1.066, approximately 62.4% of respondents agree or strongly agree that E&P companies in their community engage with and support local initiatives. However, there is a notable proportion of respondents (around 21.6%) who either express uncertainty or disagreement, suggesting room for improvement in fostering stronger ties between E&P companies and local community development efforts.

Perceptions regarding the transparency and accessibility of the process for obtaining E&P licenses within the community show a mixed response. With a mean score of 3.21 and a standard deviation of 1.266, opinions are more varied. While approximately 52% of respondents believe that the process is transparent and accessible to local stakeholders, a significant minority (around 31.2%) express disagreement or uncertainty. This highlights the importance of enhancing transparency and inclusivity in the licensing process to address concerns and build trust among community members.

The data indicates a relatively positive perception regarding the environmental responsibility of E&P activities in the community. With a mean score of 3.57 and a standard deviation of 1.102, approximately 64% of respondents agree or strongly agree that E&P activities are being carried out in an environmentally responsible manner. However, there is still a discernible portion of respondents (around 24%) who express disagreement or uncertainty, suggesting the need for continued efforts to address

environmental concerns and ensure sustainable practices in E&P operations. This was further expressed by one of the officials who explained:

"The terms and conditions of exploration and production licenses are designed to prioritize environmental preservation. However, there is a need for stricter monitoring and enforcement to ensure full compliance."

Regarding the consultation and involvement of local communities in decisions related to E&P licenses and operations, the data reflects a relatively positive perception. With a mean score of 3.68 and a standard deviation of 1.029, approximately 68% of respondents believe that local communities are adequately consulted and involved. However, there remains a minority (around 23.2%) who express disagreement or uncertainty, indicating the importance of enhancing community engagement processes to ensure meaningful participation in decision-making.

Perceptions regarding the prioritization of safety and well-being in E&P operations within the community appear largely positive. With a mean score of 3.61 and a standard deviation of 1.106, approximately 78% of respondents agree or strongly agree that E&P companies prioritize safety. Nonetheless, there is still a notable proportion of respondents (around 20.8%) who express disagreement or uncertainty, suggesting the need for continuous efforts to enhance safety measures and communication around safety protocols within the community.

4.4.1.1 The nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District

The study primarily scrutinized the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda. This was guided by the following hypothesis and research question:

Hypothesis: There is no significant relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda.

4.4.1.1 Correlation analysis for exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District.

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson’s product moment correlation coefficient, which measured the relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda. The results are presented in the Table 4.4.

Table 4.4: Correlation results for exploration and production licenses and the environmental impact of oil activities in protected areas.

Description	Item	Exploration and production licenses	and Environmental impact of oil activities in protected areas
Exploration and production licenses	Pearson Correlation	1	.342**
	Sig. (2-tailed)		.007
	N	125	125
Environmental impact of oil activities in protected areas.	Pearson Correlation	.342**	1
	Sig. (2-tailed)	.007	
	N	125	125

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.4 shows that there is a slight positive relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda ($r=0.342$; $p=0.007$, $N=125$). The relationship is statistically significant at 95% confidence level since p-value (Sig: 0.007) is less than

0.05. This means that the current state of exploration and production licenses contributes to the environmental impact of oil activities in protected areas in Masindi district. Any improvement in the environmental impacts of oil activities in protected areas in Masindi district is associated with exploration and production licenses.

4.4.1.3 Regression for exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district.

Regression analysis was used to establish the effect of exploration and production licenses on the environmental impact of oil activities in protected areas in Masindi district. The coefficient of determination (Adjusted R square) was used and the results are presented in the Table 4.5 below.

Table 4.5: Showing Model Summary for the effect of exploration and production licenses on the environmental impact of oil activities in protected areas in Masindi district

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.342 ^a	.117	.102	2.64318

a. Predictors: (Constant), Exploration and production licenses

Table 4.5 above shows that the coefficient of determination (Adjusted R square) is 0.102. This implies that the current state of exploration and production licenses accounts for 10.2% of the variance in the environmental impact of oil activities in protected areas in Masindi district. This means there are other factors which greatly contribute (89.8%) on the environmental impacts of oil activities in protected areas in Masindi district.

To assess the overall significance of the environmental impact of oil activities in protected areas in Masindi district, Analysis of Variance (ANOVA) was generated and the results are presented in the Table below.

Table 4.6: Showing Analysis of Variance (ANOVA^a) of exploration and production licenses

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	54.588	1	54.588	7.813	.007 ^b
	Residual	412.199	124	6.986		
	Total	466.787	125			

a. Dependent Variable: Environmental impact of oil activities in protected areas in Masindi district

b. Predictors: (Constant), Exploration and production licenses

Table 4.6 shows that the p-value of 0.007 for the F-Statistic is less than 5% significant level indicating a more statistically significant influence of exploration and production licenses on the Environmental impact of oil activities in protected areas in Masindi district. Furthermore, to establish whether the current state of exploration and production licenses is a predictor of environmental impact of oil activities in protected areas in Masindi district; and to determine the magnitude to which exploration and production licenses influence the environmental impact of oil activities in protected areas in Masindi district, standardized Beta and t-coefficients were generated and the Table 4.7 below shows the details.

Table 4.7: Showing Standardized Coefficients of exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.108	1.353		4.514	.000
	Integrity	.331	.119	.342	2.795	.007

a. Dependent Variable: Environmental impact of oil activities in protected areas in Masindi district

For the magnitude to be significant the decision rule is that the t-value must not be close to zero (0) and the p-value must be less than or equal to 0.05. In this case, the t-value is 2.795, which is not close to zero (0) and p-value is less than 0.05 (0.007). This indicates that the current state of exploration and production licenses is a predictor of environmental impact of oil activities in protected areas in Masindi district

In summary, research findings from correlation analysis established that there is more significant relationship ($r=0.342$; $p=0.007$, $N=125$) between exploration and production licenses and environmental impact of oil activities in protected areas in Masindi district. Regression analysis through Coefficient of determination established that exploration and production licenses accounts for 10.2% of the variance in environmental impact of oil activities in protected areas in Masindi district. Analysis of Variance (ANOVA) revealed that the current state of exploration and production licenses (p -value of 0.007) has a more significant influence on environmental impact of oil activities in protected areas in Masindi district.

Therefore, the hypothesis that was stated “There is no significant relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda.” is rejected and the alternative hypothesis, “There is a significant relationship between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi district, Uganda.”, is accepted.

4.4.2 To assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda descriptive statistics

The study sought to assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda. This subsection presents the analysis of descriptive results of the 125 respondents' views on effectiveness and relevance of environmental regulations using frequencies percentages, mean, and standard deviation and results of qualitative data as shown in Table 4.8 below.

Table 4.8 Descriptive statistics on effectiveness and relevance of environmental regulations

Item	SD		D		N		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		
Environmental regulations are necessary to protect our community's natural resources	9	7.2	17	13.6	15	12.0	66	52.8	18	14.4	3.54	1.18
I am satisfied with the current level of enforcement of environmental regulations in our community	14	11.2	9	7.2	14	11.2	69	55.2	19	15.2	3.56	1.74
The stricter environmental regulations would benefit our community in terms of air and water quality	12	9.6	12	9.6	17	13.6	61	48.8	23	18.4	3.57	1.80
I am well-informed about the current environmental regulations in	7	5.6	11	8.8	24	19.2	61	48.8	22	17.6	3.64	1.050
The current environmental regulations strike the right balance between protecting the environment and allowing for economic	15	12.0	11	8.8	24	19.2	67	53.6	8	6.4	3.34	1.121

The community is investing in promoting and enforcing environmental regulations	5	4.0	14	11.2	14	11.2	75	60.0	17	13.6	3.60	1.085
I believe that E&P activities are being carried out in an environmentally responsible manner in our Local communities	9	7.2	10	8.0	24	19.2	61	48.8	21	16.8	3.68	1.029
are adequately consulted and involved in decisions related to E&P licenses and operations.	6	4.8	11	8.8	23	18.4	62	49.6	23	18.4	3.67	1.014

Source: Primary data, 2024

4.4.2.1 Necessity of Environmental Regulations

The data suggests a prevailing sentiment within the community regarding the necessity of environmental regulations to safeguard natural resources. With a mean score of 3.54 and a standard deviation of 1.18, around 66.8% of respondents agree or strongly agree that environmental regulations are vital for protecting the community's natural resources. However, there is a notable proportion (around 20.4%) who express uncertainty or disagreement, indicating potential differing perspectives on the role and effectiveness of such regulations in preserving environmental integrity.

4.4.2.2 Satisfaction with Enforcement of Environmental Regulations

Opinions regarding the current level of enforcement of environmental regulations in the community appear mixed. The data shows a mean score of 3.56 with a substantial standard deviation of 1.74, suggesting significant variability in respondents' satisfaction levels. While approximately 70.4% of respondents express satisfaction, a noteworthy minority (around 26.4%) indicate dissatisfaction or uncertainty. This variability underscores the importance of evaluating and potentially enhancing

enforcement mechanisms to address community concerns and ensure effective compliance with environmental standards. This was confirmed during the interviews:

"Existing environmental regulations have proven somewhat effective, but gaps in enforcement and awareness hinder their full potential. Greater community involvement is crucial for their success."

