

**THE EFFICACY OF MITIGATION HIERARCHY IN
PRESERVING BIODIVERSITY IN UGANDA**

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DECLARATION

I, NAMATOVU OLIVER declare that this is my original work and that all materials cited in this Research which are not my own have been fully acknowledged.

Signature

DATE

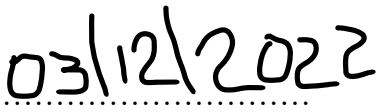
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APPROVAL

This Dissertation thesis has been done under the guidance and supervision of a lecturer and lawyer at the institute of petroleum Studies-Kampala.

Signature 

MR. MUGABI. K. IVAN

Date 

DEDICATION

This research is dedicated to my hero and role model, my mother Jane Roseline Akitui and my son, Jesse Peterson Akengye.

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I am grateful to God for enabling me pursue and accomplish this course. I Thank the Administration of the Institute of Petroleum Studies-Kampala for giving me a chance to take this course.

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LIST OF ACRONYMS

CBD	Convention on Biological Diversity
CBDR	Common but differentiated responsibilities
CDM	Clean based mechanisms
EIA	Environmental impact assessment
GHG	Greenhouse gas
JI	Joint implementation
MH	Mitigation Hierarchy
NBSAP	National Biodiversity Strategy and Action plan
NCCA	National Climate Change Act
NEA	National Environment Act
NEMA	National Environment Authority
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention for Climate Change

Chapter one: Introduction

1.1. Background of the study

The rapidly growing need for natural resources has increased the extinction of natural habitats leading to irreversible loss of biodiversity thus compromising the normal nature and operation of the ecosystems.¹

Among other factors, the loss of biodiversity is majorly caused by several activities including overexploitation of the species, pollution, modification of habitats, diseases, climate change. Just like climate change, the loss, of biodiversity is one of the internationally growing environmental concerns which have called coordinated international effort for it to be adequately managed.²

By way of a solution, the 2015 Paris agreement set a goal to limit global warming by 2 degrees Celsius above preindustrial levels (UNFCCC 2015), and the recent publication of a roadmap for rapid decarbonization offers guidance on actions required at the national level to effectively limit carbon emissions meet the goal.³ Besides, all nations have been called upon to follow similar roadmap for global biodiversity conservation to guide the necessary steps to achieve goals and targets for stopping the biodiversity crisis.⁴ However, to achieve this there is need for an integrated worldwide framework capable of being implemented at national and project levels, which would enable the quantification and subsequent reduction of humanity's impact on biodiversity.⁵

Mitigation measures are always employed in environmental impact assessment to reduce or avoid the likely impact of certain developmental activities on the environment and losses suffered by the people. The mitigation hierarchy if correctly employed enables a developer in achieving the net positive impact or a no net loss on biodiversity, which is the point at which project-related impacts on biodiversity are balanced through measures taken to prevent, minimize, restore and offset

¹ william n. S. Arlidge, joseph w. Bull, prue f. E. Addison, michael j. Burgass, dimas gianuca, taylor m. Gorham, céline jacob, nicole shumway, samuel p. Sinclair, james e. M. Watson, chris wilcox, and e. J. Milner-gulland, 'A global mitigation hierarchy for biodiversity conservation' *BioScience* • May 2018 / Vol. 68 No. 5. Oxford university press

² ibid

³ ibid

⁴ ibid

⁵ ibid

significant impacts.⁶ Uganda devised different laws and policies for enhancing the preservation of biodiversity.⁷

1.2.Problem statement

The Mitigation Hierarchy provides the best footing for sustainable development, and it is a suitable means for companies and states to appropriately handle biodiversity related impacts.⁸ Mitigation hierarchy is a procedure that is used in reducing the negative impacts of development projects. Additionally, can be useful in a wide range of disciplines.⁹ The mitigation hierarchy if employed enables the developer to achieve the net positive impact or a no net loss on biodiversity;- net positive impact or a no net loss on biodiversity is the point at which project-related impacts on biodiversity are balanced by measures taken for preventing, minimizing, restoring and finally offsetting the significant impacts.¹⁰

The steps for mitigation hierarchy which a project developer would be required to follow include avoidance, minimization, restoration and offsetting of environmental and social impacts.¹¹ Mitigation hierarchies are also divided into two categories; - that is to say preventative centered approaches which involves avoidance and minimizing then the remediative centered approaches which involve restoration and offsetting. Those two mitigation hierarchies in case placed together comprise the four key focus areas for mitigation measures.¹² It is comprised of four steps that is to say;- avoidance, minimizing, restore/rehabilitation and offsetting residual impacts.

Various frameworks exist to manage the impacts resulting from extracting biological resources and promoting sustainable use but these frameworks often fail to account for all the negative biodiversity impacts caused by extracting target resources.¹³ Applying a standardized framework such as the mitigation hierarchy to all human impact would allow for seemingly disparate impacts

⁶Birdlife international & fauna and flora international, '*Strengthening implementation of the mitigation hierarchy: managing biodiversity risk for conservation gains*' university of Cambridge (2015)

⁷ The national environment Act, 2019

⁸ The Rescue project, *Using the Mitigation Hierarchy to manage impacts on biodiversity in Pacific Island Countries and Territories* The biodiversity consultancy (2018)

⁹ Ibid (no.8)

¹⁰ Ibid (no.6)

¹¹ The National Environment (Environmental and social Assessment) Regulations, (2020) Reg 43(1)

¹² Ibid (no.6)

¹³ Ibid (no.6)

on biodiversity to be categorized and accounted for between sectors, scales and nations.¹⁴ It might be ideal to adopt a more structured approach for planning, implementing, and evaluating actions to achieve goals of global conservation that are necessary for the better balancing natural-resource extraction, industrial development;- on one hand and nature conservation on the other hand.¹⁵

1.3.Purpose of the study

The purpose of the study is to evaluate the effectiveness of mitigation hierarchy as used in environmental impact assessment in preservation of biodiversity.

1.4.Significance of the study

Applying the mitigation hierarchy in dealing with matters of environmental impact assessment helps in ensuring environmental sustainability and biodiversity conservation.

This research will inform policy makers on proposed recommendations on identified gaps in the mitigation hierarchy.

The research will also open opportunities for more research into the mitigation hierarchy as used in environmental impact assessment.

1.5.Justification of the study

The research is conducted to examine the effectiveness of the mitigation hierarchy as used in environmental impact assessment for conserving biodiversity.

1.6.Aims/ objectives of the study

1.6.1. Main objective

To examine the effectiveness of the mitigation hierarchy in preserving biodiversity in Uganda.

¹⁴ william n. S. Arlidge, joseph w. Bull, prue f. E. Addison, michael j. Burgass, dimas gianuca, taylor m. Gorham, céline jacob, nicole shumway, samuel p. Sinclair, james e. M. Watson, chris wilcox, and e. J. Milner-gulland, 'A *global mitigation hierarchy for biodiversity conservation*' BioScience • May 2018 / Vol. 68 No. 5. Oxford university press

¹⁵ Ibid (no.14)

1.6.2. Specific objectives

- a) To examine the legal framework governing the implementation mitigation hierarchy as a component of environmental impact assessment.
- b) To evaluate the efficacy of the mitigation hierarchy in conserving biodiversity
- c) To carry out a comparative analysis of the role of mitigation hierarchy in conserving biodiversity in other jurisdictions.
- d) To assess the ambiguities surrounding the mitigation hierarchy and come up with possible recommendations on how to effectively preserve biodiversity.

1.7. Research questions

- a) What is the importance of mitigation hierarchy in environmental impact assessment?
- b) How effective is mitigation hierarchy in conserving biodiversity?
- c) What provisions are contained Uganda's current legal framework for promoting effective preservation of biodiversity?

1.8. Scope of the study

This study will cover the effectiveness of the mitigation hierarchy in Uganda while considering the laws passed and the international instruments on mitigation hierarchy ratified by Uganda. The focus of this study will be on assessing how the mitigation hierarchy has been implemented and whether or not it has achieved its purpose.

1.9. Chapter synopsis

Chapter one: introduction

The first chapter provides a foundation for our research by giving the background of the study, research problem, purpose and objectives of the study.

Chapter two: literature review

The second chapter contains the previous literature on conservation of biodiversity following the mitigation hierarchy, literature from other countries like United Kingdom, united states among others that will also be used for comparison purposes. The chapter will also identify the existing gaps after analyzing the said literature.

Chapter three: methodology

This chapter focuses on the methodology that will be employed in carrying out the research detailing the research design, it details the area of study, data collection methods, instruments to be used and data analysis methods in addition to the reliability and validity of the research, ethical considerations and the limitations of the study.

Chapter four: analysis

This particular chapter will entail the findings and the analysis of the legal framework (laws, policies and case law) and scholarly articles relating to how the mitigation hierarchy is used in conserving biodiversity and how effective it is. I will equally discuss the efficacy of the mitigation hierarchy in conserving biodiversity. wherein I look at the mitigation hierarchy actions that is (i) avoid, (ii) minimize, (iii) remediate, and (iv) offset and how they help in conserving the different species that make up biodiversity. I will also make a comparative analysis on conserving biodiversity, looking at the different jurisdictions and how they have tried to conserve biodiversity.

Chapter five: conclusion and recommendations

This chapter contains the conclusion, recommendation and areas of further study.

Chapter two: Literature review

2.1. Introduction

This chapter focuses on Uganda's biodiversity and whether the mitigation hierarchy is effective in protecting and conserving it given the country's ongoing efforts to develop its various sectors of extractive industry aimed at the exploitation of natural resources.

2.2. Summary of the literature review

2.2.1. Status of biodiversity in Uganda

According to Daniel on Biodiversity, The term biodiversity is a contraction of biological diversity or biotic diversity. These terms all refer to the idea of living variation, from genes and traits, to species and to ecosystems¹⁶. I personally agree with this wide interpretation of biodiversity and I aver that it simply connotes the variety of plant and animal life in the world or in a particular habitat.

