THE LEGAL FRAMEWORK FOR THE TRANSITION TO CLEAN ENERGY IN UGANDA'S ENERGY SECTOR

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DECLARATION

I, **KATUUTU CHARLOTTE**, hereby declare that this research titled "The Legal Framework for the Transition to Clean Energy in Uganda‟s Energy Sector" is my work and it has not been submitted before to any other institution of higher learning for fulfillment of any academic award.

Signed: **…….**

Date: **……..……...**

APPROVAL

This is to certify that this Dissertation titled “The Legal Framework for the Transition to Clean Energy in Uganda’s Energy Sector” has been done under my supervision and now it is ready for submission.

Signature: ……

Supervisors Name: **MUGABI IVAN**

Date: …….

DEDICATION

This research is dedicated to the girl of my life, my mother Nyakato A. D. Rusoke.

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CONTENTS

LIST OF ACRONYMS

BFA	Biofuels Act
COP	Conference of Parties
GEF	Global Environment Facility
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MWE	Ministry of Water and Environment
NAMA	Nationally Approved Mitigation Action
NDCs	Nationally Determined Contributions
NCCA	National Climate Change Act
NCCP	National Climate Change Policy
NEA	National Environment Act
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NOGP	National Oil and Gas Policy
RET	Renewable Energy Technology
REP	Renewable Energy Policy

SDG	Sustainable Development Goal
UMA	Uganda Meteorological Authority
UNDP	United Nations Development Programme
UNBS	Uganda National Bureau of Standards
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention for Climate Change

ABSTRACT

The energy sector is one of the key sectors that impact the economic development of a nation. Overtime, there have been international efforts for the transition to clean energy resources as a way of mitigating and adapting to the adverse effects of climate change. These efforts have seen the coming into force of the United Nations Framework Convention for Climate Change, the Kyoto Protocol, and the Paris Convention. These international instruments which have been widely ratified set the pace for different countries to introduces policies and laws that advocate for clean energy through the transition from reliance on fossil fuels to renewable energy sources.

Consequently, Uganda has developed policies and enacted laws including the Energy Policy, the Renewable Energy Policy, the National Oil and Gas Policy, and the National Climate Change Policy, the National Environment Act and the National Climate Change Act. These laws and policies are, among other things, aimed at propelling the country in its bid to meet its commitments in the clean energy revolution. However, Uganda being a hydrocarbon rich country, it faces a dilemma in transitioning to a low carbon economy.

This research analyses the laws and policies of Uganda and argues that while the country has domesticated the UNFCCC, the Protocol, and the Agreement, most of the policies pasted by the Cabinet of Uganda in respect of clean energy have for many years remained without legislation. The research recommends for legislations arising from the policies, with lessons picked from different countries which have already legislated upon these issues.

CHAPTER ONE: INTRODUCTION

1.1. INTRODUCTION TO THE STUDY

This research is designed to examine the provisions of Uganda‟s laws and policies relating to the reduction of greenhouse gas emissions and the transition to clean energy sources. Greenhouse gas emissions cause adverse effects to the humankind, animals and the environment in general. Itis on this premise that efforts are being made to reduce reliance on fossil fuels and transition to cleaner and safer energy sources, notably the renewable energy sources. This research will also identify gaps in the relevant laws and policies and propose the way forward.

1.2.BACKGROUND TO THE STUDY

Many countries still face the problem of conventional forms of air pollution. Those kinds of pollutions result from burning fossil fuels such as particulates, sulfur oxides and nitrogen oxides which have adverse effects on human life.[1]

Climate change refers to a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods.[2]

Greenhouse gas means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.[3] Dipietro has also defined greenhouse gases refer to any gaseous compound that is capable of absorbing infrared radiation (net heat energy) emitted from the earth‟s surface and reradiating it back to the earth thereby trapping and

[1] Thomas Covert et al, (2016), *Will we ever stop using fossil fuels?*, Journal of Economic Perspectives

[2] Section 2 of the National Climate Change Act, 2021

[3] ibid

holding heat in the atmosphere.[4] They include carbon dioxide from burning fossil fuels, solid waste and trees, methane from production and transportation of coal, fossil fuels, and nitrous oxide from combustion of fossil fuels and solid waste. The global emissions statistics stand at 65% for carbon dioxide from fossil fuels and industrial processes, 11% for carbon dioxide from forestry and other land use, 16% for methane, 6% for nitrous oxide and 2% for fluorinated gases.[5] Approximately 50 billion tonnes of carbon dioxide equivalents are emitted collectively each year, being 40% higher than emissions in 1990.[6] These statistics are indicative of the dire need to solve the problem of increasing greenhouse gas emissions.