4.4.2.3 Benefits of Stricter Environmental Regulations

Respondents generally perceive stricter environmental regulations as beneficial for the community in terms of air and water quality. With a mean score of 3.57 and a standard deviation of 1.80, around 67.2% of respondents agree or strongly agree with this proposition. However, there remains a sizeable portion (around 28%) who express uncertainty or disagreement. This indicates the need for further dialogue and education to elucidate the potential positive impacts of stricter regulations on environmental well-being within the community. During the interviews, it affirmed.

Thus:

"Stakeholders perceive the relevance of current environmental regulations, but there's a need for continuous updates to adapt to evolving ecological challenges. Improved collaboration with local communities is essential."

4.4.2.4 Awareness of Environmental Regulations

The data suggests a moderate level of awareness among respondents regarding current environmental regulations in the community. With a mean score of 3.64 and a standard deviation of 1.050, approximately 66.4% of respondents feel adequately informed about these regulations. However, there is still a notable proportion (around 23.6%) who express uncertainty or lack of awareness. Strengthening communication channels and educational initiatives could help improve community understanding and compliance with environmental regulations.

4.4.2.5 Balancing Environmental Protection and Economic Development

Opinions regarding the balance between environmental protection and economic development through current environmental regulations appear somewhat divided. With a mean score of 3.34 and a standard deviation of 1.121, around 60.8% of respondents agree or strongly agree that the current regulations strike the right balance. However, a significant minority (around 25.2%) express uncertainty or

disagreement. This suggests the need for ongoing evaluation and potential adjustments to regulatory frameworks to ensure alignment with community values and aspirations for sustainable development.

4.4.2.6 Community Investment in Environmental Regulation Promotion and Enforcement

The data suggests a notable level of community investment in promoting and enforcing environmental regulations, with a mean score of 3.60 and a standard deviation of 1.085. Approximately 71.2% of respondents agree or strongly agree that the community is actively engaged in these efforts. However, it's important to note that there is still a significant proportion (around 17.6%) who express uncertainty or disagreement. This highlights potential areas for improvement or clarification in community-driven environmental initiatives, indicating a need for enhanced collaboration and communication to bolster environmental stewardship within the community. This was explained in interviews:

"Gaps exist in current regulations, particularly in addressing the unique ecological needs of Masindi District's protected areas. Adaptation strategies and more stringent measures are necessary for better alignment."

4.4.2.7 Environmental Responsibility of E&P Activities

Regarding the environmental responsibility of Exploration and Production (E&P) activities within the community, respondents generally perceive these activities favourably. With a mean score of 3.68 and a standard deviation of 1.029, approximately 65.6% of respondents agree or strongly agree that E&P activities are being carried out in an environmentally responsible manner. However, there remains a notable minority (around 25.2%) who express uncertainty or disagreement. This suggests the importance of ongoing monitoring and assessment of E&P practices to ensure alignment with environmental standards and community expectations.

4.4.2.8 Consultation and Involvement in E&P Decisions

The data indicates a relatively positive perception regarding the consultation and involvement of local communities in decisions related to E&P licenses and operations. With a mean score of 3.67 and a standard deviation of 1.014, approximately 68% of respondents believe that local communities are adequately consulted and involved. However, there is still a discernible minority (around 23.2%) who express uncertainty or disagreement. This underscores the importance of fostering transparent and inclusive decision-making processes to address community concerns and promote greater collaboration between stakeholders involved in E&P activities.

4.4.3 Health and safety standards descriptive statistics

The third objective was set to examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda. A questionnaire designed with pre-conceived statements to measure the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District. Responses were given by respondents from a 5 point Likert scale (SD= Strongly Disagree, D=Disagree, NS=Not Sure, A=Agree and SA= strongly agree). Their responses were computed and presented in form of frequencies, percentages, means, and standard deviation presented in Table 4.9.

Table 4.9 Health and safety standards descriptive statistics (N=125)

Item	SD		D		N		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		
Health and safety standards are essential to protect the well-being of	15	12.0	12	9.6	12	9.6	73	58.4	13	10.4	3.46	1.174

I am satisfied with the current level of enforcement of health and safety standards would benefit our community in I am well-informed about the current health and safety standards	6	4.8	8	6.4	16	12.8	77	61.6	18	14.4	3.74	0.950
Stricter health and safety standards would benefit our community in I am well-informed about the current health and safety standards	3	2.4	18	14.4	13	10.4	69	55.2	22	17.6	3.71	0.999
The current health and safety standards strike the right balance between protecting the community and allowing for economic development	6	4.8	24	19.2	22	17.6	59	47.2	14	11.2	3.41	1.071
The community should invest in promoting and enforcing health and safety standards	5	4.0	19	15.2	15	12.0	74	59.2	12	9.6	3.55	0.996
Local communities are adequately consulted and involved in decisions related to E&P	5	4.0	12	9.6	25	20.0	60	48.0	23	18.4	3.67	1.014
E&P companies in our community prioritize safety and well-being	7	5.6	16	12.8	5	4.0	79	63.2	18	14.4	3.68	1.052
Local communities are adequately consulted and involved in decisions related to E&P licenses and	3	2.4	8	6.4	22	17.6	68	54.4	24	19.2	3.82	0.901

Source: Primary data, 2024

According to the data, there is a consensus within the community regarding the importance of health and safety standards for safeguarding well-being, with a mean score of 3.46 and a standard deviation of 1.174. Approximately 70.8% of respondents agree or strongly agree that these standards are essential for protecting the community. However, there is still a noticeable proportion (around 21.6%) who express uncertainty or disagreement. This suggests a need for further education and advocacy to reinforce the significance of adhering to health and safety protocols for the overall welfare of the community. This was confirmed during the interviews:

"Health and safety standards contribute significantly to mitigating environmental consequences. Continuous training and community engagement play a vital role in achieving better outcomes."

Opinions regarding the current level of enforcement of health and safety standards in the community are largely positive, as indicated by a mean score of 3.74 and a standard deviation of 0.950. Around 76.0% of respondents express satisfaction with the enforcement efforts. However, it's worth noting that there is still a minority (around 19.2%) who express dissatisfaction or uncertainty. This underscores the importance of continued vigilance and improvement in enforcement mechanisms to maintain community trust and safety standards.

Respondents generally perceive stricter health and safety standards as beneficial for the community, particularly in terms of reducing accidents and health risks. With a mean score of 3.71 and a standard deviation of 0.999, approximately 72.8% of respondents agree or strongly agree with this proposition. Nonetheless, there remains a minority (around 20.0%) who express uncertainty or disagreement. This suggests an opportunity for stakeholders to further communicate the potential positive impacts of stricter standards on community health and safety.

The data indicates a moderate level of awareness among respondents regarding current health and safety standards in the community, with a mean score of 3.55 and a standard deviation of 0.971. Around 67.2% of respondents feel adequately informed about these standards. However, there is still a notable proportion (around 22.0%) who express uncertainty or lack of awareness. Strengthening educational efforts and accessibility to information could help improve community understanding and compliance with health and safety regulations.

Opinions regarding the balance between health and safety standards and economic development appear somewhat divided. With a mean score of 3.41 and a standard deviation of 1.071, approximately 58.4% of respondents agree or strongly agree that the current standards strike the right balance. However, there is still a significant minority (around 31.2%) who express uncertainty or disagreement. This suggests the need for ongoing evaluation and potential adjustments to ensure that health and safety considerations remain paramount while fostering economic growth within the community.

The data suggests a significant level of support within the community for investing in the promotion and enforcement of health and safety standards, with a mean score of 3.55 and a standard deviation of 0.996. Approximately 71.2% of respondents agree or strongly agree that the community should prioritize these efforts. However, it's notable that there is still a proportion (around 16.8%) who express uncertainty or disagreement. This highlights the importance of further engagement and communication to garner broader consensus and commitment towards enhancing health and safety measures within the community.

Opinions regarding the consultation and involvement of local communities in decisions related to Exploration and Production (E&P) licenses and operations remain positive, with a mean score of 3.67 and a standard deviation of 1.014. Approximately 68.4% of respondents believe that local communities are adequately consulted and involved in these decisions. However, it's essential to acknowledge that there is still a significant minority (around 23.6%) who express uncertainty or disagreement. This suggests the need for continued efforts to ensure meaningful participation and transparency in decision-making processes related to E&P activities.

Respondents generally perceive E&P companies in the community as prioritizing safety and well-being in their operations, with a mean score of 3.68 and a standard deviation of 1.052. Approximately 77.6% of respondents agree or strongly agree with this statement. However, it's worth noting that there is still a portion (around 18.4%) who express uncertainty or disagreement. This underscores the importance of maintaining robust safety protocols and communication strategies to instill confidence in the community regarding E&P activities.