The Biodiversity Consultancy, A cross-sector guide for implementing the Mitigation Hierarchy¹⁷ defines mitigation as a framework for managing risks and potential impacts related to biodiversity and ecosystem services. The authors explain that mitigation hierarchy is used when planning and implementing development projects, so as to provide a logical and effective way to protect and conserve biodiversity to maintain ecosystem services. This definition could be compared to the one by CSBI, in Framework for Guidance on Operationalizing the Biodiversity Mitigation Hierarchy, where mitigation hierarchy is described as a sequence of action to anticipate and avoid impacts on biodiversity and ecosystem services; and where avoidance is not possible, minimise and when impacts occur, rehabilitate or restore and where significant residual impacts remain, offset. My personal view about the above definitions is that the latter is a more detailed one than the former, the latter provide details on the tenets of mitigation hierarchy and the processes that they follow.

In addition, Pomeroy in the State of Uganda's biodiversity avers that Biodiversity can be considered at three levels – genetic, species and ecosystem. When it comes to genetic, the most vital change in recent decades has been the loss of over a hundred cichlid fish species from Lake Victoria, after the introduction of the Nile perch in the late colonial days. A few other species, such as the Oryx and Lammergeier, have also been lost.¹⁸

¹⁶ Daniel P. Faith, Biodiversity, Stanford Encyclopedia of Philosophy, (substantive revision) 2021

¹⁷ The Biodiversity Consultancy, A cross-sector guide for implementing the Mitigation Hierarchy 2015

¹⁸ Pomeroy, D. Tushabe, H. and Loh, J. 2017. *The State of Uganda's Biodiversity 2017*. National Biodiversity Data Bank. Makerere University. Kampala ISBN: 978-9970-9690-0-5

It is also shown that losses in the other species have mainly been in their numbers as a result of loss of habitats which include forests, woodlands and wetlands being the most common.¹⁹

However, large mammals (key part of Uganda's wildlife) are recovering well from the slaughter of recent decades, and the National Bird, the Grey Crowned Crane, seems to be holding its own after a major decline and also the biodiversity of agricultural lands is proved to be at its best.²⁰

Uganda is reported to be rich in biodiversity, having a record of more than half of Africa's birds for instance,²¹ despite being a small area of the continent because most of the significant African biomes meet in this country and have a variety of fauna and flora from the continent. Besides, the large altitude range found here from 5,100 metres in the Rwenzori Massif down to 500-600m in the north of the country with mountains and forests of the Albertine Rift are particularly rich in vertebrates and this ecoregion contains more endemic and threatened vertebrates than any other part of Africa and those in the east along the Kenya border which have unique species, particularly Mount Elgon but also Mount Moroto, and other mountains/hills in Karamoja.²²

Research shows that the western protected areas are rich in threatened species these include Budongo Forest Reserve and Bwindi Impenetrable National Parks which are rich in globally threatened species with other sites in the Albertine Rift ranking in the next cohort of sites.²³ These areas contain species such as the mountain gorilla (*Gorilla beringei*) and chimpanzee (*Pan troglodytes*) plus endemic species of the northern Albertine Rift region and the eastern sites of Mt Elgon National Park and Moroto.²⁴

Data shows that forest Reserves rank relatively high for nationally threatened species as well as the Sango Bay region to the west of Lake Victoria but the north east of the country is the poorest

¹⁹ Ibid (no.14)

²⁰ Ibid (no.17)

²¹ Ibid (no.17)

²² Plumptre, A.J., Ayebare, S., Pomeroy, D., Tushabe, H., Nangendo, G., Mugabe, H., Kirunda, B., & Nampindo, S. (2017). *Conserving Uganda's Biodiversity: Identifying critical sites for threatened species and habitats*. Unpublished report to USAID and Ministry of Tourism, Wildlife and Antiquities.

²³ Ibid (no.19)

²⁴ Ibid (NO.19)

in threatened species apart from the Kidepo Valley National Park on the border with Southern Sudan.²⁵

There is also evidence showing that birds, plants and mammals were found to be in more sites than reptiles and amphibians with calculated average ranking across sites for the five taxa for all species and for globally and nationally threatened species.²⁶ Pian-Upe world life reserve and Kidepo are the only sites where African wild dogs (*Lycaon pictus*) have been sighted in the recent past as well as cheetahs (*Acinonyx jubatus*). Mt Elgon has a few endemic species which it shares with Kenya.²⁷

My personal view about the above research and averments made by Pomeroy is that there is an increase in reduction of the different species in biodiversity. Uganda which is known as the pearl of Africa and home to several species might wake up to a curse. This would not only affect tourism but other sectors as well. Thus, my Research is to contribute on how we can reserve biodiversity in Uganda.

2.2.2. The mitigation hierarchy and its role in conserving and protecting biodiversity

According to the Mitigation Hierarchy on Mitigation Hierarchy, the mitigation hierarchy is a widely used tool that guides users towards limiting as far as possible the negative impacts on biodiversity from development projects.

Having looked at what mitigation hierarchy is, the Biodiversity consultancy, (supra) further elaborates on the processes in mitigation hierarchy. (i) Avoidance, the is the first and most effective way of reducing the potential outbursts/negative impacts. It is implemented at an earlier stage because when brought in late, it may not be effective. Examples of avoidance include site selection such as selecting a different site than the one with more negative impacts, design, and scheduling. (ii) Minimization, this the second processing the mitigation hierarchy. These are measures put in place to reduce the duration, intensity, extent and significance of the impacts. They include physical controls, operational controls and abatement controls. If planned well, minimization may be effective in reducing impacts. (iii)Restoration, this is used to repair following the degradation

²⁵ Ibid (n0.19)

²⁶ Ibid (no.19)

²⁷ Ibid (no.19)

caused by project activities. It is usually carried out on-site and to repair impacts caused whether directly or indirectly by the project. These include re-establishing habitat types, re-establishing biodiversity values, re-establishing ecosystem services. (iv) Offsets this is the final process of the mitigation hierarchy. They are measurable conservation mechanisms resulting from actions applied to areas that are not impacted by the project, that compensate for significant, adverse project impacts that cannot be avoided, minimized and/or rehabilitated or restored. Thus, they must have a quantitative target that related directly to residual project impacts. The challenge is that offsets can be complex, expensive and may have an uncertain outcome.

According to the American institute of bioscience²⁸ the first and most important step of the mitigation hierarchy is avoiding potential impacts on biodiversity through actions like screening potential risks prior to the project design and choosing an alternative development site.²⁹

The second step of the hierarchy requires that before and during development the potential impacts are minimized, for example by using more environmentally friendly construction procedures.³⁰

The third step requires repairing what part of biodiversity has been removed or damaged and this could necessitate taking actions such as reseeded affected land or developing a breeding program for affected species during and after project completion.³¹

The fourth and final step requires that any residual impacts not captured by the first three steps of the hierarchy are offset elsewhere, such as through wetland restoration or the removal of invasive from ecologically important areas.³²

The four steps of the mitigation hierarchy represent broad categories of biodiversity impact reduction and compensation, meaning that most conservation actions can be categorized within these steps. Avoidance being the most important step in the mitigation hierarchy because its conservation

²⁸ william n. S. Arlidge, joseph w. Bull, prue f. E. Addison, michael j. Burgass, dimas gianuca, taylor m. Gorham, céline jacob, nicole shumway, samuel p. Sinclair, james e. M. Watson, chris wilcox, and e. J. Milner-gulland, 'A global mitigation hierarchy for biodiversity conservation' *BioScience* • May 2018 / Vol. 68 No. 5. Oxford university press

²⁹ Ibid (no.24)

³⁰ Ibid (no.24)

³¹ Ibid (no.24)

³² Ibid (no.25)

benefits are most likely to outweigh taking more uncertain remediation and offsetting measures once damage has occurred.³³

Additionally, the institute also states that the mitigation hierarchy offers transparency between stakeholders, with flexibility to address a variety of anthropogenic impacts on biodiversity, across different sectors and scales.³⁴ Many regulatory and financial instruments are now in place that aim to balance biodiversity conservation with sustainable economic development by requiring the application of the mitigation hierarchy.³⁵

A study conducted on behalf of the business and biodiversity offsets program and UNEP financing initiative³⁶ states that despite society's reliance on biodiversity and the Eco services it underpins, it is still undervalued by the modern economies and its diminishing at a very high speed, over the 50 years, human beings have impacted biodiversity and ecosystems at a very high speed than ever.³⁷

All businesses depend on and as a result have an impact on biodiversity and ecosystems especially those that need to access and convert areas of biodiversity value like agriculture, exploitation of natural resources among others. Some of these industries have a direct impact on biodiversity while others rely on ecosystem services to support their supply link, the mitigation hierarchy is therefore a useful tool in curbing all these biodiversity risks and it is commonly used in environmental impact assessment.³⁸

According to the article published by Birdlife international & fauna and flora international,³⁹ The mitigation hierarchy if employed enables the developer achieve a net positive impact or a no net loss on biodiversity, which is the point at which project-related impacts on biodiversity are balanced by measures taken to prevent, minimize, restore and finally offset significant impacts.

³³ Ibid (no.25)

³⁴ Ibid (no.250)

³⁵ Ibid (no.25)

³⁶ Price water house coopers '*biodiversity offsets and mitigation hierarchy: a review on the current application in the banking sector*' march 2010

³⁷ ibid

³⁸ ibid

³⁹ Birdlife international & fauna and flora international, '*Strengthening implementation of the mitigation hierarchy: managing biodiversity risk for conservation gains*' university of Cambridge (2015)

2.2.3. Effects of economic development activities on biodiversity

Uganda is rich in biodiversity however there are a lot of activities that can easily affect biodiversity conservation and some effects have already been noticed in the Albertine graben region where oil activities are taking place in addition to the other potential dangers to biodiversity in the area.

Robert, Paul, Nathan and Elladt ⁴⁰ states that energy development in Uganda and environmental damage are intricately related. The energy sector has bigger environmental impacts than most other economic sectors. Hence, energy investments in Uganda are subject to greater environmental scrutiny. The energy sector in Uganda is directly linked to the other sectors of the economy, and is a vital input for many. The sector is a major contributor to government revenues, and decisions taken in the oil and gas sector have a direct bearing on the performance of the other sectors. There are both institutional and legal weaknesses, especially in areas of the downstream petroleum industry, renewable energy, energy conservation and efficiency and atomic energy applications.