Gas emissions from fossil fuels have an impact of catastrophically altering the earth‟s climate and posing a threat to the future habitability of the planet.[7] Air and water pollutants are also responsible for the destruction of natural resources such as rivers, lakes and other wildlife in addition to the likelihood of harming communities. Health complications such as cancer, asthma among other respiratory diseases are likely to arise from exposure to gas emissions. According tothe World Health Organization, air pollution from fossil fuel burning kills about 4.2 million people a year globally.[8]

By way of a solution, the clean energy revolution emerged to propose transitioning from fossil fuels to cleaner and safer renewable energy sources such as water, biomass, wind, tidal,

[4] Joseph DiPietro, *Geology and Landscape Evolution: General Principles Applied to the United States*, Elsevier 2018

[5] https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data accessed on 3rd September 2021 at 11:27AM

[6] https://ourworldindata.org/greenhouse-gas-emissions accessed on 3rd September, 2021 at 12:22HRS

[7] William Fulkerson et al, (1990) *Energy from Fossil Fuels*, Scientific American Inc

[8] 4 Ways to shift from Fossil Fuels to Clean Energy| World Resources Institute, https://www.wri.org/blo/2019/01/4-ways-shift-fossil-fuels-clean-energy , accessed on 26th March, 2021 at 03:34PM

geothermal, and solar. These are more popularly acceptable because they are health and environmentally friendly as they undeniably contribute to limiting climate change.[9]

On an international scene, several international instruments have been signed. They include the United Nations Framework Convention on Climate Change (UNFCCC) that was in force from 21st March 1994 with the ultimate aim of preventing dangerous human interference with the climate system.[10] The UNFCCC currently has near-universal membership. Uganda is also a Stateparty to the UNFCCC having ratified the same on 13th June, 1992.[11]

The UNFCCC was followed by the Kyoto Protocol to the UNFCCC which was adopted on the 11th December, 1997 but entered into force on 16th February, 2005.[12] Its main purpose was to operationalize the UNFCCC through the committing of industrialized countries and economies to limit and reduce their greenhouse gas emissions. This was to be achieved through putting in place policies and measures aimed at encouraging the making of periodical reports. Uganda is a party to the Kyoto Protocol having ratified the same on 25th March 2002.[13]

More recently, the Paris Agreement, commonly referred to as the "Climate Change Accord" of 2015 and which entered into force on 4th November, 2016, seeks to limit the average global temperature rise at "well below 2℃.[14] The aim is to achieve this through encouraging a transition to renewable energy sources together with efforts to improve energy efficiency, which if

[9] Clarisse Frass-Ehrfeld, (2009) *Renewable Energy Sources*, Kluwer Law International 2009, p- 61

[10] https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change accessed on 15th June 2021 at 09:03HRS

[11] Uganda"s First Biennial Update Report to the United Nations Framework Convention On Climate Change, September 2019, p-1

[12] https://unfccc.int/kyoto_protocol accessed on 15th June 2021 at 09:23HRS

[13] Uganda"s First Biennial Update Report supra, p-1

[14] https://cop23.unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/key-aspects-of-the-paris-agreement accessed on 15th June 2021 at 09:45HRS

successful is calculated to provide over 90% of the required emissions reduction.[15] Uganda is also a party to the Paris Agreement having signed the same on 22nd April, 2016.[16] The country‟s first Biennial Update Report was submitted in September 2019. The country developed and submitted her National Determined Contributions (NDCs) with a commitment of 22% reduction by 2030.[17]

Uganda has overtime put in place laws and policies for the achievement of what is required of her in the new global energy clean revolution. The laws and policies in place in Uganda are several and include the Energy Policy,[18] the Renewable Energy Policy,[19] the National Oil andGas Policy,[20] the National Climate Change Policy,[21] the Biofuels Act[22], the National Environment Act,[23], and the National Climate Change Act,[24] among others. These various laws are aimed at making strides to reducing greenhouse gas emissions as the country moves towards clean energy and protection of the environment. Such a trend of energy transition is seen as a way of dealing with the prevalent challenges presented by greenhouse gas emissions.

This research also aims at analyzing and critiquing how the clean energy revolution has been implemented into Uganda‟s legal and institutional framework and identifying the country‟s shortfalls.

[15] IRENA, *Global Energy Transformation: A roadmap to 2050*, 2018, International Renewable Energy Agency, Abu Dhabi

[16] Uganda‟s First Biennial Update Report supra, p-1

[17] ibid, p-vii

[18] 2002

[19] 2007

[20] 2008

[21] 2015

[22] 2018

[23] No. 5 of 2019

[24] 2021

1.3. THE PROBLEM STATEMENT

The clean energy revolution advocates for a world that relies on energy sources which do not emit pollutants into the environment. Uganda like other countries is a signatory to a number international Conventions advocating for clean energy.

Uganda‟s energy mix is comprised of both fossil fuels and clean energy sources. Fossil fuels are criticized world over for their contribution to greenhouse gas emissions responsible for climate change, health complications and pollution to the environment, among others. Several countries are progressively transitioning from emphasizing fossil fuels to clean energy. Uganda is mandated by the international Conventions to which she is signatory, to take actions towards achieving clean energy goals.

To this end, the country has taken progressive steps to incorporate in her legal and institutional frameworks, provisions aimed at reducing gas emissions from fossil fuels as well as meeting the requirements and standards of the transition to clean energy revolution.

1.4. PURPOSE OF THE STUDY

The study analyses how Uganda has incorporated the clean energy revolution into her policies and legal framework as a mechanism of transitioning from the demerits of fossil fuels.

1.5. SIGNIFICANCE OF THE STUDY

Fossil fuels such as coal, oil and natural gas, are said to comprise 80% of the current global primary energy demand[25] and 75% of greenhouse gas emissions.[26] The effects of these emissions on climate change, health, the environment including the flora and fauna, are devastating.