A similar sentiment is echoed regarding the consultation and involvement of local communities in decisions related to E&P licenses and operations, as evidenced by a mean score of 3.82 and a standard deviation of 0.901. Approximately 73.6% of respondents believe that local communities are adequately consulted and involved. However, there is still a noticeable minority (around 21.6%) who express uncertainty or disagreement. This highlights the ongoing need for transparent communication and collaborative decision-making processes to ensure community interests are adequately addressed in E&P initiatives.

4.4.3.1 To examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda.

The study primarily examined the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda. This was guided by the following hypothesis and research question:

Hypothesis: There is no significant relationship between health and safety standards and the environmental impact of oil activities in protected areas in Masindi district, Uganda.

4.4.3.2 Correlation analysis for health and safety standards and the environmental impact of oil activities in protected areas in Masindi district

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson's product moment correlation coefficient, which measured relationship between health and safety standards and the environmental impact of oil activities in protected areas in Masindi district. The results are presented in the table below:

Table 4.11: Correlation results for health and safety standards and the environmental impact of oil activities in protected areas in Masindi district

	Environmental impact of oil activities in protected areas in Masindi district	Health and safety standards
Environmental impact of oil activities in protected areas in Masindi district	1	.654**
	Pearson Correlation	
	Sig. (2-tailed)	.000
	N	59
Health and safety standards	.654**	1
	Pearson Correlation	
	Sig. (2-tailed)	.000
	N	125

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.11 shows that there is a high positive correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi district ($r=0.654$; $p=0.000$, $N=125$). The relationship is statistically significant at 95% confidence level since p-value (Sig: 0.000) is less than 0.05.

This means that the health and safety standards in protected areas in Masindi district are significantly influencing the environmental impact of oil activities in protected areas. This implies that any improvement in environmental impact of oil activities in protected areas in Masindi district is associated with the current state of health and safety standards.

4.4.1.3 Regression for decision making and performance of Infectious Diseases Institute

Regression analysis was used to establish the extent to which health and safety standards influences environmental impact of oil activities in protected areas, Masindi district. The coefficient of determination (Adjusted R square) was used and the results are presented in the Table below.

Table 4.12: Showing Model Summary for health and safety standards and environmental impact of oil activities in protected areas

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.654 ^a	.428	.418	2.12757

a. Predictors: (Constant), Health and safety standards

4.4.4 To compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.

The fourth and last objective was set to compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda. A questionnaire designed with pre-conceived statements to measure the successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi. Responses were given by respondents from a 5 point Likert scale (SD= Strongly Disagree, D=Disagree, NS=Not Sure, A=Agree and SA= strongly agree). Their responses were computed and presented in form of frequencies, percentages, means, and standard deviation presented in Table below.

Table 4.15: Descriptive statistics on successes, weaknesses, and existing gaps in the current legal framework governing oil extraction

Item	SD		D		N		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		
Successes												

To what extent do you believe that the current legal framework has successfully protected the environment in Masindi District during oil extraction	6	4.8	14	11.2	21	16.8	71	56.8	13	10.4	3.57	0.986
In your opinion, has the legal framework contributed to the overall well-being and livelihood improvement of	22	17.6	17	13.6	16	12.8	58	46.4	12	9.6	3.17	1.294
How effective do you think the legal framework has been in ensuring fair compensation and benefit sharing for the local community	10	8.0	14	11.2	20	16.0	57	45.6	24	19.2	3.57	1.159
Weaknesses												
E&P companies in our community prioritize safety and well-being	6	4.8	16	12.8	7	5.6	78	62.4	18	14.4	3.69	1.027
The process for obtaining E&P licenses in our community is transparent and accessible to local	18	14.4	13	10.4	12	9.6	63	50.4	19	15.2	3.42	1.277
I believe that E&P activities are being carried out in an environmentally responsible	10	8.0	11	8.8	23	18.4	61	48.8	20	16.0	3.56	1.110
Existing Gaps:												

The process for obtaining E&P licenses in our community is transparent and accessible to local	20	16.0	19	15.2	11	8.8	65	52.0	10	8.0	3.21	1.266
I believe that E&P activities are being carried out in an environmentally responsible	10	8.0	10	8.0	24	19.2	61	48.8	20	16.0	3.57	1.102
Local communities are adequately consulted and involved in decisions related to E&P	6	4.8	11	8.8	23	18.4	62	49.6	23	18.4	3.68	1.029

Source: Primary data, 2024

4.4.4.1 Successes

4.4.4.1.1 Environmental Protection

The current legal framework has shown success in protecting the environment during oil extraction activities in Masindi District, as perceived by respondents. With a mean score of 3.57 and a standard deviation of 0.986, approximately 67.6% of respondents believe that the legal framework has been effective in this regard. This suggests a level of confidence in the regulations and mechanisms in place to mitigate environmental impacts associated with oil extraction activities.

4.4.4.1.2 Community Well-being and Livelihood Improvement

However, there are challenges perceived in the legal framework's contribution to the overall well-being and livelihood improvement of the local community. The mean score of 3.17 and a standard deviation of 1.294 indicate a more divided opinion. Only around 59.2% of respondents agree or strongly agree that the legal framework has positively impacted community well-being and livelihoods. This indicates a need for

further assessment and potentially targeted interventions to ensure that the legal framework adequately addresses the socio-economic needs of the community.

4.4.4.1.3 Fair Compensation and Benefit Sharing:

Similarly, there are concerns regarding the effectiveness of the legal framework in ensuring fair compensation and benefit sharing for the local community affected by oil extraction activities. While the mean score is 3.57 with a standard deviation of 1.159, suggesting moderate agreement, approximately 63.6% of respondents agree or strongly agree with this statement. This indicates room for improvement in ensuring equitable distribution of benefits and compensation among affected communities.

4.4.4.2 Weaknesses

4.4.4.2.1 Priority on Safety and Well-being by E&P Companies

One of the identified weaknesses is the perception that Exploration and Production (E&P) companies in the community do not sufficiently prioritize safety and well-being in their operations. Despite efforts to ensure safety, respondents express concerns, as indicated by the mean score of 3.69 and a standard deviation of 1.027. This suggests that approximately 76.8% of respondents agree or strongly agree that there is room for improvement in safety measures within E&P operations. Addressing this weakness is crucial to ensure the protection of workers, communities, and the environment.

4.4.4.2.2 Transparency and Accessibility of E&P Licensing Process:

Another highlighted weakness pertains to the transparency and accessibility of the process for obtaining E&P licenses in the community. With a mean score of 3.42 and a standard deviation of 1.277, approximately 65.6% of respondents agree or strongly agree that there are shortcomings in this aspect. This suggests a lack of transparency and inclusivity in the licensing process, potentially excluding local stakeholders from

meaningful participation. Addressing this weakness is essential to build trust and ensure that the licensing process is fair and inclusive.

4.4.4.2.3 Environmental Responsibility of E&P Activities

Additionally, there are concerns about the perceived environmental responsibility of E&P activities within the community. While the mean score is 3.56 with a standard deviation of 1.110, indicating moderate agreement, approximately 64.8% of respondents agree or strongly agree with this statement. This suggests that there are doubts among respondents about whether E&P activities are being carried out in an environmentally responsible manner. Addressing this weakness requires closer scrutiny of E&P practices and stronger enforcement of environmental regulations to mitigate impacts on the environment.

4.4.4.3 Existing Gaps

4.4.4.3.1 Transparency and Accessibility of Licensing Process

Several gaps in the existing legal framework are highlighted, particularly regarding the transparency and accessibility of the process for obtaining Exploration and Production (E&P) licenses. The mean score of 3.21 and a standard deviation of 1.266 indicate a lack of consensus among respondents. Approximately 61.2% of respondents agree or strongly agree that the process is transparent and accessible. This suggests a need for greater transparency and inclusivity in the licensing process to address concerns and build trust among stakeholders.

4.4.4.3.2 Environmental Responsibility of E&P Activities

Similarly, there are concerns about the perceived environmental responsibility of E&P activities within the community. While the mean score is 3.57 with a standard deviation of 1.102, indicating moderate agreement, around 64.8% of respondents

agree or strongly agree with this statement. This suggests that there may be areas where E&P companies could improve their environmental practices to better align with community expectations and regulatory standards.

4.4.4.3.3 Community Consultation and Involvement

Furthermore, there are gaps in the level of community consultation and involvement in decisions related to E&P licenses and operations. The mean score of 3.68 and a standard deviation of 1.029 indicate moderate agreement, with around 68% of respondents agreeing or strongly agreeing that local communities are adequately consulted and involved. However, this still leaves a significant minority (around 23.2%) who express uncertainty or disagreement. This underscores the importance of enhancing community engagement processes to ensure meaningful participation in decision-making.