A study by the National Association of Professional Environmentalists (NAPE) shows that the environment of the oil region is slowly being degraded by oil related activities, such as excavations from the numerous roads and there is a high likelihood of it being degraded further when oil exploitation starts.⁴¹

Oil construction and exploration activities have led to displacement of people in the area and since some activities are taking place in the Murchison Falls National Park impairing the settlement patterns of animal species by forcing them to migrate from one place to other places.⁴² This is also attributed to the sporadic wild animal attacks at 0.48% especially marauding elephant in Nwoya district – West Nile region of Uganda causing crop fields destruction, killing and injuring people, sometimes unwarranted displacements and transferring zoonotic diseases.⁴³ Different tree species have also been uprooted during several oil construction activities. Apart from impairing Uganda's

⁴⁰ Robert tumwesigye, poul twebaze, Nathan mukuragye and elladt muyambi, ' *key issues in ugandas energy sector*' International Institute for Environment and Development (UK) in 2011. ISBN 978-1-84369-831-9

⁴¹ National Association of professional environmentalists, ' *the oil industry in Uganda-raising women's voices: community perspective*' NAPE, AJWS (2012)

⁴² Joseph kimuli Balikudembe & Ali Ardalan, ' *Disaster Risk Management and oil production in Uganda*' UNISDR (2014)

⁴³ Ibid (no.38)

tourism which has been thriving well, these are some of factors causing hazardous climate change with debilitating impacts like drought.⁴⁴

Data collected also shows that Fishing as a livelihood activity has been severely disrupted in the Albertine region by oil exploration activities leading to negative impacts to many fisher folks in Lake Albert.⁴⁵ Communities in the oil region have reported that fish they get is increasing low because some of the fish rich areas in the lake have been demarcated and they are barred from accessing them because of possible contaminations that may affect consumers' health.⁴⁶

Furthermore, oil pollution kills birds and fish.⁴⁷ They encounter it on the water surface and some even seem to deliberately settle on oil slicks, perhaps because to the bird they resemble the indications of shoals of fish.⁴⁸ The oil destroys the natural weatherproofing of the bird's feathers so that it loses its insulating properties and the bird dies of exposure and exhaustion.⁴⁹ Oiled birds on the shore struggling to clean themselves are a piteous sight and so they too increase the disgust felt about oil on the sea.⁵⁰ In regards to fish, water contamination as a result of oil spills retards fish hatcheries and depletes species due to poisoning with dreadful effect to both fish species and fish consumers' health.⁵¹

Eventual deaths caused by accidents like large oil spills, leaks, fires and explosion on plants.⁵² When oil is spilled into an aquatic environment, it can harm organisms that live on or around the water surface and those that live under water.⁵³ Spilled oil can also damage parts of the food chain, including human food resources.⁵⁴ The severity of the impact of an oil spill depends on a variety of factors, including characteristics of the oil itself.⁵⁵ Natural conditions, such as water temperature

⁴⁴ Ibid (no.38)

⁴⁵ Ibid (no.38)

⁴⁶ Ibid (no.38)

⁴⁷ Joseph kimuli Balikudembe & Ali Ardan, '*Disaster Risk Management and oil production in Uganda*' UNISDR (2014)

⁴⁸ Jacqueline Barboza Mariano, Emilio Lèbre La Rovere, '*petroleum engineering – downstream - environmental impacts of the oil industry*' EOLSS <<https://www.eolss.net>> accessed on 15 march 2022

⁴⁹ Ibid

⁵⁰ Ibid

⁵¹ Joseph & Ali, '*Disaster Risk Management and oil production in Uganda*' (ibid no.24)

⁵² Unites states environmental protection agency, '*understanding oil spills and oil spill response*' EPA (1999)

⁵³ Ibid (no.44)

⁵⁴ Ibid(no.44)

⁵⁵ Ibid (no.44)

and weather, also influence the behavior of oil in aquatic environments. Various types of habitats have differing sensitivities to oil spills as well.⁵⁶

2.3. Conclusion

The above literature covers the status of Uganda's biodiversity, in terms of the role of the mitigation hierarchy in preserving and protecting biodiversity and the effects of economic activities on biodiversity but little has been researched on the loopholes in the mitigation hierarchy and whether or not it is effective.

Building on the above literature, this research will analyze the legal provisions of laws that promote biodiversity conservation in Uganda, whether or not the mitigation hierarchy is effective and if not what strategies can be employed to fully achieve the benefits of employing the mitigation hierarchy as a method of biodiversity conservation.

Chapter three: Methodology

3.1. Introduction

This chapter explains the methods that will be used in this research which include data collection methods and the-data analysis tools. It will also give the limitations to the research, ethical considerations and give validity for the selected research method.

3.2. Research context/legal context

3.2.1. Study/Research design

This study will be based on a qualitative design, which will comprise interviews and structured questionnaires directed at specific groups of people, particularly those having more accurate information that is critical to this research's progress.

⁵⁶ Ibid (no.44)

This study will analyze the mitigation hierarchy the laws that support protection and conservation of biodiversity which include the Constitution,⁵⁷ the National Environment Act,⁵⁸ Uganda's National Biodiversity Strategy and Action plan (NBSAP), Uganda Wildlife Act,⁵⁹ Uganda Wild Life Policy,⁶⁰ The Climate Change Act,⁶¹ National Forestry and Tree Planting Act,⁶² convention on biological diversity and the Kyoto protocol among others.

3.2.2. Area of study

Kampala located in Uganda will be the area of study because that where all the main offices for the institutions designed to protect biodiversity and the intended officials to participate in the research's interviews are located.

3.3. Data collection methods

The researcher will use documentary review analysis for analyzing the mitigation hierarchy and the laws that provide for mitigation hierarchy as the studies phenomena. In addition to examining other scholarly materials like text books and journal articles relevant to the study.

The participants will be selected by simple random sampling from specific departments in charge of biodiversity conservation and ensuring implementation of the mitigation hierarchy in Uganda. These specific departments and their individual participants have been chosen because of their previous involvement in enforcing laws on biodiversity and ensuring that the mitigation hierarchy is implemented.

3.4. Instruments

Semi structured interviews will be used in interviewing the selected participants from Uganda National Environment Authority (NEMA) and Uganda wildlife authority.

⁵⁷ The Constitution of the Republic of Uganda 1995, as amended

⁵⁸ The National Environment Act 2019

⁵⁹ Uganda Wild Life Act 2019

⁶⁰ Uganda Wild Life policy 214

⁶¹ The National Climate Change Act 2021

⁶² National Forestry and Tree Planting Act 2003

The selection of semi structured interviews as the instrument of data collection is based on the fact that these give room for flexibility.

Semi structured interviews are also more detailed ensuring that the researcher understands the participants' opinions since it gives them time to open up on sensitive matters, encourage a two-way communication and provide qualitative data to compare to future and previous data.⁶³

The type of questions used shall be open ended questions which allows participants to give unlimited responses, they also ensure more detail, allows the interviewer to deeply understand the participants opinions and sentiments among others.⁶⁴

3.5. Data analysis

This refers to the process of collecting, modeling, and analyzing data with a view of extracting insights that support decision-making. This helps the researcher in sieving information into a more accurate and relevant form thus providing researchers with better data and better ways to analyze and study data.⁶⁵

The researcher will also use thematic data analysis for the sake of reading through data with an aim of identifying patterns in meaning across the data to derive themes.⁶⁶ The methods conducting thematic analysis entails following a six-step process of familiarizing yourself with the data, thereafter generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.⁶⁷

The data will be transcribed to enable the researcher put data and information collected into a text-based format. That will aid in easing data analysis and sharing, thus helping the researcher in

⁶³ Fuel cycle blog, *a quick guide on semi structured interviews* available at <[www.https://fuelcycle.com>blog](https://fuelcycle.com/blog)> accessed on 20th march, 2022

⁶⁴ Moneky learn blog, *advantages and disadvantages of open-ended and close ended questions* <[www.https://monkeylearn.com/blog](https://monkeylearn.com/blog)> accessed on 20th march, 2022

⁶⁵ <<https://www.simplilearn.com/data-analysis-methods-process-types-article>> accessed on 20th march, 2022

⁶⁶ <<https://delvetool.com/blog/thematicanalysis#:~:text=Thematic%20analysis%20is%20a%20qualitative,the%20data%20to%20derive%20themes.>> accessed on 20th march, 2022

⁶⁷ Michelle E. Kiger & Lara Varpio (2020): *Thematic analysis of qualitative data*: AMEE Guide No. 131, Medical Teacher, DOI: 10.1080/0142159X.2020.1755030 available at <<https://doi.org/10.1080/0142159X.2020.1755030>> accessed on 20th march, 2022

creating a coherently interwoven narrative that is founded upon their data. Such a narrative will be easily assembled into a guide for coding.⁶⁸

The data will then be coded with a view of identifying a passage in the text. This will also help in identifying other data items searching and identifying concepts in addition to finding relations between them which will allow the researcher to interpret, organize, and structure observations and interpretations into meaningful theories.⁶⁹

3.6. Reliability and validity

These concepts are useful given their role in evaluating the quality of research because they indicate how well a method, technique or test accurately measures a studied or researched phenomena. Reliability mostly relates to the consistency of a measure whereas validity is concerned with the accuracy of a measure.⁷⁰

The researcher shall ensure that the participants are checked and the data will have to be confirmed by the participants after transcription to ensure its accuracy.