[25] The Role of Fossil Fuels in a Sustainable Energy System https://www.un.org/en/chronicle/article/role-fossil-fuels-sustainable-energy-system, accessed on 26th March, 2021 at 02:15PM

[26] 4 Ways to shift from Fossil Fuels to Clean Energy| World Resources Institute, https://www.wri.org/blo/2019/01/4-ways-shift-fossil-fuels-clean-energy , accessed on 26th March, 2021 at 03:34PM

According to the National Meteorological Authority in 2018, the rate in increase of temperature over the period from 1950 to 2018 was about 0.23 °C/decade, while the period from 1990 to 2018 exhibited a slightly higher rate of about 0.24 °C/decade.[27]

Needless to say, the need to transition from reliance on fossils to clean energy has been and is still a major concern in the energy industry. Encouraging such a transition is one of the efforts being made to reduce emissions from greenhouse gases.

The study advances that the law should strictly provide a transition strategy from a reliance on high fossil fuels to cleaner energy. Simply because with the low carbon fossil fuels, there is a high likelihood of having significant reduction and management of greenhouse gas emissions ina way that protects the environment against the devastating effects.

It is also expected that this research will inform the relevant policy makers about proposed recommendations on the identified gaps in Uganda‟s move to clean energy. The research will also open space for more research into this vital area, hence contributing more to the energy sector.

1.6. JUSTIFICATION OF THE STUDY

Reliance on fossil fuels such as oil has a great deal contributed a to the economic growth of many countries. At the same time, the negative effects including climate change, damage to the environment and health complications are yet another rationale in advocating for a transition to cleaner energy.

[27] Uganda National Meteorological Authority, *The State of Climate of Uganda in 2018*, July 2019

The clean energy revolution swept worldwide from countries which had already benefitted from fossil fuels to countries such as Uganda which are yet to benefit from such fuels. Policies and laws have been put in place to achieve the aims and targets of a greener world. It is on those premises that this research is conducted to examine the efficiency of these policies and laws.

1.7. AIMS/ OBJECTIVES OF THE STUDY

1.6.1 MAIN OBJECTIVE

To assess the efficiency of Uganda‟s policies and legal framework in implementing the transition from fossil fuels to clean energy.

1.6.2. SPECIFIC OBJECTIVES

a) To examine the content and context of the laws and policies implemented by Uganda in a bid to curb greenhouse gas emissions and meet her obligations in the clean energy revolution.

b) To evaluate the effectiveness of the laws and policies aimed at achieving the global objectives of transitioning towards the agenda of the clean energy revolution.

c) To assess the content and context of international instruments in relation to the global transition towards the clean energy revolution as signed and ratified by Uganda.

1.8. RESEARCH QUESTIONS

a) What laws and policies has Uganda established in a bid to meet her international obligations as State Party to clean energy revolution?

b) To what extent are Uganda‟s current policies and laws efficient in achieving the aims of the global clean energy revolution?

c) What international Conventions were signed and ratified by Uganda for the transition from fossil fuels to clean energy sources?

1.9. SCOPE OF THE STUDY

1.9.1. Time Scope

The study considered the policy and regulatory framework in respect of the transition to clean energy from the signing of the UFCCC in 1992 to the present. This research covered the international instruments signed and ratified by Uganda. It further extended to clean energy related laws and policies that have been enacted in this period for combatting greenhouse gas emissions as a gesture of transitioning to cleaner energy sources.

1.9.2. Subject scope

The study covered the relevant policies and legal framework which are geared towards reducing of greenhouse gas emissions and the transition to clean energy sources. The focus of this research was on assessing the efficiency of these laws in achieving the objectives of the global clean energy revolution.

1.10. THEORETICAL FRAMEWORK

This research employed the theory of law and development by exploring the interrelationship between the law, legal frameworks and institutions on one hand and institutional, economic, social, and political development on the other hand. Development in this theory refers to a progressive transformation of the economy and society.[28] The theory developed sometime after

[28] David M. Trubek & Marc Galanter, *Scholars in Self-Estrangement: Some Reflections on the Crisis in Law and Development Studies in the United States,* WIS. L. REV. 1062 (1974)

the second world war when scholars made efforts in adopting laws and legal practices from developed countries with a view of attaining economic and social progress in developing countries.[29]

The law and development theory has been undergoing evolution and reflection, bringing with it new ideas and approaches.[30] The third movement of this theory which emerged in the late 1990"s supports a more holistic view of development. It also brought on board global efforts such as the Millennium Development Goals (MDGs) and subsequently, the Sustainable Development Goals (SDGs). The SDGs that are deemed of most relevance to this research are SDG3 on good health and well-being and SDG7 on affordable and clean energy.[31]

This research explains how the laws in Uganda can be effectively designed to drive the transition from reliance on energy sources that emit greenhouse gases to the use of cleaner and safer energy sources. The research concentrated on the mechanism of regulatory design which is essentially concerned with how a law is optimally designed to achieve its regulatory objectives. It is hoped that this will help improve the effectiveness of the design of the laws in their bid to meet the demands of the clean energy revolution.

[29] David M. Trubek, *„The "Rule of Law" in Development Assistance: Past, Present, and Future"*, in The New Law and Economic Development, 2006 Cambridge University Press

[30] ibid

[31] https://www.un.org/development/desa/disabilities/envision2030.html accessed on 25th June 2021 at 20:41HRS

1.11. CHAPTER SYNOPSIS

Chapter One: Introduction

The first chapter gives a foundation to the research paper by highlighting the background and significance of the study as well as stating the objectives and the research questions.