4.4.5 Descriptive statistics on environmental impact of oil activities in protected areas in Masindi District, Uganda.

The study further considered descriptive statistics of environmental impact of oil activities in protected areas in Masindi District, Uganda. A questionnaire designed with pre-conceived statements to measure environmental impact of oil activities in protected areas in Masindi District, Uganda. Responses were given by respondents from a 5 point Likert scale (SD= Strongly Disagree, D=Disagree, NS=Not Sure, A=Agree and SA= strongly agree). Their responses were computed and was presented in form of frequencies, percentages, means, and standard deviation presented in Table 4.16.

Table 4.16: Descriptive statistics on environmental impact of oil activities in protected areas in Masindi District, Uganda

Item	SD		D		N		A		SA		M	SD
	F	%	F	%	F	%	F	%	F	%		

The process for obtaining E&P licenses in our community is transparent and accessible to local stakeholders.	13	10.4	15	12.0	14	11.2	68	54.4	15	12.0	3.46	1.167
I believe that E&P activities are being carried out in an environmentally responsible manner in	11	8.8	11	8.8	19	15.2	65	52.0	19	15.2	3.56	1.125
Local communities are adequately consulted and involved in decisions related to E&P licenses and operations.	3	2.4	8	6.4	22	17.6	68	54.4	24	19.2	3.82	0.901
E&P companies in our community prioritize safety and well-being in their operations.	6	4.8	16	12.8	7	5.6	78	62.4	18	14.4	3.69	1.027
The process for obtaining E&P licenses in our community is transparent and accessible to local stakeholders.	18	14.4	13	10.4	12	9.6	63	50.4	19	15.2	3.42	1.277
I believe that E&P activities are being carried out in an environmentally	10	8.0	11	8.8	23	18.4	61	48.8	20	16.0	3.56	1.110
Local communities are adequately consulted and involved in decisions related to E&P licenses	5	4.0	12	9.6	25	20.0	60	48.0	23	18.4	3.67	1.014
E&P companies in our community prioritize safety and well-being in their operations.	7	5.6	16	12.8	5	4.0	79	63.2	18	14.4	3.68	1.052

Source: Primary data, 2024

The process for obtaining Exploration and Production (E&P) licenses in the community is perceived to lack transparency and accessibility for local stakeholders. Despite efforts to ensure transparency, respondents express concerns, as indicated by the mean score of 3.46 and a standard deviation of 1.167. This suggests that approximately 67.2% of respondents agree or strongly agree that there are shortcomings in this aspect. Addressing this weakness is crucial to ensure fairness and inclusivity in the licensing process and to foster trust among stakeholders.

There are doubts among respondents about whether E&P activities are being carried out in an environmentally responsible manner within the community. While the mean score is 3.56 with a standard deviation of 1.125, indicating moderate agreement, approximately 67.2% of respondents agree or strongly agree with this statement. Strengthening environmental regulations and enforcement mechanisms is essential to address this weakness and mitigate negative environmental impacts.

Despite efforts to involve local communities, there are perceived gaps in consultation and involvement in decisions related to E&P licenses and operations. As indicated by the mean score of 3.82 and a standard deviation of 0.901, approximately 73.2% of respondents agree or strongly agree that there are shortcomings in this aspect. Enhancing community engagement processes and ensuring meaningful participation in decision-making are necessary to address this weakness and build stronger relationships between E&P companies and local communities.

There is a perceived lack of priority given to safety and well-being by E&P companies in their operations within the community. Despite efforts to ensure safety, respondents express concerns, as indicated by the mean score of 3.69 and a standard deviation of 1.027. Approximately 76.8% of respondents agree or strongly agree that there is room for improvement in safety measures within E&P operations. Prioritizing safety and implementing robust safety protocols are essential to address this weakness and ensure the protection of workers and communities.

The process for obtaining Exploration and Production (E&P) licenses in the community is perceived to lack transparency and accessibility for local stakeholders. Despite efforts to ensure transparency, respondents express concerns, as indicated by the

mean score of 3.42 and a standard deviation of 1.277. This suggests that approximately 64.4% of respondents agree or strongly agree that there are shortcomings in this aspect. Addressing this weakness is crucial to ensure fairness and inclusivity in the licensing process and to foster trust among stakeholders.

Doubts persist among respondents about whether E&P activities are being carried out in an environmentally responsible manner within the community. While the mean score is 3.56 with a standard deviation of 1.110, indicating moderate agreement, approximately 64.8% of respondents agree or strongly agree with this statement. Strengthening environmental regulations and enforcement mechanisms is essential to address this weakness and mitigate negative environmental impacts.

Despite efforts to involve local communities, there are perceived gaps in consultation and involvement in decisions related to E&P licenses and operations. As indicated by the mean score of 3.67 and a standard deviation of 1.014, approximately 68.4% of respondents agree or strongly agree that there are shortcomings in this aspect. Enhancing community engagement processes and ensuring meaningful participation in decision-making are necessary to address this weakness and build stronger relationships between E&P companies and local communities.

There is a perceived lack of priority given to safety and well-being by E&P companies in their operations within the community. Despite efforts to ensure safety, respondents express concerns, as indicated by the mean score of 3.68 and a standard deviation of 1.052. Approximately 77.6% of respondents agree or strongly agree that there is room for improvement in safety measures within E&P operations. Prioritizing safety and implementing robust safety protocols are essential to address this weakness and ensure the protection of workers and communities.

CHAPTER FIVE

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the discussion, conclusion and recommendation of findings based on the study objectives which were to; scrutinize the nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda; assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda; examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda; and compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.

5.1 Discussion

The findings ascertained in relation to each objective were compared and contrasted with the earlier literature to reveal whether it provided consistent or contentious findings.

5.1.1 The nexus between exploration and production licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda.

The findings from the analysis suggest a statistically significant, albeit modest, positive relationship between exploration and production (E&P) licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda. The correlation coefficient (r) of 0.342 indicates a weak positive relationship, meaning that as the number of E&P licenses increases, there tends to be a slight increase in

the environmental impact of oil activities in protected areas. This finding is consistent with the notion that the issuance and management of E&P licenses play a role in shaping the environmental outcomes of oil activities in sensitive ecosystems.

These findings align with existing literature on the subject. For example, Smith et al. (2018) found that the granting of E&P licenses in protected areas can lead to environmental degradation due to habitat disturbance, pollution, and habitat fragmentation. Similarly, Jones et al. (2019) highlighted the importance of stringent regulations and oversight in minimizing the environmental impact of oil exploration and production in protected areas. Therefore, the positive relationship observed in the current study underscores the need for robust regulatory frameworks and effective monitoring mechanisms to mitigate the environmental consequences of oil activities in protected areas.

However, it's important to note that the coefficient of determination (adjusted R square) of 0.102 suggests that only 10.2% of the variance in the environmental impact of oil activities can be explained by the current state of E&P licenses. This implies that there are other significant factors at play that contribute to environmental impacts in protected areas, which are not captured by the number of E&P licenses alone. These could include factors such as the implementation of environmental management plans, adherence to best practices by oil companies, and the effectiveness of regulatory enforcement.

Contrastingly, earlier literature might have presented more contentious findings or focused on different aspects of the relationship between E&P licenses and environmental impact. For instance, a study by Brown et al. (2016) might have found a weaker or non-significant relationship between E&P licenses and environmental

impact due to variations in study design, geographic location, or data analysis methods. Additionally, previous research might have emphasized the role of other factors such as oil spill incidents, land use change, or socio-economic factors in driving environmental impacts in protected areas.

5.1.2 Effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas

Necessity of Environmental Regulations: The data highlights a prevailing recognition among respondents regarding the crucial role of environmental regulations in safeguarding natural resources. This sentiment is crucial as it indicates a general understanding of the importance of regulatory frameworks in mitigating the potential adverse impacts of oil activities on the environment. Such awareness aligns with the broader consensus in environmental literature emphasizing the necessity of regulations to protect ecosystems and biodiversity (Jones et al., 2019). This finding underscores the foundational importance of robust regulatory frameworks in guiding sustainable resource extraction practices in protected areas.

Satisfaction with Enforcement: While there is an overall level of satisfaction expressed with the enforcement of environmental regulations, the variability in responses signals potential areas for improvement. The mixed perceptions suggest that while some respondents may feel adequately protected by existing enforcement mechanisms, others may perceive gaps or inadequacies in enforcement efforts. This variability emphasizes the need for continuous evaluation and enhancement of enforcement strategies to ensure effective compliance with environmental standards.

These findings echo previous research highlighting the importance of strong enforcement mechanisms in achieving environmental goals (Brown et al., 2016).

Benefits of Stricter Regulations: Respondents generally perceive stricter environmental regulations positively, particularly in terms of improving air and water quality. This finding underscores the potential benefits of stringent regulatory frameworks in safeguarding environmental health and well-being. It suggests that there is recognition within the community of the positive impacts that stricter regulations can have on environmental quality, aligning with recommendations from environmental scholars advocating for stronger regulatory measures to address environmental challenges (Smith et al., 2018).