3.7. Ethical considerations

The researcher shall ensure that the targeted participants understand the purpose of the data the researcher wants to collect before they give their consent.⁷¹

The researcher shall also make sure that the participants fully understand their rights which among others include the right to withdraw consent to participate.⁷²

⁶⁸ <<https://www.rev.com/blog/resources/what-is-data-transcription-qualitative-data-transcription-meaning>> accessed on 20th march 2022

⁶⁹ <<https://delvetool.com/guide>> accessed on 20th march, 2022

⁷⁰ <<https://www.scribbr.com/methodology/reliability-vs-validity/#:~:text=Reliability%20and%20validity%20are%20a%20concepts,the%20accuracy%20of%20a%20measure.>>> Accessed on 20th, march 2022

⁷¹ <https://www.scribbr.com/methodology/research-ethics/#:~:text=considerations%20in%20research%3F-Ethical%20considerations%20in%20research%20are%20a%20set%20of%20principles%20that,for%20harm%2C%20and%20results%20communication.>

⁷² Ibid (no.69)

The researcher shall also ensure that where any personal data is during the research, strict adherence to confidentiality is guaranteed and ensuring only data needed for academic purposes is collected and availed rather than for any other course.⁷³

3.8. Limitations of the story

Some of the limitations the researcher expects to face will relate to the hesitation by some participants to divulging information for the fear of exposing their identities. However, this will be solved by the researcher explaining to the participants the purpose of the research and assuring them about the confidential storage of their personal data collected to protect their identities from being exposed on public sites.

Chapter Four, Analysis

4.0. Introduction

This chapter analyses different national and international laws that are aimed at conserving and protecting biodiversity by using the mitigation hierarchy. In addition, this Chapter will evaluate the efficacy of the mitigation hierarchy in conserving biodiversity. I will also make a comparative analysis relating to biodiversity and how other jurisdictions have dealt with it.

⁷³ Ibid (no.69)

4.1. Recap on the research objectives

4.1.1. Main objective

To examine the effectiveness of the mitigation hierarchy in preserving biodiversity in Uganda.

4.1.2. Specific objectives

- a) To examine the legal framework governing the implementation mitigation hierarchy as a component of environmental impact assessment.
- b) To evaluate the efficacy of the mitigation hierarchy in conserving biodiversity
- c) To carry out a comparative analysis of the role of mitigation hierarchy in conserving biodiversity in other jurisdictions.
- d) To assess the ambiguities surrounding the mitigation hierarchy and come up with possible recommendations on how to effectively preserve biodiversity.
- e) To make conclusions and recommendations on the use of mitigation hierarchy to conserve biodiversity.

4.1.3. International instruments

There are several international instruments related to conservation of biodiversity but this focuses on two which include convention on biodiversity and the Kyoto protocol.

4.1.4. Convention on biological diversity (CBD)

The convention on biological diversity is founded on the fact bio diversity is an important asset to the current and future generations throughout the world. Based on this background, the United Nations environment programme (UNEP) mandated experts to prepare an instrument that can ensure sustainable use and conservation of biodiversity while considering the importance of sharing costs and benefits between developed and developing countries plus supporting innovation by local people.⁷⁴

It was first adopted in May 1992 but was opened for signing on 5th June 1992 during the earths summit and entered into force on 29th December 11993 with the main objectives of conserving biological diversity, sustainable use biological biodiversity components, ensure equitable and sharing of the benefits out of the utilization of generic forces.⁷⁵

The Convention mandates parties to develop national biodiversity strategies and action plans. The parties also agreed on a 10-year global strategic plan for biodiversity which ran from 2011-2020

⁷⁴ https://ec.europa.eu/environment/nature/biodiversity/international/cbd/index_en.htm Accessed on 29th June, 2022

⁷⁵ ibid

for combating biodiversity loss during the 10th conference.⁷⁶ Parties were mandated to report on the progress towards the targets in the 5th European Union report to the convention on biological diversity which was submitted in 2014 on midterm progress and the 6th report submitted in 2019 on the final assessment of the progress towards the 2020 targets.⁷⁷

The final report was published by the European Union and it indicates that wetlands, coastal and agricultural ecosystems are the highly threatened throughout the European Union as a result of climate change, changes in land use, over exploitation, pollution among others.⁷⁸ The strategy strengthened knowledge on ecosystems and their services within the region, has improved actions around invasive species, contributions towards stopping the loss of biodiversity at an international level.⁷⁹

4.1.5. Kyoto protocol

This protocol was adopted in Kyoto, Japan at the 3rd conference of the parties to the United Nations Framework on Climate Change (UNFCCC). It mandates and commits industrialized states to stabilize greenhouse gas emissions with the detailed implementation rules were adopted at the 7th conference of parties to the UNFCCC in Marrakesh in 2001 (Marrakesh accords).⁸⁰ The protocol then entered into force on 16th February, 2005 and has so far been ratified by 192 parties⁸¹ including Uganda.

This protocol places a heavier burden on developed countries under the principle of common but differentiated responsibilities (CBDR)⁸² which is to the effect that all states are responsible for addressing the environmental destruction but not equally responsible thus balancing the need for all states to take responsibility for environmental problems on one hand and the need to consider the differences in the levels of economic developments across the different states, the level of contribution to environmental destruction and their ability to address it.⁸³

⁷⁶ Ibid (no.73)

⁷⁷ Ibid

⁷⁸ Ibid

⁷⁹ Ibid

⁸⁰ https://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_the_kyoto_protocol.pdf Accessed on 29th June, 2022

⁸¹ https://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_the_kyoto_protocol.pdf accessed on 29th June, 2022

⁸² Article 10 Kyoto protocol

⁸³ <https://www.britannica.com/topic/common-but-differentiated-responsibilities> accessed on 29th June, 2022

The protocol has 3 main mechanisms for reducing greenhouse gas emissions which include emissions trading/carbon market, clean development-based mechanisms (CDM)⁸⁴ and joint implementation (JI) which enables developed countries to do joint implementation project with other countries while CDM is about investing in sustainable development projects that reduce greenhouse gas emissions. These two mechanisms are project based and feed the carbon market.⁸⁵

The protocol has also assigned annex 1 parties the limits of amounts of GHG emissions and mandates them to demonstrate their progress in achieving their commitments under the protocol by 2005.⁸⁶

4.1.6. The Constitution of the Republic of Uganda, 1995 as amended

The constitution has several objectives on environmental protection which are enforceable by virtue of Article 8A which is to the effect that Uganda as a country shall be governed in accordance to principles of national interest and common good as provided in the national objectives and directive principles of state policy. The court in the case of **Amooti Godfrey Nyakaana Vs. National Environment Management Authority & 6 Others**⁸⁷ emphasized the importance of national objectives by stating that they go beyond simply guiding the interpretation. of the constitution but are themselves enforceable.

The Constitution mandates the state to protect important natural resources which include land, fauna and flora, wetlands among others, sanitize the public on the importance of managing air, water resources and land in a sustainable manner to be able benefit future and current generations.⁸⁸

It also encourages the state to utilize natural resources in a way that sustains the development and environmental needs by considering all measures to avoid and reduce damage and destruction to land, air, water and water resources in resulting from pollution or other causes.

⁸⁴ Article 12 Kyoto protocol

⁸⁵ https://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_the_kyoto_protocol.pdf accessed on 29th June, 2022

⁸⁶ Article 3 & 4 Kyoto protocol

⁸⁷ Supreme Court Constitutional Appeal No. 5 of 2011

⁸⁸ Objective XIII AND XXVII National Objectives and Directive Principles of State Policy, the constitution of the Republic of Uganda 1995, as amended

The central or local government has the power and mandate to create and develop parks, reserves, recreation areas and conservation of natural resources.⁸⁹

The constitution protects everyone's right to a clean and healthy environment. It further calls upon the parliament to put in place laws for purposes of protecting and preserving the environment, sustainable development and ensure environmental awareness.⁹⁰ The state is also required to promote and enforce energy policies that meet the basic needs of the people and environmental conservation.⁹¹

4.1.7. The National Environment Act, 2019 (NEA)

The purpose of this Act is to ensure management of the environment in a way that promotes sustainable development, provide for all the emerging environmental problems which include climate change, management of hazardous chemicals and biodiversity offsets, ensure strategic environmental assessment, address all the environmental problems that result from petroleum operations, cater for management of plastics and its products and lastly establish a body charge with protecting environment, penalties for offences in the Act plus procedural and administrative matters.

The Act mandates the national environment management authority to ensure that the principles of environment management in consideration with the finite nature of non-renewable resources are respected.⁹² The principles listed include equitable and sustainable use of the environment use of environment, maintaining a balance between the living and non-living parts of the environment through biodiversity conservation measures, sustainable results in the use of renewable resources, restoration of lost or damages ecosystems, avoid using scientific certainty as a reason to not using cost-effective measures to prevent harm to biodiversity where there is a risk of permanent harm among others.⁹³

Developers are tasked with the responsibility to ensure that a person carrying out environmental impact assessment does not deviate from any provisions of the applicable laws, quality assessment

⁸⁹ Objective XXVII

⁹⁰ Article 39, constitution of Uganda, *ibid* (no.80)

⁹¹ objective XXVII (iii) *ibid* (no.80)

⁹² S.5 (1) Environment Act, 2019

⁹³ S.5 (2) *ibid*

and shall also incorporate in its project design the human rights risk assessment and environmental risk assessment.⁹⁴

All developers of projects set out part 1 of schedule 4 which include petroleum projects are mandated to carry out an environmental and social impact assessment in form of a project brief to be submitted to the national environment authority⁹⁵ whereas those undertaking projects listed in schedule 5 are mandated to carry out environmental and social impact assessment by way of scoping.⁹⁶

The national environmental authority may also require a developer to carry out an environmental risk assessment. That risks assessment constitutes a key part of the environmental and social impact assessment.⁹⁷ Such a risk assessment is inevitable especially where the project involves introduction of a new species to the environment that may pose potential threats to the environment;- in this context environment threat could imply a project activity that worsens the vulnerability or even causes permanent loss of a species.⁹⁸ In other situations such an activity may affect important habitats, species or cultural/natural heritage.:- this definition extends to activities that require use of procedures, chemicals and technology which is risky to the ecosystem, introduction of genetically modified organisms into the country, may cause severe pollution, relates to handling petroleum commodities or products throughout the value chain and where the activity is near the airport or aerodrome operations and is likely to affect aircraft operations.⁹⁹

Mitigation hierarchy principles are supposed to be applied by developers while designing all projects that require environmental and social impact or risk assessment.¹⁰⁰ The proposals are to be evaluated by the authority to ensure that the said principles are applied before authorizing the use of biodiversity offset and compensation mechanisms.¹⁰¹

The NEA widely covers most of the areas concerning biodiversity conservation and protection including the mitigation hierarchy. However, much needs to be done on the side of enforcement.