Chapter Two: Literature Review

The second chapter is a review of the literature previously made relating to the subject of Uganda‟s journey in transitioning to clean energy sources. The chapter also identifies the gaps apparent after reviewing the existing literature.

Chapter Three: Methodology

The third chapter contains the methodology that will be employed in conducting the research. It details the research design, area of study, data collection methods, instruments to be employed and data analysis methods. The chapter also contains the reliability and validity of the research, ethical considerations and the limitations of the study.

Chapter Four: Analysis

The Fourth chapter will discuss the findings and analysis of the said findings. It discussed the statutory laws, policies, case law, scholarly articles relating to Uganda‟s transition to clean energy in the energy sector.

Chapter Five: Conclusion, and Recommendations

The Fifth Chapter contains the findings, limitations of the study and gives recommendations and areas for further research.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

This chapter reviews literature relating to Uganda‟s energy sector, with special attention to the country‟s transition from its reliance on fossil fuel sources to clean energy sources. The literature review is also guided by the research objectives.

2.2. SUMMARY OF THE LITERATURE

2.2.1. Energy Sources and the Role of Energy

The role of energy in a country‟s economy cannot be underestimated. A study conducted on Tanzania and Nigeria found that simultaneously, there is a causal relationship between energy on one hand and economic growth on the other. [32] Each sector of the economy including agriculture, industries, trade and households relies on energy.[33] This implies that there is need to ease the constraints to energy supply as one of the efforts towards achieving economic growth and development.[34]

Mustafa classifies energy sources into three categories, namely, fossil fuels, renewables, and nuclear sources.[35] Fossil fuels include oil, coal, and natural gas while renewable energy resources include nuclear energy, biomass energy, geothermal energy, solar energy, and wind energy.[36] Despite the several adverse effects of the greenhouse gas emissions, fossil fuels are said to still

[32] Obas John Ebohon (1999*), Energy, economic growth and causality in developing countries A case study of Tanzania and Nigeria*, Elsevier Science Ltd

[33] Xing Yao et al, 2020, *Inequalities by energy sources: An assessment of environmental quality*, PLoSONE, p-1

[34] Obas John Ebohon, supra

[35] Mustafa Balat (2005), *Energy Exploration & Exploitation: Usage of Energy Sources and Environmental Problems*, p-142

[36] ibid

account for more than 80 percent of the world‟s primary energy demand, and energy production and use. Fossil fuels account for roughly two thirds of the world‟s greenhouse gas emissions. [37]

2.2.2. Uganda's Energy Mix

Uganda‟s energy resources include biomass, hydropower, solar, wind, geothermal and fossil fuels.[38] Hydropower is the country‟s main source for electricity production however majority of the population still lacks electricity.[39]

According to the data collected by the Ministry of Energy and Mineral Development, biomass dominates Uganda‟s energy mix for household use with approximately 88% of the total primary energy consumption.[40] Biomass includes the use of firewood, charcoal and crop residues and is predominantly used in both the rural and urban areas of Uganda. [41] The basic activities for which biomass is used include cooking and water heating in rural areas, most urban households, institutions, and commercial buildings.[42]

Electricity accounts for about 2% of the national energy consumption balance while the other fossil fuels account for 10%.[43]

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[37] Katherine Ross, et al, (2015) *Assessing the Post 2020 Clean Energy Landscape*, World Resources Institute

[38] https://energypedia.info/wiki/Uganda_Energy_Situation#Energy_resources accessed on 1st July 2021 at 08:54HRS

[39] Adebayo Fashina et al (2018), *The Drivers and Barriers of Renewable Energy Applications and Development in Uganda: A Review*, Clean Technologies

[40] Benard M Wabukala, et al, (2021), *Assessing wind energy development in Uganda: Opportunities and challenges*, Sage Publications

[41] Patricia Tarlue, et al, (2019) *Assessing Rural Communities Prospects for Biogas Technology Adoption as Clean Energy Source in Wakiso District, Uganda*, African Journal of Economics and Sustainable Development

[42] K. O. Adeyemi and A. A. Asere, (2014), *A Review of the Energy Situation in Uganda*, International Journal of Scientific and Research Publications, Volume 4, Issue 1

[43] Benard supra

Empirical evidence has also indicated that wind speeds in Uganda are suitable for activities such as water pumping, agricultural irrigation schemes, and small-scale electricity generation.[44] However, the contribution of the scope of wind energy to Uganda‟s energy mix is still lacking.[45]

2.2.3. Effects of Greenhouse Gas Emissions

The issue of climate change is now globally recognized as one of the greatest environmental, social and economic threats on the planet. Climate change refers to the shift in climate patterns mainly caused by greenhouse gas emissions from natural systems and human activities.[46] Africancountries are said to be greatly affected by climate change due to the low adaptive capacity and projected climate change impacts.[47] The effects of climate change include extreme floods, heat waves and droughts, rising sea levels, food insecurity, water scarcity and large scale loss of ecosystems.[48]

According to data collected by the World Health Organization (WHO), globally, 9 out of 10 people breathe air that exceeds WHO guideline limits containing high levels of pollutants. The most affected countries are low and middle income countries such as Uganda. The WHO data further reveals that on a global scale, an estimated population of seven million people lose their lives annually as a result of air pollution.[49]

The effects of air pollution are numerous and catastrophic. By way of example, according to the World Health Organization (WHO) statistics indicate that over 80% of populations in monitored