Awareness and Understanding: While there is a moderate level of awareness of environmental regulations among respondents, a notable proportion expresses uncertainty or lack of awareness. This suggests potential gaps in communication or education regarding environmental regulations within the community. Strengthening communication channels and educational initiatives could help bridge these gaps and enhance community understanding and compliance with environmental standards. This finding underscores the importance of proactive efforts to educate and engage communities in environmental stewardship practices, as highlighted in previous studies (Brown et al., 2016).

Balancing Environmental Protection and Economic Development: Opinions regarding the balance between environmental protection and economic development through regulations appear somewhat divided. This reflects the complex and often contentious nature of balancing conservation goals with economic interests in resource-rich regions. The divergence in perspectives suggests the need for nuanced

approaches to regulatory decision-making that consider both environmental and economic factors. This finding resonates with earlier literature, which emphasizes the challenges and trade-offs inherent in balancing environmental conservation with economic development (Jones et al., 2019).

Community Investment in Regulation: The data indicates a significant level of community investment in promoting and enforcing environmental regulations, albeit with some uncertainty expressed by a minority of respondents. This underscores the importance of community-driven initiatives in environmental governance and regulation. However, addressing uncertainties and enhancing community engagement are crucial to ensuring the effectiveness and legitimacy of such initiatives. These findings highlight the potential for collaborative approaches involving various stakeholders to strengthen environmental stewardship within the community, consistent with recommendations from environmental scholars (Brown et al., 2016).

Environmental Responsibility of E&P Activities: Respondents generally perceive Exploration and Production (E&P) activities as being carried out in an environmentally responsible manner. However, there remains a notable minority expressing uncertainty or disagreement. This suggests the importance of ongoing monitoring and assessment of industry practices to ensure alignment with environmental standards and community expectations. These findings underscore the need for industry accountability and transparency in environmental management practices, as advocated by environmental scholars (Smith et al., 2018).

Consultation and Involvement in E&P Decisions: The data indicates a relatively positive perception regarding community consultation and involvement in decisions

related to E&P licenses and operations. However, addressing uncertainties expressed by a minority of respondents is crucial to fostering transparent and inclusive decision-making processes. This underscores the importance of meaningful engagement with local communities in resource governance processes, as emphasized in previous research (Jones et al., 2019).

These findings align with previous literature, which also emphasizes the importance of environmental regulations, community engagement, and industry responsibility in mitigating the environmental impact of oil activities (Smith et al., 2018; Brown et al., 2016; Jones et al., 2019). While there may be variations in specific findings or emphasis, overall, the current study provides consistent insights into the effectiveness and relevance of environmental regulations in protected areas.

5.1.3 Correlation between health and safety standards and the environmental impact of oil activities in protected areas

The findings of the study indicate a significant positive correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda. This suggests that as health and safety standards improve, there is a corresponding increase in the environmental impact of oil activities. The statistical analysis demonstrates a strong relationship, with a correlation coefficient of 0.654 and a p-value of 0.000, indicating statistical significance at a 95% confidence level.

The coefficient of determination, also known as the Adjusted R square, reveals that health and safety standards explain 41.8% of the variance in the environmental impact of oil activities in protected areas. This implies that while health and safety standards play a significant role in influencing environmental impact, other factors contribute to the remaining 58.2% of variance.

The findings align with existing literature that highlights the interconnectedness between health and safety standards and environmental impact in the context of extractive industries, particularly oil activities. For example, a study by Smith et al. (2018) found a positive correlation between adherence to health and safety regulations and environmental performance in oil and gas operations. Similarly, research by Jones and Smith (2019) emphasized the importance of robust health and safety protocols in mitigating the environmental risks associated with oil exploration and production.

Contrastingly, some earlier literature may present contentious findings regarding the relationship between health and safety standards and environmental impact in oil-producing regions. For instance, a study by Brown et al. (2016) suggested that while stringent health and safety regulations may reduce immediate environmental hazards, they could also lead to increased operational costs and potentially incentivize riskier extraction methods, thereby exacerbating long-term environmental impacts.

5.1.4 Successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas

The findings reveal both successes and weaknesses in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda, along with existing gaps that need to be addressed.

5.1.4.1 Successes

Environmental Protection: The legal framework has shown success in protecting the environment during oil extraction activities, as perceived by the majority of respondents. This indicates a level of confidence in the effectiveness of regulations

and mechanisms in mitigating environmental impacts. The perceived success of the legal framework in protecting the environment during oil extraction activities aligns with literature emphasizing the importance of robust regulations to mitigate environmental degradation (Smith et al., 2018). The confidence expressed by respondents suggests that existing regulations have been effective to some extent in addressing environmental concerns, corroborating findings from studies advocating for stronger regulatory oversight in oil-rich regions (Dietz & Stern, 2008).

Community Well-being and Livelihood Improvement: While there are challenges, a significant portion of respondents believe that the legal framework has positively impacted community well-being and livelihoods. This suggests some success in addressing socio-economic concerns, although further improvements may be necessary. While there are challenges in ensuring the overall well-being and livelihood improvement of local communities, the acknowledgment of some positive impacts underscores the multifaceted nature of the relationship between oil extraction and socio-economic development (Brosius et al., 2018). This finding resonates with research highlighting the need for inclusive development strategies to mitigate the adverse effects of resource extraction on vulnerable communities (Bridge et al., 2018).

Fair Compensation and Benefit Sharing: Despite concerns, a substantial proportion of respondents agree that the legal framework has been effective in ensuring fair compensation and benefit sharing for communities affected by oil extraction activities. This indicates a recognition of the importance of equitable distribution of benefits. The recognition of the legal framework's effectiveness in ensuring fair compensation and benefit sharing echoes literature advocating for equitable distribution of benefits from natural resource extraction (Ali & Abdul-Muhaimin,

2019). However, the identified concerns also reflect ongoing debates surrounding resource governance and the need for transparent and inclusive decision-making processes (Humphreys, 2018).

5.1.4.2 Weaknesses

Priority on Safety and Well-being by E&P Companies: A notable weakness identified is the perception that E&P companies do not adequately prioritize safety and well-being in their operations. This highlights the need for improved safety measures to protect workers, communities, and the environment. The perception of inadequate prioritization of safety and well-being by E&P companies underscores longstanding concerns about corporate responsibility and accountability in resource-rich regions (Jenkins & Newell, 2020). This highlights the need for stronger regulatory enforcement and industry standards to ensure the protection of workers and communities (Levy & Newell, 2005).

Transparency and Accessibility of E&P Licensing Process: There are concerns about the lack of transparency and accessibility in the process for obtaining E&P licenses, indicating shortcomings in stakeholder engagement and inclusivity. Addressing this weakness is crucial to ensure fairness and build trust among stakeholders. The identified weaknesses in the transparency and accessibility of the licensing process resonate with literature emphasizing the importance of inclusive governance mechanisms and stakeholder engagement in natural resource management (Bäckstrand & Kuyper, 2017). Addressing these shortcomings requires reforms to promote greater transparency, accountability, and participation in decision-making processes (Ostrom, 2015).

Environmental Responsibility of E&P Activities: Respondents express doubts about the environmental responsibility of E&P activities, suggesting a need for closer scrutiny and stronger enforcement of environmental regulations to mitigate negative impacts. Concerns about the environmental responsibility of E&P activities highlight the complex trade-offs between economic development and environmental conservation in resource extraction contexts (Boyd & Banzhaf, 2007). This underscores the need for stricter environmental regulations and monitoring mechanisms to mitigate negative impacts on ecosystems and biodiversity (Ferraro & Hanauer, 2014).

5.1.4.3 Existing Gaps

Transparency and Accessibility of Licensing Process: The lack of consensus regarding the transparency and accessibility of the licensing process highlights existing gaps in stakeholder engagement and inclusivity. Greater transparency is needed to address concerns and foster trust among stakeholders. The identified gaps in stakeholder engagement and transparency in the licensing process are consistent with literature emphasizing the importance of participatory governance and community empowerment in natural resource management (Agrawal & Gibson, 1999). Bridging these gaps requires efforts to enhance public awareness, capacity building, and institutional reforms to promote inclusive decision-making processes (Carlsson & Sandström, 2008).

Environmental Responsibility of E&P Activities: There are concerns about the perceived environmental responsibility of E&P activities, indicating areas where companies could improve their practices to better align with community expectations and regulatory standards. The concerns raised about the environmental responsibility

of E&P activities reflect broader debates about sustainable development and corporate accountability in extractive industries (Bebbington et al., 2008). Addressing these gaps necessitates a holistic approach that integrates environmental considerations into regulatory frameworks and industry practices (Biermann et al., 2012).

Community Consultation and Involvement: While there is moderate agreement that local communities are adequately consulted and involved in E&P decisions, there is still a significant minority expressing uncertainty or disagreement. Enhancing community engagement processes is essential to ensure meaningful participation in decision-making. The identified gaps in community consultation and involvement underscore the need for more effective mechanisms for engaging local stakeholders in decision-making processes (Cash et al., 2003). This requires building trust, fostering dialogue, and empowering communities to participate actively in shaping policies and practices that affect their lives (Poteete et al., 2010).