⁹⁴S.111 ibid

⁹⁵ S.112 ibid

⁹⁶ S.133 (1) ibid

⁹⁷ S.114 ibid

⁹⁸ ibid

⁹⁹ibid

¹⁰⁰ S.115 ibid

¹⁰¹ ibid

The state also needs to enhance adequate sensitization to create awareness among the local people on the need to preserve and protect biodiversity, much focus is put more on project developers yet even the local people's action negatively affects biodiversity.

4.1. 8. Uganda Wildlife Act and Uganda Wild Life Policy

a) Uganda Wild Life Act, 2019

The Act became law on the 1st of July, 2019 and commenced on the 11th of September, 2019. The purpose of the Act is to provide and improve conservation and management of wild life, set out the roles of the institutions involved in Wildlife conservation and also provides for the world life fund.

The Act strengthens the existence of Uganda world life authority whose role is to ensure sustainable management of world life conservation areas;- the same Act mandates the authority to enforce and propose policies on world life, identify in addition to recommending areas suitable to be declared as wildlife conservation.¹⁰² The authority is also charged with the duty to control and oversee exploitation of resources and other activities taking place in the world life conservation areas, encourage investment in sustainable utilization of world life, prepare yearly reports on state of world life, encourage world life training.¹⁰³

A conservation planning manual ought to be developed by the board which should be mindful of national policies and development planning frameworks that the executive director will have to follow with approval of the board while publishing a comprehensive management plan for every wildlife protected and management area.¹⁰⁴ The executive director can also enter into an arrangement with any person upon the board's approval for management of a conservation area or species and provision of services in the area on condition that the said person submits a management plan.¹⁰⁵

The Act requires any developer intending engage in a project which is likely to affect any species or community significantly to carry out an environmental impact assessment in accordance with the National Environment Act, 2019.¹⁰⁶ The world life authority is mandated to monitor and audit

¹⁰²S. 6 & 7 Wildlife Act, 2019

¹⁰³ ibid

¹⁰⁴ S.21 ibid

¹⁰⁵ S.22 ibid

¹⁰⁶ S.23 Wild Life Act, 2019

these projects to ensure that they are conducted in compliance with the National Environment Act.¹⁰⁷

Harvesting of wild life resources is restricted to a sustainable yield level and the executive director is mandated with the duty to ensure that the required limit is not exceeded¹⁰⁸ and this is subject to classes of wild life rights set out in the Act.¹⁰⁹ The Act also prohibits any use of wildlife without or contravention with the wildlife use right.¹¹⁰

Species listed in the third schedule for example mammals like cheetahs, spiny mouse, impala, common hartebeest, tree pangolin, Congo clawless, red colobus among others reptiles and amphibians, and those protected under any international convention.¹¹¹ The act goes ahead to create offences and punishments in relation an authorized utilization of protected species.¹¹²

The minister can make regulations for the management of wild life conservation providing for matters like conditions under which anyone may be allowed to travel through any world life conservation area, use of weapons or any other devices, conditions for using fire, control of the disposal or litter waste, keeping a domestic animal in a wild life conservation area, conditions for introducing new species, use of wild life resources and provide for penalties for contradicting the regulation put in place.¹¹³

In conclusion, the wild life Act widely covers the protection, utilization and management of world life however does not cater for the conflicts between world life and the human community which has been the main cause of wild life killings by human beings thus creating a need for legislative balance to ensure that no interest is protected at the expense of the other.

b) Uganda Wild Life Policy, 2014

The main aim of the policy is to conserve wildlife resources in Uganda so as to achieve sustainable development of the country and promote the wellbeing of the people by mitigating human wild life conflicts, adequately manage wildlife population, encouraging research and training in world

¹⁰⁷ S.24 ibid

¹⁰⁸ S.31 ibid

¹⁰⁹S.35 ibid

¹¹⁰ S.36 ibid

¹¹¹ S. 34 ibid

¹¹² S.71 ibid

¹¹³ S.33 ibid

life conservation and management, promotes awareness on conservation, prevent wild life related crimes, achieve net positive impacts on natural resource exploitation and encourage local, regional, and global partnerships for wild life conservation.¹¹⁴ The policy sets out several strategies to achieve these objectives which include;

The Policy sets out to be employed to achieve sustainable management of wild life protected areas which include developing criteria for gazettelement and degazettelement of conservation areas, restoration of wild life degraded areas, survey of protected areas boundaries.¹¹⁵ It also proposes putting in place and ensuring enforcement of protected areas bye-laws and regulations in a way that balances wild life protection and community livelihoods, encourage ecological research and tracking, carryout constant inspections of wildlife protected areas to make sure there is efficient implementation of policies and acceptable practices.¹¹⁶

Managing wild life population; the strategies set cup to manage wild life population with and out of the protected areas include putting in place and enforcing a national development plan for world life outside the protected areas, encourages sustainable utilization, encourage setting up of community wild life areas where possible, put in place guidelines for conserving wild life outside protected areas and ensure their enforcement, promote payment for ecosystem, render necessary help to encourage conserving of wild life species in forest reserves and wetlands.¹¹⁷

Sustainable and equitable utilization of wildlife; the policy also sets out strategies like encouraging eco-tourism, set up good security to ensure safety in wild life conservation areas; - with the view of improving infrastructure in the protected areas, promoting sustainable hunting which is scientific based and encourage domestic tourism.¹¹⁸ The Policy objectives also extend to the abolishment of exclusion zones while encouraging equitable competition in world life protected areas,¹¹⁹ encourage inclusive participation of the private sector in the conservation enterprise.¹²⁰

¹¹⁴ Uganda wild life policy, 2004. Pg. 16

¹¹⁵ Ibid pg.16-17

¹¹⁶ Ibid

¹¹⁷ Ibid pg.17

¹¹⁸ Ibid pg.18

¹¹⁹ Ibid

¹²⁰ Ibid

The policy has strategized to effectively mitigate human-wild life conflicts by setting up barriers in all areas near wild life protected areas to prevent stray wild animals and ensure compensation for damages caused by wild animals that stray.¹²¹ It also suggests maintaining updated records on damages caused by wild life, encourage value addition and utilization in vermin and problem animal management.¹²² The other strategy is encouraging revenue sharing funds to human wild life conflict mitigation, ensure that both the needs of wild life and humans are catered for with keen attention on places affected by insurgencies and civil strife.¹²³

The policy set up strategies in order to promote research and training into world life; some of those strategies include setting up a wild life research and training institute, support and prioritize wild life research, carry out world life surveys more often, closely monitor wild life species and their habitats.¹²⁴

The Policy also suggests turning the wildlife education Centre into a statutory agency to ensure and encourage wild life conservation education and awareness.¹²⁵ That will also strengthen the conservation centered education institutions as well as harmonizing conservation education programs by ensuring that national curricula incorporates conservation education across all levels and programs.¹²⁶

The policy also set up strategies to achieve net positive impact of exploitation of natural resources. These strategies include enhancing cooperation with the other ministries in charge of natural resources plus other stake holders.¹²⁷ The second strategy involves setting up acceptable standards and guidelines including mitigation measures to be considered while undertaking any developmental activity which significantly affects wildlife.¹²⁸ The policy also suggests monitoring the impacts of natural resource exploitation to ensure that all natural resource exploitation activities are conducted in accordance with the approved environment impact assessments-this can be

¹²¹ Ibid Pg.19

¹²² Ibid

¹²³ Ibid

¹²⁴ Ibid pg.20

¹²⁵ Ibid

¹²⁶ Ibid

¹²⁷ Ibid

¹²⁸ Ibid

achieved by setting up institution to monitor natural resources exploitation impacts, encourage use of biodiversity offsets and payment of ecosystems.¹²⁹

The policy suggests the review of the Wildlife Act cap 2000 in order to prevent wildlife crime which was done and resulted into the passing of the world life Act, 2019 in addition to the regulations and guidelines enacted to enforce the Act.¹³⁰ The other important suggestion is in regards to regulating the utilization of world life specimen, discourage poaching and ensure that the work force is well trained, disciplined and equipped.¹³¹

Lastly, the Policy has also set up a number of strategies encourage local, regional and global partnerships for wildlife conservation.¹³² These strategies include ensuring active participation of the local government in tourism and wild life decision making process in addition to promote efforts aimed at increasing positive attitude towards wild life and enhancing the community's efforts to provide other options of wild life products of transitional value.¹³³ Other important strategies suggesting involves supporting trans-boundary collaboration on wild life conservation and management, establish capacity for the sector in negotiating and enforcing international agreements, ratify and implement wild life international instruments.¹³⁴

In conclusion, the Uganda wild life policy has covered widely all matters relating to work life conservation and protection and set up good strategies to achieve all the set objectives however there is a big gap when it comes to the implementation of most of these strategies which defeats the purpose and objectives of the policy.

4.1.9. The National Climate Change Act, 2021 (NCCA)

This Act became law on 14th August 2021 upon the president's assent. The Act was enacted to enforce the United Nations Frameworks Convention on Climate Change (UNFCCC), The Kyoto Protocol and The Paris Agreement, to provide for response measures for climate change, enable participation in mechanisms of climate change, ensuring compliance with measuring emissions,

¹²⁹ Uganda wild life policy, pg. 20

¹³⁰ Ibid pg.21

¹³¹ Ibid

¹³² Ibid

¹³³ Ibid

¹³⁴ Ibid

establishing the institutional framework to enable climate change implementation and financing for climate change.