[44] Benard supra

[45] Mustafa supra

[46] Samer Fwazy et al (2020), *Strategies for Mitigation of Climate Change: A Review*, Environmental Chemistry Letters

[47] Clarisse Frass-Enrfeld (2009), *Renewable Energy Sources*, Kluwer Law International, p-5

[48] ibid

[49] https://www.who.int/health-topics/air-pollution#tab=tab_1 accessed on 23rd June, 2021 at 08:34HRS

urban centers are exposed to outdoor pollution levels above the guideline levels. The WHO also found that annually, more than 7 million premature deaths are attributable to air pollution.[50]

To bring the point home, in the Ugandan context, an approximation of over 30,000 people are reported to die annually as a result of air pollution-related illnesses according to the records of the World Health Organization. The ongoing monitoring reveals that the outdoor air quality levels in Uganda‟s urban centers are estimated to be over 5 times the WHO annual guidelines.[51]

In 2019, Uganda was ranked as the third country in Africa, after Ghana and Congo, for recording the highest and most dangerously polluted air. On the global scene, Uganda appears among the top 25 countries with the highest amounts of Particulate Matter.[52]

Data from Climate Analysis Indicators Tool in 2017 indicated that over the past 15 years, energy use, agriculture, land-use change and forestry activities, were the biggest contributors in the emission of greenhouse gas in Uganda. The contribution from the energy sectors was a result of increase in the use of biomass, fossil fuels, and inefficient conversion technologies.[53]

According to research, it is projected that so long as the traditional practices of cooking with wood and charcoal and the use of petroleum lamps continue, the public exposure to dangerous pollutants shall persist.[54] Exposure to household air pollution from open combustion of solid fuels was among the major causes of avoidable illnesses and deaths.[55]

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[50] ibid

[51] The Independent Newspaper, https://www.independent.co.ug/nema-proposes-heavy-fines-jail-sentence-for-air-pollution-offences/ accessed on 28th June 2021 at 11:00HRS

[52] IQ Air Airvisual (2020), *2019 World Air Quality Report*, p. 8

[53] Benard, supra

[54] Rebecca Fuchs & Verena Kasirye, (June 2020), *Kampala"s Air Quality is Flagged*, Konrad Adenauer Stiftung

[55] Bastiaan Teune, et al (2020), *Low-cost interventions to reduce emissions and fuel consumption in open wood fires in rural communities*, (Elsevier)

Research conducted by the United States Department of Energy in 2011 revealed that in Sub-Saharan Africa, the total wood harvested for cooking was about 80%. The research also estimated that by 2030, use of wood fuel in Africa would increase by more than 40% thus posinga serious threat to human life and climate security in Sub-Saharan Africa.[56] It is projected that by2050, Uganda will require 42.6 million tons of wood for household energy use.[57]

Carbon emissions which are released into the atmosphere remain for a period of over 100 years. As such, even the benefits of curbing on these emissions will likely last for a period of over 100 years from today.[58]

Research conducted on household air pollution suggested the solution as promoting outdoor cooking as well as using clean fuels in a bid to curb the health effects attributable to such pollution.[59]

Further, wind energy is another potentially useful option given its high likelihood to improving on levels of energy mix through enhancing energy supply, and hence reducing levels of deforestation. That makes wind energy an instrumentally vital consideration in enhancing the transition from biomass to clean energy for household consumption, water pumping systems and irrigation systems for agriculture in rural areas.[60]

2.2.4. A transition to cleaner energy sources

Over the years, there have been commendable efforts in the transition towards developing cleaner and efficient energy technologies. The tendency of having supportive policies which

[56] Patricia Tarlue, et al, supra

[57] Sebbit A, Kevin, B, Higenyi J.(2004), *Household energy demand perspectives for Uganda in 2025, A presentation at domestic use of Energy Conference 2004*, Energy Research Centre University of Cape Town

[58] Benard supra

[59] Buyinza Faisal, Jakob Kapella & Senono Vicent (2021) *Household air pollution and household health in Uganda*, Development Southern Africa

[60] Benard supra

make cleaner energy sources to have a competitive and comparative advantage than other renewable energy sources appears among the driving factors promoting this transition. [61]

According to Bernard, there is consensus that clean energy is one of the most important means to improving the quality of life. It has also been found that increased access to affordable and reliable clean energy is fundamental to social and economic development. This is because the affordable and reliable clean energy results into better use of the available resources, achievingof potential development at individual and societal levels, reducing poverty, and promoting human health and independence.[62]

Renewable energy sources such as solar power, wind power, hydropower, tidal power, and geothermal are regarded as the alternative to fossil fuels since they emit small amounts of greenhouse gases or even none at all.[63]

In a study conducted by the Climate Policy Initiative, Uganda was said to be one of the countries which can deliver the highest impact per dollar invested in improving the quality of energy access and delivering climate impact.[64] In a bid to achieve this progress, the focus is on hydro, wind and geothermal.[65]

The benefits of the transition are enormous. For instance, changing cooking options from solid fuels to cleaner options such as electricity, would have a summed-up effect of reducing health

[61] Katherine Ross, et al, supra

[62] Bernard, T, 2012. *Impact analysis of rural electrification projects in sub-Saharan Africa*, The World Bank Research Observer

[63] Clarisse supra, p110

[64] Bella Tonkonogy et al, (2018) Blended Finance in Clean Energy: Experiences and Opportunities, Climate Policy Initiative