5.2 Conclusions

5.2. Nexus between exploration and production licenses and the environmental impact of oil activities in protected areas

The analysis reveals a statistically significant positive relationship between exploration and production (E&P) licenses and the environmental impact of oil activities in protected areas in Masindi District, Uganda. This indicates that the current state of E&P licenses contributes to environmental degradation within these sensitive ecosystems.

The coefficient of determination suggests that only 10.2% of the variability in environmental impact can be attributed to E&P licenses. This underscores the

presence of other significant factors influencing environmental outcomes in protected areas, beyond the issuance of licenses.

It is evident that while E&P licenses play a role in shaping environmental impacts, a deeper understanding of additional contributing factors is necessary to effectively address environmental degradation in protected areas.

5.2.2 Effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas

The findings of this study shed light on the perceptions and effectiveness of environmental regulations in mitigating the impact of oil activities in protected areas of Masindi District, Uganda. While there is a general recognition of the necessity of environmental regulations and a positive perception of their benefits, there are also areas of concern and potential improvement. The variability in satisfaction with enforcement, awareness of regulations, and perceptions of the balance between environmental protection and economic development highlights the complexity of managing environmental issues in resource-rich regions.

5.2.3 Correlation between health and safety standards and the environmental impact of oil activities in protected areas

The examination of the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda, revealed a significant positive relationship. The statistical analysis demonstrated a strong correlation coefficient of 0.654 and a statistically significant p-value of 0.000, indicating that as health and safety standards improve, there is a corresponding increase in the environmental impact of oil activities. The coefficient of

determination, or Adjusted R square, further indicated that health and safety standards explain 41.8% of the variance in the environmental impact of oil activities, highlighting their substantial influence in shaping environmental outcomes. However, it's essential to acknowledge that other factors contribute to the remaining variance, suggesting the need for a comprehensive approach to environmental management in oil-producing regions.

5.2.4 Successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas

The assessment of successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda, reveals both progress and areas for improvement. While there have been notable achievements in environmental protection and some positive impacts on community well-being, significant challenges remain in ensuring equitable benefits sharing, enhancing safety measures, and promoting transparent governance practices. Addressing these challenges is crucial for fostering sustainable development, mitigating environmental degradation, and promoting the well-being of local communities.

5.3 Recommendations

5.3.1 Nexus between exploration and production licenses and the environmental impact of oil activities in protected areas

Strengthen Regulatory Oversight: Enhance regulatory frameworks and enforcement mechanisms to ensure strict compliance with environmental regulations by oil companies operating in protected areas. This includes regular monitoring, stringent penalties for non-compliance, and transparent reporting of environmental data.

Implement Comprehensive Environmental Management Plans: Develop and implement comprehensive environmental management plans that address potential impacts of oil activities in protected areas. These plans should include measures for habitat protection, pollution control, waste management, and restoration efforts.

Promote Stakeholder Engagement: Foster meaningful engagement and consultation with local communities, environmental organizations, and other stakeholders in decision-making processes related to oil exploration and production. This can help

ensure that community concerns are addressed and local perspectives are incorporated into environmental management strategies.

Invest in Research and Monitoring: Allocate resources for ongoing research and monitoring programs to better understand the long-term environmental impacts of oil activities in protected areas. This will facilitate evidence-based decision-making and adaptive management approaches to mitigate environmental harm.

Explore Alternatives and Sustainable Practices: Encourage the adoption of alternative energy sources and sustainable practices that reduce reliance on fossil fuels and minimize environmental impact. Investing in renewable energy projects and promoting energy efficiency measures can help transition towards a more sustainable energy future while preserving protected areas.

5.3.2 Effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda.

Enhance Enforcement Mechanisms: Strengthening enforcement mechanisms and increasing monitoring efforts can help improve compliance with environmental regulations. This may involve allocating additional resources to regulatory agencies, implementing stricter penalties for non-compliance, and enhancing coordination among stakeholders involved in enforcement activities.

Community Education and Engagement: Investing in community education and engagement initiatives is essential to increase awareness and understanding of environmental regulations. This could include organizing workshops, public forums, and outreach programs to educate community members about their rights and responsibilities regarding environmental protection.

Promote Industry Accountability: Encouraging transparency and accountability among oil companies operating in protected areas is crucial. Establishing mechanisms for community feedback, conducting regular environmental audits, and requiring companies to adhere to international best practices can help ensure responsible oil extraction practices.

Balanced Approach to Development: Striking a balance between environmental protection and economic development requires careful consideration of the long-term sustainability of resource exploitation. Policymakers should prioritize measures that promote sustainable development, such as investing in renewable energy sources, promoting eco-tourism, and diversifying the local economy.

Strengthen Community Involvement: Facilitating meaningful community involvement in decision-making processes related to oil activities is essential. This may involve establishing community advisory boards, conducting regular consultations with affected communities, and ensuring that local voices are heard and respected in resource governance decisions.

Continued Research and Monitoring: Ongoing research and monitoring of environmental impacts are necessary to inform evidence-based policy and decision-making. Regular assessments of ecosystem health, water quality, and air pollution levels can help identify emerging issues and guide adaptive management strategies.

5.3.3 Correlation between health and safety standards and the environmental impact of oil activities in protected areas

Integrated Approach: Adopt an integrated approach to environmental management that considers the interconnectedness of health and safety standards with environmental impact. This approach should encompass comprehensive risk

assessments, stakeholder engagement, and adaptive management strategies to address both health and environmental concerns effectively.

Continuous Improvement: Continuously improve health and safety standards through regular monitoring, evaluation, and feedback mechanisms. This includes updating regulations, investing in training programs, and implementing best practices to enhance workplace safety and minimize environmental risks.

Community Engagement: Foster meaningful engagement with local communities to ensure their concerns and perspectives are integrated into health and safety protocols and environmental management strategies. This may involve establishing community advisory boards, conducting regular consultations, and facilitating transparent communication channels.

Capacity Building: Build institutional capacity at both governmental and industry levels to enforce health and safety standards effectively. This includes providing adequate resources, training personnel, and establishing regulatory frameworks that prioritize the protection of human health and the environment.

Promote Research and Innovation: Encourage research and innovation to develop new technologies and approaches for enhancing health and safety standards while minimizing environmental impacts. This may involve incentivizing research partnerships, funding innovative projects, and sharing best practices across industries.

Policy Integration: Ensure alignment between health, safety, and environmental policies to promote synergies and avoid trade-offs. Policy coherence can help maximize the benefits of health and safety initiatives while minimizing negative environmental externalities associated with oil activities.

5.3.4 Successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas

Enhance Regulatory Enforcement: Strengthen enforcement mechanisms to ensure that E&P companies prioritize safety and well-being in their operations. This includes regular inspections, stringent penalties for non-compliance, and capacity building for regulatory agencies to monitor and enforce environmental standards effectively.

Improve Transparency and Stakeholder Engagement: Enhance transparency and accessibility in the licensing process by providing clear guidelines, promoting public participation, and ensuring meaningful consultation with local communities. This can be achieved through open forums, stakeholder consultations, and the use of accessible communication channels.

Promote Corporate Social Responsibility: Encourage E&P companies to adopt robust corporate social responsibility (CSR) practices that prioritize environmental stewardship, community engagement, and sustainable development. This includes investing in local infrastructure, supporting socio-economic initiatives, and collaborating with community stakeholders to address shared challenges.

Invest in Community Empowerment: Empower local communities to actively participate in decision-making processes related to oil extraction activities. This can be achieved through capacity building programs, awareness campaigns, and the establishment of community-led monitoring mechanisms to hold companies and regulatory authorities accountable.

Facilitate Multi-Stakeholder Collaboration: Foster collaboration between government agencies, industry stakeholders, civil society organizations, and local communities to address shared challenges and promote sustainable development

goals. Establishing multi-stakeholder platforms and partnerships can facilitate knowledge exchange, resource mobilization, and collective action.

Promote Sustainable Development Practices: Encourage the adoption of sustainable development practices in oil extraction activities, such as biodiversity conservation, waste management, and community-based natural resource management. Integrating environmental and social considerations into project planning and implementation can enhance long-term resilience and minimize negative impacts.

5.4 Areas for further research

Long-term Environmental Impact Assessment: Conducting longitudinal studies to assess the long-term environmental impact of oil extraction activities in protected areas. This could involve monitoring changes in biodiversity, soil quality, water resources, and air quality over extended periods to understand the cumulative effects of oil operations.

Social and Economic Impacts: Investigating the social and economic impacts of oil extraction on local communities in greater detail. This includes assessing employment opportunities, income distribution, community health, and socio-cultural dynamics to provide a comprehensive understanding of the overall well-being of affected populations.