The Act tasks the department in charge of climate change to develop a framework strategy on climate change in Uganda within one year from the date of commencement of the Act.¹³⁵ The department ought to be mindful of indigenous knowledge that is scientifically present, dependence and the need to adopt in vulnerable communities, gender and human rights issues, food security, desire to encourage sustainable development, damage occasioned on the ecosystems, communities and human beings as a result of climate change.¹³⁶ The frame work is also supposed to specify the impacts, risks and risk trends caused by climate change and the assessment of the same, mitigation and adaptation priorities to be employed, strategies to reduce vulnerability to climate change, ways of ensuring climate-resilient development, finance and reduce GHG emissions, point out the areas most likely to be affected by climate change and the extent of the likely effects.¹³⁷

The Policy also suggest a national climate change action plan to be developed within one year from the commencement of the Act.¹³⁸ This plan should clearly indicate the actions to be taken to manage the impacts and risks of climate change, measures for adaptation, ways to conserve and increase sinks and reservoirs of greenhouse gases.¹³⁹ The action plan should also show the level of perseverance, mitigation and measures for adaptation for ecosystems, the gender matters and communities most likely to be affected plus the levels of climate change.¹⁴⁰

The Act also sets out mechanisms for participation in climate change which include compliance with trading mechanisms as well as promoting voluntary emissions trading mechanisms.¹⁴¹ The regulations may prescribe non-market approaches, cooperative approaches and any other climate change mechanisms.¹⁴²

There is a limit to GHG emissions that is imposed through measurement or calculation in tones of carbodioxide equivalent of the targeted GHG emissions, reduction of targeted GHG emissions and

¹³⁵ S.5 (4) *ibid*

¹³⁶ *ibid*

¹³⁷ *ibid*

¹³⁸S.6 *ibid*

¹³⁹ *ibid*

¹⁴⁰ *ibid*

¹⁴¹ S.9 *ibid*

¹⁴² *ibid*

ensuring removal the targeted GHG from the atmosphere.¹⁴³ The amount and removal shall be determined every after two years in compliance with the international acceptable reporting practices as per the convention, its protocol and the agreements.¹⁴⁴

The minister is mandated with the duty to determine the national base year, reference level and targets for reduction of GHG emissions for each year upon consultation with the committee subject to revision as the minister may deems necessary.¹⁴⁵

The Act provides for a department responsible climate change which is charged with duties like ensuring the country meets its obligation under the convention, its protocol and the agreement¹⁴⁶ it also provides for a policy committee on environment charged with duties like making policies and decisions for implementation by department plus advising the department and other lead agencies.¹⁴⁷ The Act requires that the national climate change advisory committee be comprised of technical experts from fields of natural resources, environment, technology, science and agriculture, four persons from the national planning authority, academia, private sector and civil society.¹⁴⁸ The advisory committee should also consist of lead agencies charged with the duty to set up mitigation, adaptation and compatibility standards in addition to methods and performance levels for responding to the climate change matters relating to committee's duty.¹⁴⁹ There are also other committees set up at a district level and lower local government level.¹⁵⁰

In conclusion, enacting the NCCA was an important move to ensure enforcement of the convention on climate change, its protocol and agreement but still has some gaps as to how the minister and other institutional bodies can achieve effect the reforms set up in regards to climate change.

4.1.10. National Forestry and Tree Planting Act, 2003

This Act became law on 17th June, 2003 upon the president's assent and commenced on 8th August, 2003 with an aim of providing for conservation, sustainable management/use and development of forests in a way that is beneficial to the country.

¹⁴³ S.10 (1) ibid

¹⁴⁴ S.10 (2) ibid

¹⁴⁵ S. 10 ibid

¹⁴⁶ S.14 ibid

¹⁴⁷ S.15 ibid

¹⁴⁸ S.16 ibid

¹⁴⁹ S.17 ibid

¹⁵⁰ S.18-20 ibid

The government/local government is tasked with the duty of maintaining and protecting forest reserves in trust for the benefit and common good of citizens and gives any person a right to sue any one whose actions may have a significant effect on a forest.¹⁵¹

The minister has power to declare an area as central forest reserve upon consultation with the local council and authority of the place where the reserve is to be located subject to parliament's approval.¹⁵² The minister can also declare a place as a local forest reserve upon the request of the local council of the place where the intended reserve is to be located and subject to parliament's approval.¹⁵³ An area may also be declared as a community forest by a minister upon consultation with the district land board and subject to the district councils approval.¹⁵⁴

Management of local forest reserve can be transferred to the authority where the minister is sure that the local government has failed to manage and maintain the forest reserve the way it is supposed to, failed to implement the forest reserve management plan or where the minister deems it necessary to put the forest under the management of the authority to ensure its efficient protection and management.¹⁵⁵

The forest reserve is supposed to be managed in accordance with its intended purpose and shall not be used to anything else except for what is intended for as per the management plan and in line with the accepted principles set up by the minister.¹⁵⁶

According to the Act "no person is allowed to cut, disturb, damage, burn or destroy any forest produce or receive it contrary to the regulations made to ensure proper management of the forest reserve except in the course of its management, exercising the right in the forest and when in possession of a license."¹⁵⁷

The Act allows any person to register a natural forest and obtain a license to harvest and use the produce in a sustainable manner.¹⁵⁸ It also allows anyone to register a private forest, obtain a

¹⁵¹ S.5 National Forest and Tree Planting Act, 2003

¹⁵² S.6 National Forest and Tree Planting Act, 2003

¹⁵³ S.9 *ibid*

¹⁵⁴ S.17

¹⁵⁵ S.12 *ibid*

¹⁵⁶ S. 13 *ibid*

¹⁵⁷ S.14 & 32 *ibid*

¹⁵⁸ S.21

license to harvest and use produce from the private but may be subject to the district forest officers directions to use the forest in a professional and sustainable manner.¹⁵⁹

The government has no ownership on trees on private land but the district forest officer can issue directions to the owner to manage and harvest the same in a sustainable manner.¹⁶⁰

The Act requires all biological resources in the forest shall be conserved for the benefit of Ugandans.¹⁶¹ It also gives the minister power to declare any tree species as a reserved/protected species where its determined that the same is rare or threatened.¹⁶²

According to the Act, community people can cut the and take and dry wood or bamboo for domestic use while taking necessary steps to avoid damaging and other forest produce or the environment.¹⁶³

The Act prohibits anyone from setting fire on a forest without authorization.¹⁶⁴ The public shall be notified of any plant and livestock pests or diseases dangerous to forests and imposes procedure to be taken to control the same.¹⁶⁵

The Act requires any person intending to engage in an activity that is likely to affect the forest significantly to undertake an environmental impact assessment.¹⁶⁶

The Act also provides for tree planting and financing of the same.¹⁶⁷ This encourages members of the local community and government agencies to engage in tree planting and also contributes helps to restore the damages or extinguished tree species.

In conclusion, the Act adequately provides for protection of forests and management but does not specify any compensatory measures to be undertaken in case the forests in damaged which creates a loophole in the legislation. In order to fully achieve the aim of the Act, there is need to put in place preventative measures with solutions.

¹⁵⁹ S.22

¹⁶⁰ S.27 National Forest and Tree Planting Act, 2003

¹⁶¹ S. 29 ibid

¹⁶² S. 30 & 31 ibid

¹⁶³ S. 33 & 34 ibid

¹⁶⁴ S.35 ibid

¹⁶⁵ S.36 ibid

¹⁶⁶ S.37 ibid

¹⁶⁷ S.39 & 40

4.1.11. National Biodiversity Strategy and Action plan (NBSAP)

The main aim of the NBSAP is to promote biodiversity conservation, management, sustainable utilization and equitable sharing of its benefit. The objectives to be achieved include promoting stakeholder coordination and frameworks for biodiversity management, encourage research on biodiversity, establish measures to reduce negative impacts on biodiversity, create awareness and education on biodiversity and promote sustainable funding mechanisms for implementation of the strategy and action plan.¹⁶⁸ The following strategies and action plans have been set up to achieve these objectives;

To be able to strengthen stakeholder co-ordination and frameworks for biodiversity management the steps to be implemented include making mainstreaming an important aspect, startup participatory and inclusive process of implementation and establishing monitoring and evaluation framework.¹⁶⁹

In order to enhance and build capacity for research, monitoring and information management on biodiversity, the government needs to encourage research in strategic areas of biodiversity conservation and sustainable use, strengthen capacity for information management and exchange in taxonomy plus improving the role of the community in biodiversity conservation and management.¹⁷⁰

To be able to reduce and manage the negative impacts on biodiversity, the NBSAP suggests enhancing effective management of protected areas in addition to improving and establishing ways of protecting threatened and vulnerable species.¹⁷¹ The NBSAP also suggests ensuring efficient management of agricultural practices, forests and aquaculture for conservation and sustainable utilization, efficient monitoring and management of pollution and waste in ecosystems that are most likely to be significantly affected on top of establishing measures for abolishing and controlling alien species plus putting in place alien species.¹⁷²

The strategies set up to achieve a sustainable utilization and fair sharing of expenses and benefits of biodiversity include ensuring access and benefit sharing which can be achieved by setting up

¹⁶⁸ NBSAP

¹⁶⁹ Ibid

¹⁷⁰ Ibid

¹⁷¹ Ibid

¹⁷² Ibid

efficient institutional structures, better financing and mechanisms for research and development in addition to creating awareness among the local communities.¹⁷³

To increase awareness and education on biodiversity matters, stake holder awareness programs on biodiversity and its values need to be put in place and facilitated. In regards to education, educational programs on Uganda's biodiversity issues need to put in place and biodiversity needs to be incorporated into the school curricular.¹⁷⁴

The NBSAP also suggest measures to be implemented in order to properly utilize modern biotechnology for socio-economic development with adequate safety measures for human health and the environment.¹⁷⁵ These strategies include assessing capacities national biotechnology and biosafety in addition ensuring availability and sharing of information on it.¹⁷⁶ It also proposes creation of mechanisms for consistent human and infrastructure capacity and setting up a repository for plant and animal species.¹⁷⁷ The other strategy is encouraging research in biotechnology and avail updated information on it in addition establishing strong and efficient monitoring systems for biotechnology use and create biotechnology awareness.¹⁷⁸

The other important objective pertains to promoting funding for supporting NBSAP implementation.¹⁷⁹ Such support would be achievable through identifying funding from different sources, create strategic partnerships with different parties and ensuring efficient use of available sources of funding while employing cost effective ways to build capacity.¹⁸⁰

The NBSAP also sets out ways of implementation by tasking NEMA to pilot national coordination, gives sectorial agencies the role to of ensuring implementation of the sectorial strategies and action plans in different sectors, the district local governments are mandated to act as lead agencies in supporting and implementing the NBSAP and calls for participation of local communities and non-government organizations.¹⁸¹

¹⁷³ *ibid*

¹⁷⁴ NBSAP

¹⁷⁵ *ibid*

¹⁷⁶ *ibid*

¹⁷⁷ *ibid*

¹⁷⁸ *ibid*

¹⁷⁹ *ibid*

¹⁸⁰ *ibid*

¹⁸¹ *ibid*

In conclusion the NBSAP clearly sets out targets to preserve and protect biodiversity and sets up strategies for achieving them and implementation. Uganda is still at risk of losing biodiversity if all these laws are not properly enforced because the biggest contributor to biodiversity loss is poor enforcement mechanisms.