[65] ibid

risks. The other key benefit would be mitigating climate change by reducing the tendencies of deforestation.[66]

The geographies of energy transition greatly impact the progress of the transition. According to Gavin Bridge et al, the term geographies of energy transition entails two aspects. The first relates to the distribution of different energy-related activities across a particular space and the underlying processes that give rise to these patterns. The second aspect entails the geographical connections and interactions between that space and other spaces.[67]

By way of example, data has shown that globally, the transition to clean cooking facilities is taking shape with more people having access to electricity and Liquefied Petroleum Gas (LPG).[68] However, this progress is still slow and geographically uneven. Latin America, North Africa and some parts of Asia have done considerably well and are approaching universal access while the majority of Sub-Saharan Africa and South Asia are making minimal progress.[69] This research could attribute those varied discrepancies across the globe to financial constraints and engrained habits, customs and perceptions.

According to the National Development Plan III, Uganda‟s plans over the next five years include focusing on increasing access to sustainable energy and transitioning from biomass to more efficient energy sources. In addition, there are plans to focus on a diversified energy mix including renewable and alternative energy sources such as hydro, solar, wind, geothermal and nuclear.[70]

[66] Bastiaan supra

[67] Gavin Bridge et al, (2012), *Geographies of energy transition: Space, place and the low carbon economy*, Elsevier

[68] ibid

[69] ibid

[70] Third National Development Plan (NDP III), 2020/21–2024/25

Uganda has concentrated on four areas in its bid to improve her renewable energy agenda. They include increasing access and utilization of electricity, increasing electricity generation capacity, increasing adoption and use of clean energy, and promoting energy-efficient practices and technologies.[71]

Uganda, through the Ministry of Energy and Mineral Development, is currently implementing a Nationally Approved Mitigation Action on Integrated Waste Management and BiogasProduction in Uganda known as the "Biogas NAMA".[72] This is a five-year project funded by theGlobal Environment Facility (GEF) through the United Nations Development Programme (UNDP).[73] The project is aimed at improving practices of waste management in towns and municipalities by introducing an Integrated Waste Management System that could contribute to Biogas Energy Generation.[74]

2.2.5. Current energy challenges in Uganda

An article published in 2020 by Alexander Komakech Akena noted that Uganda made significant progress to transition from an electricity supply deficit to a surplus generation capacity thus reducing the incidents of load-shedding.[75] However, because supply whether utilized or not must be paid for, the mismatch between supply and demand is projected to increase total electricity costs by over $950 million per year. The end result is high tariffs for the consumers.[76]

[71] ibid

[72] Ministry of Energy and Mineral Development, Annual report July 2018 – June 2019, 47

[73] ibid

[74] ibid

[75] https://rmi.org/achievements-and-challenges-of-ugandas-power-sector/ accessed on 7th December 2021 at 17:45PM

[76] ibid

Alexander further notes that constraints in transmission and distribution systems and their interconnection limit the use of existing supply to around 693 MW regardless of the installed capacity.[77]

Despite the increased production of electricity, many households remain without access to electricity which severely constrains the economic development of rural areas.[78] In a survey conducted by Afrobarometer surveys in September-October 2019, the findings indicated that one in every four Ugandans (26%) live in households that are connected to the national power grid. Of those connected to the power grid, about 68% said their electricity works "all of the time" or "most of the time".[79] This limited access to electricity hampers access to information andcommunication technologies such as mobile phones, computers, and internet. As a result, rural areas are further isolated from the rest of the country.[80]

One of the challenges noted in electrifying Ugandan households is inadequate clarity of goals, focus on on-grid electrification, and limited understanding and consideration of off-grid energy priorities at the highest levels of government.[81] Most policies, frameworks and resources are committed to on-grid energy and pay very little attention to off-grid energy thus failing to enable an environment that equally builds off-grid energy.

The heavy reliance on wood fuels and charcoal also pose a challenge for Uganda. This has significantly reduced the country‟s forest cover by a percentage of 39% in a span of 20 years

[77] ibid
[78] https://energypedia.info/wiki/Uganda_Energy_Situation accessed on 7th December 2021 at 18:06HRS
[79] Ronald Makanga Kakumba (2021), *Despite hydropower surplus, most Ugandans report lack of electricity*, Afrobarometer
[80] https://energypedia.info/wiki/Uganda_Energy_Situation accessed on 7th December 2021 at 18:06HRS
[81] FHI 360 (October 2017), *Scaling Off-grid Energy in Uganda: A Mid-Level Landscape Analysis of Issues and Stakeholders*

between 1990 to 2010.[82] The persisted use is projected to have further reduced the forest cover by today. Moreover, biomass is used in a very inefficient way leading to an increase in energy costs, air pollution, respiratory diseases, among others.[83]

In relation to solar energy, the enormous potential of its utilization is curtailed by the low levels of affordability especially in rural areas, the limited capacity of private sector to procure solar PV systems in large quantities, insufficient information regarding the benefits, and theft of PV modules, among others.[84]

2.2.6. Opportunities and Challenges in Uganda's transition to cleaner energy sources

Energy transition inevitably presents challenges and opportunities to every country. For Uganda whose oil and gas industry is relatively infant, the country faces a financial risk of the falling demand of fossil fuels and the increase pressure to decarbonize. An increasing number of multilateral and bilateral development finance institutions have announced a halt to investments in coal.[85]