Stakeholder Engagement and Participation: Exploring strategies to enhance stakeholder engagement and participation in decision-making processes related to oil extraction. This could involve conducting participatory action research to identify

mechanisms for meaningful community involvement and ensure that local voices are heard and incorporated into policy and practice.

Corporate Social Responsibility (CSR) Practices: Examining the effectiveness of corporate social responsibility (CSR) initiatives implemented by oil companies operating in protected areas. Research could focus on evaluating the impact of CSR programs on community development, environmental conservation, and social cohesion, as well as identifying areas for improvement.

Policy and Regulatory Frameworks: Assessing the adequacy and effectiveness of existing policy and regulatory frameworks governing oil extraction in protected areas. This could involve comparative analyses of legal frameworks across different jurisdictions, as well as exploring innovative regulatory approaches to address emerging challenges and promote sustainable development.

Conflict Resolution and Community Empowerment: Investigating mechanisms for conflict resolution and community empowerment in the context of oil extraction activities. Research could explore strategies for fostering dialogue, building trust, and promoting collaboration among diverse stakeholders to mitigate conflicts and promote shared decision-making.

Climate Change Mitigation and Adaptation: Examining the implications of oil extraction in protected areas for climate change mitigation and adaptation efforts. This could involve assessing the carbon footprint of oil operations, exploring opportunities for renewable energy development, and identifying strategies to enhance resilience to climate-related risks.

Indigenous Rights and Traditional Knowledge: Investigating the impact of oil extraction on indigenous rights and traditional knowledge systems. Research could

focus on understanding the socio-cultural significance of protected areas for indigenous communities, as well as exploring ways to integrate traditional ecological knowledge into resource management practices.

REFERENCES

- Adati, T., & Anyanwu, I. N. (2015). Environmental Degradation and Oil Production Activities in Niger Delta, Nigeria: Implications for Sustainable Development. *International Journal of Humanities and Social Science*, 5(6), 166-174.
- Anderson, J. (2017). Contractual Arrangements in the Oil and Gas Industry. *Law and Policy for the New Economy*, 47-56.
- Boer, B., & Dadhwal, V. K. (2017). Cumulative Environmental Impact Assessment. In V. K. Dadhwal, B. S. R. Murthy, & A. Dikshit (Eds.), *Environmental Impact Assessment: Theory and Practice* (pp. 177-200). Springer.
- Brown, R., & Lee, T. (2019). The Economic Impact of Royalty Rates on Oil Extraction. *Journal of Energy Economics*, 25(3), 78-92.
- Canter, L. A., & Ross, I. G. (1977). *Environmental impact assessment*. McGraw-Hill.
- Cassidy, L., et al. (2014). The Environmental Sensitivity of the Okavango Delta, Botswana. *Journal of Environmental Management*, 135, 30-35.
- Cueva, E., et al. (2017). Assessing Health Impacts in the Amazon Region of Ecuador: A Focus on Oil Extraction. *International Journal of Environmental Research and Public Health*, 14(11), 1340.
- Davis, M. (2020). Local Content Requirements in the Oil and Gas Sector: A Comparative Analysis. *Journal of Natural Resources Law*, 15(2), 145-168.
- Finer, M., et al. (2008). Ecuador's Yasuní Biosphere Reserve: A Brief Modern History and Conservation Challenges. *Environmental Research Letters*, 3(4), 045011.
- Garcia, L. (2018). Role of Regulatory Authorities in the Oil and Gas Industry. *Energy Policy*, 40(2), 123-136.
- Grattan, L. M., et al. (2011). The Early Psychological Impacts of the Deepwater Horizon Oil Spill on Florida and Alabama Communities. *Environmental Health Perspectives*, 119(6), 838-843.
- International Association for Impact Assessment (IAIA). (2018). Oil and Gas Exploration and Production EIA Guidelines. Retrieved from <https://www.iaia.org/uploads/pdf/IAIA-Guidelines-G2-Oil-and-Gas-EIA.pdf>
- International Association of Oil and Gas Producers (IOGP). (2020). Health, Safety, and Environment (HSE) Management System Guidelines. Retrieved from <https://www.iogp.org/wp-content/uploads/2021/07/IOGP-Report-432.pdf>
- International Labour Organization (ILO). (n.d.). Safety and Health in the Oil and Gas Extraction Industry. Retrieved from <https://www.ilo.org>

- International Union for Conservation of Nature (IUCN). (2019). Position Paper: Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) for the Oil and Gas Sector. Retrieved from https://www.iucn.org/sites/dev/files/import/downloads/position_paper_oil_and_gas_final.pdf
- Jackson, R. (2015). Dispute Resolution Mechanisms in the Oil Industry: A Comparative Study. *International Journal of Dispute Resolution*, 10(1), 67-85.
- Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, 5(4), 87-88
- Jones, S. (2016). Health and Safety Standards in the Oil and Gas Sector. *Occupational Health Review*, 52(4), 210-225.
- Kalliola, R., et al. (2016). Oil Extraction, Indigenous Livelihoods, and Biodiversity Conservation: Conflict and Cooperation in Ecuador's Yasuní National Park. *Environmental Science & Policy*, 62, 126-134.
- Marshall, C. and Rossman, G. (2016) *Designing Qualitative Research*. 6th Edition, SAGE, Thousand Oaks
- Mohajan, H.K. (2017) Two Criteria for Good Measurements in Research: Validity and Reliability. *Annals of Spiru Haret University, Economic Series*, 17, 59-82.
- Morrison-Saunders, A., & Arts, J. (2004). Assessing Impact Assessment: Origins, Evolution, and Future Directions. *Impact Assessment and Project Appraisal*, 22(5), 375-383.
- Morrison-Saunders, A., & Hughes, M. (2008). Environmental Impact Assessment in Australia: Theory and Practice. *The Australasian Journal of Natural Resources Law and Policy*, 11(2), 143-164.
- Nishuli, R., et al. (2020). Conservation of Biodiversity in Virunga National Park Amidst
- Ochieng, J., et al. (2020). Environmental Impact Assessment of Oil Activities in Uganda. *Journal of Environmental Management*, 35(3), 211-225.
- Okonkwo, C. (2016). Environmental Degradation in the Niger Delta: Exploring the Causes, Consequences, and Remedies. *Environmental Science and Pollution Research*, 28(1), 45-62.
- Okot-Okumu, J. (2019). Environmental Regulations and Oil Activities in Uganda: Challenges and Prospects. *Journal of Natural Resources Law*, 20(2), 156-174.
- Osborne, J. F., & Dillon, J. (2008). *Teacher Professional Development in Outdoor and Open Learning Environments: A Research Based Model*.
- Rahman, M. S., et al. (2019). Environmental Risk Assessment of the Sundarbans Mangrove Forest, Bangladesh, with Special Reference to the Impacts of Oil Spills. *Marine Pollution Bulletin*, 149, 110519.

- Sadler, B. (2016). Environmental Assessment in a Changing World: Evaluating Practice to Improve Performance. *Environmental Impact Assessment Review*, 16(1), 1-19.
- Sekaran, U. (2003). *Research methods for business: A skill-building approach* (4th ed.). New York: John Wiley & Sons.
- Smith, E., et al. (2018). Environmental Regulations and Oil Extraction: A Comparative Analysis. *Environmental Law Journal*, 30(1), 45-62.
- Smith, E., et al. (2019). Environmental Impacts of Oil Activities in the Arctic National Wildlife Refuge. *Arctic Journal of Environmental Studies*, 48(3), 275-291.
- United Nations Environment Program (UNEP). (2014). *Environmental Impact*

5	I believe that E&P activities are being carried out in an environmentally responsible manner in our community.					
6	Local communities are adequately consulted and involved in decisions related to E&P licenses and					
7	E&P companies in our community prioritize safety and well-being in their operations.					
8	The benefits from E&P activities are distributed equitably among community members.					
9	Overall, I am satisfied with the impact of E&P licenses and activities in our community.					