4.2 The efficacy of the mitigation hierarchy in conserving biodiversity

4.2.1 Discussion on mitigation hierarchy and conserving biodiversity.

According to Nangendo et al in “Effectiveness of Mitigation Hierarchy looking at Restoration; A case of oil and gas development in Murchison Falls National Park” they discuss mitigation hierarchy based on its four key actions which are (i)Avoid, (ii)Minimize, (iii)Restore, and (iv)Offset. It seeks to limit the negative direct and indirect impacts of developmental projects on biodiversity. This was a team that carried out in the Albertine region and assessed the application of the mitigation hierarchy that is Minimization and Restoration as applied in the development of oil and gas fields in Murchison Falls National Park during the exploration and appraisal phases, and for the planned production phase. The team equally visited the restored well sites we were well in terms of vegetation cover and wild animals

In their findings, they however found a few well sites that had less vegetative cover than had been expected. This was attributed to the higher intensity of animal use of these sites or soil structure. More so, there are some areas in the park with highly erodible soils. They sampled out some plots in the restored well sites which generally had higher species numbers than the control plots that were set outside the restored sites.

The team applied a Shannon Wiener Diversity index. This is used to measure the diversity of species in a community. Thus, “the pattern for the Shannon Wiener Diversity showed the impacted site generally having higher species diversity than the control site. Assessment using the Log Series Alpha diversity index, however, consistently showed the control sites having higher species diversity. The Shannon Wiener evenness index was higher at the control sites. These differences are mainly because of the indices characteristics. The Shannon Wiener Diversity index is sensitive

to changes in common species while the Log Series Alpha diversity index is more robust to variation in sample size but is influenced by rare species¹⁸².”

The impacted sites usually have more opportunistic species, which are often the common species, while the control sites are more stable in terms of species succession and so were more likely to have the rare species.

The intermediate disturbance hypothesis; According to Townsend et al¹⁸³, the disturbed habitats are likely to be more diverse than the undisturbed habitats due to the emergence of colonizing species in the disturbed habitat. Thus with reference to Nangendo et al (supra), the woody plants were, however, mainly still at the seedling stage and it will take them time to mature to the right age which makes them suitable for use by the threatened species. The cluster analysis also revealed another level of species composition variation among the well sites that is the Mpyo and Ngege well sites, which are located south of River Nile, were generally at one end of the cluster analysis diagram while well sites located north of River Nile were at the other end of the diagram. This shows that there is a difference between the vegetation (species composition) north and south of the Nile River. This could be due to other variables e.g. soil that have not been assessed in this study.

Furthermore, one of the anticipated impacts likely to occur during the production phase is on tourist activities, since the oil and gas activities are situated within one of the core tourism zones of Murchison Falls National Park. Therefore, to be able to minimize the interaction of oil and gas activities with tourism activities, Uganda Wildlife Authority had planned to commission additional tourism routes, in case the current ones become inaccessible. There are proposed two proposed tourism routes, using species richness as a proxy for tourism, and both routes have high tourism potential.

Therefore, as per the species recovery levels, vegetation has potential to recover after disturbance in the Albertine region. Species composition recovery, however, remains not well understood. This necessitates carrying out of long-term monitoring of the disturbed areas to ensure that there is no

¹⁸² Nangendo et al in “Effectiveness of Mitigation Hierarchy looking at Restoration; A case of oil and gas development in Murchison Falls National Park

¹⁸³ Townsend CR, Scarsbrook MR, Doledec S. The Intermediate Disturbance Hypothesis, Refugia, and Biodiversity in Streams. *Limnology and Oceanography*

retrogression in the recovery process and that any inhibitors to the species succession process are addressed as they become evident. There are options to use additional tourism routes if developed to provide tourists with options of where to visit, and also offer varied experiences to tourists since different species may be more abundant on the varied routes.

4.3 Comparative Analysis on conserving biodiversity

4.3.1 Discussion on Conserving biodiversity.

According to the National Geographic, biodiversity refers to all the different kinds of living organisms in a certain area. Thus, they include plants, animals, fungi, and other living things.

Briefly, scientists have found between 1 and 2 million different species. There are 950,000 species of insects, 270,000 species of plants, 19,000 species of fish, 9,000 species of birds and 4,000 species of mammals. But scientists know there are many more species. We just haven't found them yet. In addition, about 25 percent of the medicines used today are taken from or modeled on chemicals found in plants, animals, or other living things. Furthermore, Bees, birds, and other creatures pollinate 75 percent of the world's major crops. In areas with lots of biodiversity, insects and other creatures pollinate plants naturally. But when biodiversity is reduced, this is impossible. There are not enough insects to pollinate large fields of single crops, so farmers must truck in honeybees to do the job. California almond farmers need about 1.5 million hives of honeybees to pollinate their crops. That's more than half of all the commercial beehives in the country.

Bees, birds and other creatures carry pollen from plant to plant. They help plants create more plants. They are used for farming because they help crops grow. Sometimes, biodiversity is too low. That means there aren't enough bugs and animals to help all the crops. So, farmers bring in more. They bring honeybees in to do the job. Bees, birds and other creatures pollinate three quarters of the world's major crops. In areas with lots of biodiversity, insects and other creatures pollinate plants naturally. But this is impossible when biodiversity is low, since there are not enough insects to pollinate the fields of crops. So, farmers bring in honeybees to do the job. California almond farmers need about 1.5 million hives of honeybees to pollinate their crops.

Bees, birds and other creatures pollinate 75 percent of the world's major crops. In areas with lots of biodiversity, insects and other creatures pollinate plants naturally. But when biodiversity is

reduced, this is impossible. There are not enough insects to pollinate large fields of single crops, so farmers must truck in honeybees to do the job. California almond farmers need about 1.5 million hives of honeybees to pollinate their crops.

Therefore, Biodiversity refers to all the different kinds of living organisms within a given area. Biodiversity includes plants, animals, fungi, and other living things. Biodiversity can include everything from towering redwood trees to tiny, single-cell algae that are difficult to see.

There is a common way to measure biodiversity which is to count the total number of species living within a particular area. Tropical regions, areas that are warm year-round, have the most biodiversity. Temperate regions, which have warm summers and cold winters, have less biodiversity. Regions with cold or dry conditions, such as mountaintops and deserts, have even less.

Generally, the closer a region is to the Equator, the greater the biodiversity. At least 40,000 different plant species live in the Amazon rainforest of South America, one of the most biologically diverse regions on the planet. Only about 2,800 live in Canada's Quebec province.

The warm waters of the western Pacific and Indian Oceans tend to be the most diverse marine environments. The Bird's Head Seascape in Indonesia is home to more than 1,200 species of fish and 600 species of coral. Many of the corals build coral reefs, which are home to hundreds more species, from tiny seaweeds to large sharks.

Some places in the world have a large number of endemic species—species that exist only in that place. The Cape Floristic Region in South Africa is home to about 6,200 plant species found nowhere else in the world. Areas with high numbers of endemic species are called biodiversity hotspots.

Biodiversity can also refer to the variety of ecosystems—communities of living things and their environments. Ecosystems include deserts, grasslands, and rainforests. The continent of Africa is home to tropical rainforests, alpine mountains, and dry deserts. It enjoys a high level of biodiversity. Antarctica, covered almost entirely by an ice sheet, has low biodiversity.

Another way to measure biodiversity is genetic diversity. Genes are the basic units of biological information passed on when living things reproduce. Some species have as many as 400,000 genes. (Human beings have about 25,000 genes, while rice has more than 56,000.) Some of these genes are the same for all individuals within a species—they're what make a daisy a daisy and a dog a dog. But some genes within a species are different. This genetic variation is why some dogs are poodles and some are pit bulls. It's why some people have brown and blue eyes.

Greater genetic diversity in species can make plants and animals more resistant to diseases. Genetic diversity also allows species to better adapt to a changing environment.

All species are interconnected. They depend on one another. Forests provide homes for animals. Animals eat plants. The plants need healthy soil to grow. Fungi help decompose organisms to fertilize the soil. Bees and other insects carry pollen from one plant to another, which enables the plants to reproduce. With less biodiversity, these connections weaken and sometimes break, harming all the species in the ecosystem.

Ecosystems with a lot of biodiversity are generally stronger and more resistant to disaster than those with fewer species. For instance, some diseases kill only one kind of tree. In the early 1900s, American chestnut blight killed most of the chestnut trees in the eastern forests of North America. The forest ecosystem survived because other kinds of trees also grew there.

Biodiversity is important to people in many ways. Plants, for instance, help humans by giving off oxygen. They also provide food, shade, construction material, medicines, and fiber for clothing and paper. The root system of plants helps prevent flooding. Plants, fungi, and animals such as worms keep soil fertile and water clean. As biodiversity decreases, these systems break down. Hundreds of industries rely on plant biodiversity. Agriculture, construction, medical and pharmaceutical, fashion, tourism, and hospitality all depend on plants for their success.

Biodiversity is especially important to the medical and pharmaceutical industries. Scientists have discovered many chemicals in rainforest plants that are now used in helpful drugs. One of the most popular and safe pain relievers, aspirin, was originally made from the bark of willow trees.

Medicines that treat some forms of cancer have been made from the rosy periwinkle, a flower that grows on the African island of Madagascar. Scientists have studied only a small percentage of rainforest species in their search for cures. But every year, thousands of species go extinct, or die out entirely, before scientists can determine whether they might be useful in medicines.