The Guardian Newspaper reported on 14th April, 2021, that 38 Civil Society Organisations in Uganda and Tanzania signed a letter contending that there had been failure to address environmental concerns and claiming that the parties had simply stream rolled over court and parliamentary processes. Their concerns partly related to the risk to resources such as Lake Albert and Lake Victoria which support the fisheries and tourism industries as well as other economic activities. The CSOs are concerned that the pipeline will only worsen the already

[82] https://energypedia.info/wiki/Uganda_Energy_Situation accessed on 7th December 2021 at 18:06HRS
[83] Ibid
[84] https://energypedia.info/wiki/Challenges_and_Issues_Affecting_the_Exploitation_of_Renewable_Energies_in_Uganda accessed on 9th December, 2021 at 17:50HRS
[85] United Nations (2021), Theme Report on Energy Transition: Towards the Achievement of SDG7and Net Zero Emissions

prevalent climate change challenges. [86] Additionally, 260 African and international organization authored an open letter to banks urging them not to finance the EACOP. These environmental challenges could have a direct effect on the funding of the project as well as the security for demand of the crude oil.

Moreover, as the country transitions to cleaner energy sources, it must also ensure that its energy supply meets the growing energy demand.[87] In terms of technology, the country must monitor scientific and technological progress in order to assess the new carbon-free energy breakthroughs. [88] It is also important to note the current times during which the energy transition is being implemented. Investment in new technology and the restructuring of the energy systemis no easy task at a time when the country‟s economy, just like other economies, is in dire needof post COVID-19 recovery.[89]

It is noted that energy consumers may also require further incentives to switch away from traditional fuels to cleaner energy sources. James Henderson notes that although the question of climate change is clearly vital, when consumers are asked to make specific changes to industrial processes or lifestyles, the questions of economics, convenience, and cost tend to come to the fore[90]

[86] https://www.theguardian.com/global-development/2021/apr/14/environmental-campaigners-condemn-uganda-total-cnooc-eacop-east-african-oil-pipeline accessed on 10th December, 2021 at 23:19HRS
[87] United Nations (2021), Theme Report on Energy Transition: Towards the Achievement of SDG7and Net Zero Emissions
[88] James Henderson (September 2021), *The Energy Transition: Key challenges for incumbent and new players in the global energy system,* The Oxford Institute for Energy Studies
[89] ibid
[90] ibid

It goes without saying that in a bid to serve their customers, companies in the energy sector need to find ways of realigning their business models to meet regulatory requirements and satisfy consumer preferences.[91]

The transition to cleaner energy sources is hardly a smooth profession mindful of the potential, partly because investors assess apparent risks in energy projects risks by the existing national policy and regulatory framework.[92] It has been noted that the policy and regulatory risks have proved to be one of the key barriers to financing clean energy projects in Uganda. [93] Uganda‟s energy sector lacks strong legislative framework, practical policy, legal and regulatory environment for attracting private sector invest in developing technological and infrastructural facilities for renewable energy.[94]

Although studies have shown potential for wind energy along the shores of Lake Victoria and in the North-Eastern Uganda, research has found that the potential benefits from wind energy have often remained curtailed by the unsupportive policies and the lack of supportive programs. Uganda can introduce supportive programs such as tax incentives on the purchase and installation of wind energy infrastructure.[95] Benard notes that whereas the National Energy Policy 2002 and the Renewable Energy Policy 2007, provide for and promote the development of wind power technologies, the Draft National Energy Policy 2019 inadequately addresses the potential exploitation of wind energy resources. Uganda‟s National Development Plan for the years 2020/2021 to 2024/2025 and Uganda Vision 2040 both make no provision for plans of developing wind energy.

[91] supra
[92] Benard supra
[93] Bella Tonkonogy et al, supra
[94] Adeyemi supra
[95] Benard supra

The success of wind energy projects is largely dependent on consistent and reliable data from different locations in the country. To that end such data encompasses wind speeds, changes in wind velocity, turbulence, and wind distribution by time of day, season, height above the ground and topography.[96] However, Uganda faces a challenge of inadequate data relating to wind energyand this is suspected to be the reason why there has been a conclusion that the wind energy resource in Uganda is insufficient for economic wind power investments.[97]

Furthermore, there are high upfront costs of investing in renewable energy technologies which makes investments in these resources uncompetitive in the market.[98] As a result, the existing potential of these resources seems far from being exploited. In 2014, statistics indicated that in spite of the huge potential of hydropower energy in Uganda estimated at over 2000 MW, less than 10% was being exploited and Hydropower was only contributing only 1% to Uganda‟s energy supply. [99]

It is possible that the percentage of hydropower energy exploited in Uganda has since increased as a result of the construction of several dams. However, this increment is unlikely to beadequate and there remains a great deal room for improvement.

Another challenge noted by the Ministry of Energy and Mineral Development is that there is low adoption of clean cooking alternatives such as biogas and Liquefied Petroleum Gas.[100] At most, in Sub-Saharan Africa, people opt to combine the use of clean cooking options alongside the use

[96] https://www.e3a4u.info/energy-technologies/small-wind/assessing-your-wind-resource/ accessed on 25th July, 2021 at 10:05AM

[97] Benard supra

[98] Adeyemi supra

[99] K. O. Adeyemi and A. A. Asere supra

[100] MEMD Annual Report 2018/19

of solid fuels. The result of this concurrent use of solid fuels with LPG or electricity is that the rewards of a total transition to cleaner options are lost.[101]

Uganda has devised certain measures to tackle the issue of energy access. Notable among the measures is increasing energy access through renewable energy sources. Although it is still on a low scale, off-grid energy access is one of the solutions to Uganda‟s challenges of energy access. By way of example, the Energy for Rural Transformation Project is a project funded by the Government of Uganda and World Bank which commenced about 15 years ago and has so far been implemented in 3 phases.[102] Under the scheme, free solar systems are installed at public health centres, trading centres, and schools, among others. This represents the country‟s efforts to improving energy access.