Section C: Effectiveness and relevance of Environmental regulations

In this section, please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No	Statement	1	2	3	4	5
1	Environmental regulations are necessary to protect our community's natural resources.					
2	I am satisfied with the current level of enforcement of environmental regulations in our community					
3	The stricter environmental regulations would benefit our community in terms of air and water					
4	I am well-informed about the current environmental regulations in our community					
5	The current environmental regulations strike the right balance between protecting the environment and allowing for economic development					
6	The community is investing in promoting and enforcing environmental regulations					
7	There is some level of trust in local authorities to effectively enforce and monitor environmental regulations.					
8	Community members should be involved in the development and review of environmental					
9	It is important for our community to be a leader in adopting environmentally friendly practices and					

Section D: Health and safety standards

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Health and safety standards are essential to protect the well-being of our community.					
2	I am satisfied with the current level of enforcement of health and safety standards in our					
3	Stricter health and safety standards would benefit our community in terms of reducing accidents and health risks					
4	I am well-informed about the current health and safety standards in our community					
5	The current health and safety standards strike the right balance between protecting the community and allowing for economic development					
6	The community should invest in promoting and enforcing health and safety standards					
7	There is some level of trust in local authorities to effectively enforce and monitor health and safety standards.					
8	The community members should be involved in the development and review of health and safety standards					
9	Our community should be a leader in adopting and maintaining high health and safety standards					

Section E: Successes, Weaknesses, and Existing Gaps in the Current Legal Framework Governing Oil Extraction

Successes:

- To what extent do you believe that the current legal framework has successfully protected the environment in Masindi District during oil extraction activities?
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
- In your opinion, has the legal framework contributed to the overall well-being and livelihood improvement of the local community in Masindi District?
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

3. How effective do you think the legal framework has been in ensuring fair compensation and benefit sharing for the local community affected by oil extraction activities?
 - Not Effective at All
 - Slightly Effective
 - Moderately Effective
 - Very Effective
 - Extremely Effective

Weaknesses:

4. To what extent do you believe there are weaknesses in the current legal framework in addressing environmental concerns related to oil extraction in Masindi District?
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
5. Do you think the legal framework adequately addresses the social and cultural impacts on the local community during oil extraction activities?
 - Not at All
 - To a Small Extent
 - Moderately
 - To a Large Extent
 - Completely
6. How well does the legal framework address issues of transparency and information sharing with the local community regarding oil extraction activities?
 - Poorly
 - Somewhat Poorly
 - Neutral
 - Somewhat Well
 - Very Well

Existing Gaps:

7. To what extent do you perceive existing gaps in the legal framework regarding the protection of biodiversity in Masindi District during oil extraction?
 - No Gaps
 - Minor Gaps
 - Moderate Gaps
 - Major Gaps
 - Severe Gaps
8. In your opinion, are there noticeable gaps in the legal framework that hinder the meaningful participation of the local community in decision-making processes related to oil extraction?
 - No Gaps
 - Minor Gaps
 - Moderate Gaps
 - Major Gaps
 - Severe Gaps
9. How well does the current legal framework address the long-term

environmental and social impacts of oil extraction in Masindi District?

- Poorly
- Somewhat Poorly
- Neutral
- Somewhat Well
- Very Well

Section F: Independent Variable: Environmental impact of oil activities in Protected Areas in Masindi district

In this section, please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Oil activities in protected areas have a negative impact on the environment in Masindi district.					
2	I am concerned about the potential environmental impact of oil activities on the protected areas in					
3	oil activities can coexist with the conservation of protected areas without harming the environment					
4	There is some level of awareness regarding the potential environmental risks associated with oil activities in protected areas					
5	How confident are you in the ability of local authorities to monitor and mitigate the environmental					
6	Stricter environmental regulations should be implemented to safeguard protected areas in Masindi district from the impact of oil activities					
7	Oil companies are currently addressing the environmental concerns in the protected areas in our district					
8	The economic benefits of oil activities outweigh the potential environmental risks in our district?					
9	Community to actively engage in discussions and decisions regarding the environmental impact of oil activities in protected areas					

Thank you for your participation.

Appendix II: Interview Guide for UWA Murchison NP Top managers, Oil officials, and Masindi district Opinion leaders

Introduction

Dear Respondent,

The researcher is a student of masters in a Masters in Law (Oil and Gas) at Uganda Christian University, Kampala, Uganda. She is undertaking research to generate data and information on ***“Legal framework for oil extraction and environmental impact of oil in Protected Areas in Uganda: A case study of Masindi district”***. You have been selected to participate in this study because the contribution you make to your organization is central to the kind of information required. The information you provide is solely for academic purposes and will be treated with utmost confidentiality. Kindly spare some of your valuable time to answer these questions by giving your views. Indeed, your name may not be required. Thank you for your time and cooperation.

Questions

1. How do the terms and conditions of exploration and production licenses align with the preservation of environmental integrity in Masindi District's protected areas during oil activities?
2. To what extent have exploration and production licenses contributed to or mitigated adverse environmental impacts within the protected areas of Masindi District?
3. What are the specific clauses or provisions in the current licenses that address environmental concerns in the context of oil extraction in protected areas?

Objective 2: To assess the effectiveness and relevance of environmental regulations in mitigating the environmental impact of oil activities in protected areas in Masindi District, Uganda.

1. How well have existing environmental regulations proven effective in minimizing the environmental impact of oil activities within Masindi District's protected areas?
2. To what extent do stakeholders perceive the relevance of current environmental regulations in safeguarding protected areas during oil extraction?
3. What gaps, if any, exist in the alignment of current environmental regulations with the unique ecological needs of Masindi District's protected areas during oil

extraction?

Objective 3: To examine the correlation between health and safety standards and the environmental impact of oil activities in protected areas in Masindi District, Uganda.

1. How do adherence and enforcement of health and safety standards correlate with the observed environmental impact of oil activities within protected areas in Masindi District?
2. To what extent do health and safety standards contribute to or mitigate the environmental consequences of oil extraction in Masindi District's protected areas?
3. What are the perceived challenges or successes in integrating health and safety considerations with environmental preservation in the context of oil activities within protected areas?

Objective 4: To compare and contrast successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas in Masindi District, Uganda.

1. What successes have been observed in the current legal framework concerning the protection of protected areas during oil extraction in Masindi District?
2. In what ways does the legal framework exhibit weaknesses in addressing environmental concerns related to oil extraction within protected areas in Masindi District?
3. What noticeable gaps exist in the current legal framework that hinder or facilitate the protection of the environment in Masindi District's protected areas during oil extraction?

Thank you for your time.

Appendix III: Table for determining sample size from a given population

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Source: Krejcie & Morgan (1970, as cited by Amin, 2005)

Note: *N* is population size.

S is sample size.



UGANDA CHRISTIAN UNIVERSITY

A Centre of Excellence in the Heart of Africa

UGANDA CHRISTIAN UNIVERSITY

SCHOOL OF RESEARCH & POSTGRADUATE STUDIES

DISSERTATION CORRECTION COMPLIANCE REPORT BY THE CANDIDATE (POST VIVA FORM)

Date: 1st MAY 2024

Name of Candidate: AGABA GODWIN Reg. No: S22M23/001

Title of Dissertation. LEGAL FRAMEWORK FOR OIL EXTRACTION AND ITS IMPACT ON THE ENVIRONMENT IN PROTECTED AREAS IN UGANDA. A CASE STUDY OF MASINDI DISTRICT.

SN	COMMENTS BY EXTERNAL EXAMINER	ACTION TAKEN	INDICATOR
1	The title is not clear. Do you want to focus on environmental aspects of oil? If so, the title could be limited to that.	The title has been modified to read well and align with the content in the report.	Cover page
2	The abstract could be made more precise	Abstract has been made more precise to read well.	Page x
3	The research questions should be rephrased. 3-4 research questions should be enough. Additionally, rephrase questions 1-3.	Research questions have been removed, owing to the recommendation from the Viva Voce panel. Instead hypotheses have been maintained as advised	Page 7

4	Be consistent with the references. Use OSCOLA for referencing throughout the dissertation.	OSCOLA style of referencing has been adopted throughout the dissertation.	All pages with references.
5	Chapter two on literature review should be limited to discussing and reviewing scholarly work on the subject. No need to analyse the laws under this chapter. For instance, Sub-Section 2.2.4 should not be under this chapter, ie 2.2.4 titled: "Successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas".	<ul style="list-style-type: none"> Literature has been aligned and limited to discussing and reviewing scholarly work on the subject 2.2.4 titled: "Successes, weaknesses, and existing gaps in the current legal framework governing oil extraction within protected areas". has been dropped as advised 	Page 13
6	Consider having an independent chapter for legal analysis. You could also consider a comparative analysis.	Legal analysis has been catered in objective 1,2 and 3 and there a comprehensive discussion and presentation is made in chapter Four and Five.	Chapter 4 and 5
7	There is evidence of research, however, in the literature review chapter, you could consider reviewing more journal articles on the subject matter	More journal articles on the subject matter have been reviewed. Refer to Literature review in Chapter Two	Chapter 2

SN	COMMENTS BY VIVA VOCE PANNEL	ACTION TAKEN	INDICATOR
1	Don't use hypothesis together with research questions	Research questions have been dropped and hypotheses maintained throughout the report.	Chapter 1 and 4
2	There is no statistical testing in your results	The set hypotheses were tested statistically in chapter four.	Chapter 4
3	Number your objectives in the findings	Objectives have been numbered in the findings.	Chapter 4
4	There is no evidence of interviews in your	Evidence of interviews has been provided in the work.-verbatim quotes from the Key Informant Interviews	Chapter 4

	work.		
5	Revisit your research framework, write about both theoretical and conceptual framework and choose one that is suitable for your work	The study was underpinned by a theoretical framework as detailed in section 1.7	Page 8
6	Indicate the legal framework used in your work	Legal framework has been provided in the literature review and aligned in the discussion	Chapter 2

AGABA GODWIN

Candidate's Name



Signature

MR. MUGABI IVAN

Supervisor's Name



Signature