In the past hundred years, biodiversity around the world has decreased dramatically. Many species have gone extinct. Extinction is a natural process; some species naturally die out while new species evolve. But human activity has changed the natural processes of extinction and evolution. Scientists estimate that species are dying out at hundreds of times the natural rate.

A major reason for the loss of biodiversity is that natural habitats are being destroyed. The fields, forests, and wetlands where wild plants and animals live are disappearing. Land is cleared to plant crops or build houses and factories. Forests are cut for lumber and firewood. Between 1990 and 2005, the amount of forested land in Honduras, for instance, dropped 37 percent.

Pollution, overfishing, and overhunting have also caused a drop in biodiversity. Global climate change—the latest rise in the average temperature around the globe, linked to human activity—is also a factor. Warmer ocean temperatures damage fragile ecosystems such as coral reefs. A single coral reef can shelter 3,000 species of fish and other sea creatures such as clams and sea stars.

Biodiversity can also be harmed by introduced species. When people introduce species from one part of the world to another, they often have no natural predators. These non-native species thrive in their new habitat, often destroying native species in the process. Brown tree snakes (*Boiga irregularis*), for instance, were accidentally brought into Guam, an island in the South Pacific, in the 1950s. Because brown tree snakes have no predators on Guam.

People all over the world are working to maintain the planet's biodiversity. In the United States, the Endangered Species Act protects about 2,000 organisms that are in danger of becoming extinct. Animals and plants are the most familiar types of endangered species, but a fungus, such as the white ferula mushroom (*Pleurotus nebrodensis*) can also be threatened.

Around the globe, thousands of wilderness areas have been set up to conserve plants, animals, and

ecosystems. Local, national, and international organizations are cooperating to preserve the biodiversity of regions threatened by development or natural disasters. UNESCO's World Heritage Site program recognizes areas of global importance, such as the enormous wetland region of the Pantanal in South America. Many national parks, such as Glacier National Park in the U.S. state of Montana, protect biodiversity within the park by restricting extractive activities.

Marine protected areas (MPAs) have been established to preserve sea life. In the marine protected area around Australia's Great Barrier Reef, no-fishing zones have helped fish populations thrive. People are also working to limit pollution and restore coral reef ecosystems in the area. As ecosystems become healthier, their biodiversity increases.

In a nutshell, Globally, there has been a reduction in biodiversity. This has been caused by numerous justifications among which the different activities carried out that have pushed a way certain species. Unfortunately, some of these species are extinct. As result this affects activities such as tourism which would generate revenue to the government. Globally, there are four actions that have been adopted to curb biodiversity to (1) avoid, (2) minimize, (3) remediate, and (4) offset.

Chapter five Conclusion and Recommendations

5.0. Introduction

This chapter covers recommendations, conclusions of the research.

5.1. Discussion on conclusion and recommendations

5.1.1. Authoritative biodiversity information

Government agencies always collect data on biodiversity and its collection protocols, quality assurance and safe storage of the data collected is important in making this information authoritative and available to apply in developing no net loss/ net gain policy.¹⁸⁴

The government also needs to encourage participation of private companies and consultants by availing the necessary biodiversity information and tools.¹⁸⁵ This is because these private bodies play a great role in designing and assessing the impacts, pointing out and evaluating likely offset activities and areas.¹⁸⁶

5.1.2. Enable understanding of the full range of impacts

It's important for government to consider supporting land scape level and strategic conservation planning dependent on understanding of ecosystem function, national priorities and the aims of the global multilateral environmental agreements.¹⁸⁷ To achieve this, authoritative information needs to be availed to all the land users both corporate and the people in local communities but especially to the implementing authorities.¹⁸⁸

The government should ensure that ecosystem services assessment is carried out to point out critical biodiversity ecosystem services areas and avail this data in addition to information as to areas where development should completely avoided.¹⁸⁹

5.1.3. Clear legislation and strong government support

Parliament needs to enact clear legislation in regard to the mitigation hierarchy and specify with clarity areas that need to be avoided grounded on scientific and stakeholder inclusive reasons. Subsidies that encourage development of areas of great biodiversity importance should be removed.¹⁹⁰

¹⁸⁴ ten Kate, K. and Crowe, M.L.A. (2014). Biodiversity Offsets: Policy options for governments. An input paper for the IUCN Technical Study Group on Biodiversity Offsets. Gland, Switzerland: IUCN. 91pp.

¹⁸⁵ Strengthening implementation of the mitigation hierarchy: managing biodiversity risk for conservation gains (2015). *A Cambridge Conservation Initiative – Collaborative Fund Project Report* compiled by: BirdLife International, UNEP-WCMC, RSPB, FFI and the University of Cambridge.

¹⁸⁶ Ibid (no.1810)

¹⁸⁷ Ibid(no.151)

¹⁸⁸ Ibid (no.151)

¹⁸⁹ Ibid (no.151)

¹⁹⁰ Ibid (no.1510)

The government also needs to offer partnership status to companies that adhere to proper voluntary standards and encourage voluntary avoidance measures by recognizing non-legally designated areas of biodiversity importance.¹⁹¹

5.1.4. Compulsory application environmental impact assessment (EIA) and mitigation hierarchy (MH)

Application of the EIA and MH should be made compulsory to both small scale and large-scale projects and impacts to make sure that there are no likely impacts that may end up being ignored due to selective application of the process. This enables the country to fully benefit from the process by utilizing it widely instead of limiting it to only specific projects.

5.1.5. Cooperation

To be able to fully achieve the purpose of EIA and HS, maximum cooperation needs to be established between all the stake holders involved in the development activities which includes the decision makers, local communities and other stake holders. This is because all these peoples especially the local community are the ones that are greatly affected by the unmitigated impacts more so when the project area is customarily owned.¹⁹²

5.1.6. Transparency and proper implementation

MH can be more effective with correct and transparent implementation. Data shows that the MH especially offsets are considered less effective because of improper implementation without any kind of public oversight, - Most offset programs are usually implemented without or with little transparency which easily makes it easy for misappropriation of the funds meant for them. Research also shows that there can be significant biodiversity conservation results with offsets and compensatory mitigation which can partly be achieved by making the private sector pay for it which establishes a foundation for a restoration economy generating a lot revenue for the country.¹⁹³

5.2. Final conclusion

MH hierarchy can be a good method of conserving biodiversity if properly applied and enforced. Enacting good laws highly recommended but the laws can only be effective if effort is taken to ensure their effective implementation and enforcement which requires government to go an extra

¹⁹¹ Ibid (no.151)

¹⁹² Cross-Sector Biodiversity Initiative (CSBI). (2015). A Cross-sector Guide for Implementing the Mitigation Hierarchy pg. 9

¹⁹³ Geenevieve benet, melissa gallant and kerry ten kate. State of biodiversity mitigation 2017: markets and compensation for global infrastructure development

mile and create awareness, ensure transparency in the process, avail authoritative information on MH and biodiversity conservation to enable clear understanding of the full range of impacts, inclusive application of the EIA and MH but above all the government needs to ensure the applicable legislation is also clear and support companies that adhere to voluntary standards.

Government also needs to ensure effective monitoring, evaluation and enforcement of the MH implementation throughout all the project phases and set up experienced personnel and management to address all the uses that arise promptly.

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First schedule

INTERVIEW GUIDE FOR FIELD RESEARCH ON ANALYSING THE EFFICACY OF
MITIGATION HIERARCHY IN PRESERVING BIODIVERSITY IN UGANDA

PART 1: INTRODUCTION OF RESPONDENT

My names are NAMATOVU OLIVER, a student pursuing a Master of Laws Degree in Oil and Gas at the Institute for Petroleum Studies Kampala in affiliation with Uganda Christian University in Uganda. As part of the activities for the course, I am conducting research about the efficacy of mitigation hierarchy in preserving biodiversity in Uganda. The purpose is to identify any gaps and make appropriate recommendations. I request you to participate in this interview and share your views and experience which will inform this research.

Kindly be informed that your participation is voluntary and you can withdraw your consent to participate in this interview at any time. You also have the right to decide either to disclose your real identity or you may require that your personal details be kept confidential. Further note that all the information you will give in this interview will be used solely for purposes of this research and not for any other purpose.

PART 2: PARTICIPANT’S DETAILS

Name (Optional):

Job Title:

Gender:

Date:

PART 3: INTERVIEW GUIDE

What is the role and contribution of this organization in respect of preserving biodiversity?

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Does your organization have a department or division dedicated to preserving biodiversity?

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.....

MITIGATION HIERARCHY STEPS

In your assessment, rate the efficacy of mitigation hierarchy steps in preserving biodiversity in Uganda.

(Tick the appropriate box) 5=Strongly agree | 4=Agree | 3=Neutral | 2=Disagree | 1=Strongly disagree

NO.	STEPS	1	2	3	4	5
1.	Avoidance					
2.	Minimization					
3.	Restoration					
4.	Offsetting					

Are there any areas that require improvement? (if yes, specify the areas and explain your answer)

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How do you propose those gaps can be remedied?

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Any other information you would like to share

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In your assessment, rate the efficacy of Uganda’s biodiversity laws in protecting and conserving biodiversity in Uganda?

(Tick the appropriate box) 5=Strongly agree | 4=Agree | 3=Neutral | 2=Disagree | 1=Strongly disagree

NO. POLICY 1 2 3 4 5

NO.	POLICY	1	2	3	4	5
1.	The National Environment Act					

2.	The Climate Change Act					
3	Uganda Wild Life Act					
4	National forestry and Tree Planting Act					
5	Uganda Wild Life Policy					
6	Uganda's National Biodiversity Strategy and Action plan (NBSAP)					
7	convention on biological diversity					
8	Kyoto protocal					

Are there any areas in the laws that require improvement? (if yes, please specify the areas and give reasons for your answer)

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How do you propose those gaps can be remedied?

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Is there a need to create laws from the existing policies?

(Circle the appropriate number)

5=Strongly agree | 4=Agree | 3=Neutral | 2=Disagree | 1=Strongly disagree

Are there any other areas regarding biodiversity conservation and protection that you think require legislation? If yes, state the area and explain why.

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Any other information you would like to share

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Thank you for participating and sharing your knowledge and ideas