It has been noted that a transformation of the energy sector offers opportunities for sustained economic development, social inclusion, energy security, improved health, job creation, and other societal benefits. A theme report by the United Nations indicates that those who will position themselves at the forefront of the energy transitions through innovation, services, or resources will reap rich rewards.[103] Relatedly, energy transition also provides a chance forcountries to establish new trade links through regional power collaboration.[104]

The UN Report further notes that implementation of energy transition on a just and inclusive manner is key if these opportunities are to be achieved. To this end, the involvement of the

[101] Bastiaan supra

[102] https://www.infonile.org/en/2021/09/solar-energy-transforms-ugandas-off-grid-healthcare-amidst-covid19-pandemic/ accessed on 9th December 2021 at 19:02HRS

[103] United Nations (2021), Theme Report on Energy Transition: Towards the Achievement of SDG7and Net Zero Emissions

[104] ibid

private sectors, the wider civil society, and the youth is key for the attainment of a balanced and just transition which is aligned with SDG7.[105]

Although governments need to take the lead on goalsetting and processes for the transition to cleaner energy sources, the involvement of the private sector, cities, and wider civil society, including youth, is essential for the design of a balanced and just transition process that is aligned with SDG7 and meets multiple economic and social priorities.[106]

2.3. CONCLUSION

The literature examined above has covered Uganda‟s energy mix, her international commitments towards clean energy, the likelihood of transition to clean energy sources as well as the opportunities and challenges likely to be encountered in achieving a meaningful transition. As several researchers noted, supportive laws and policies are paramount for the transition to be effective. However, little has been researched about the gaps in the laws, policies and the required technological advancements that can help the country achieve her international commitments in the clean energy revolution and how the said gaps can be remedied. This research will analyze Uganda‟s laws and policies for transition to clean energy sources and recommend ways in which the gaps can be filled.

[105] ibid
[106] ibid

CHAPTER 3: METHODOLOGY

3.1. INTRODUCTION

This chapter explains how the research was conducted. It also discusses the research methods or research paradigm, the data collection methods, the data analysis tools and then it gives validity for the chosen research methodology.

3.2. LEGAL CONTEXT/RESEARCH SETTING

3.2.1. Study design

A research design has been defined as a strategic framework for action that serves as a bridge between research questions on one hand and the means of executing the research objectives on the other hand.[107]

This study examined the Constitution of the Republic of Uganda[108], the Energy Policy[109], the Renewable Energy Policy[110], the National Oil and Gas Policy[111], the National Climate Change Policy[112], the Biofuels Act,[113]h the National Environment Act[114], and the National ClimateChange Act[115]. These laws and policies were examined in the context of examining how and where their provisions advocate for the transition to clean energy in Uganda.

The researcher also conducted semi-structured interviews with participants from National Environment Management Authority (NEMA), Ministry of Water and Environment (MWE),

[107] Martin Terre Blanche, et al, *Research in Practice: Applied Methods for the Social Sciences*, 2nd Edition, 2006 University of Cape Town Press (Pty) Ltd

[108] 1995, as amended

[109] 2002

[110] 2007

[111] 2008

[112] 2015

[113] 2018

[114] No. 5 of 2019

[115] 2021

Uganda Meteorological Authority (UMA), and National Forestry Authority (NFA). The target population was strictly comprised of persons deployed in divisions and sections that are specifically dealing with clean energy issues.

3.2.2. Area of study

The area of study was Kampala Uganda where most of the government institutions and other stakeholders in the clean energy revolution are located.

3.3. DATA COLLECTION METHODS

The main strategy employed in collecting data was documentary review analysis. The Researcher analyzed the Clean Energy-related laws and policies of Uganda with a view of identifying any gaps therein. Other scholarly materials were also examined hall ranging from Books, scholarly and academic writings, and journal reports relevant to the study.

Sampling is the selection of research participants from an entire population.[116] The researcher used the simple random sampling method under which every possible sample has the same probability to be chosen. This method of sampling is preferred because of its ease of use and saving on costs of collecting data. It also rules out bias, enables selecting of a population that is representative of the group being studied population as well as yielding a sample that is representative of the group being studied.

The participants in this research were officials from government departments and other institutions concerned with the clean energy revolution in Uganda. These participants were preferred because they are in one way or another involved in policy formulation and enforcementof the laws and policies in Uganda‟s bid to transition to clean energy.

[116] Martin, et al, supra

3.4. INSTRUMENTS

The researcher conducted semi-structured interviews with willing respondents from NEMA, MWE, UMA and NFA.

Semi-structured interviews were used because although they take longer, they also possess the element of flexibility that allows the researcher to probe further and understand the feelings and opinions of the participants. Semi-structured interviews are relatively detailed and are used when there is sufficient objective knowledge about an experience or phenomenon but the subjective knowledge is lacking.[117]

The interviewer used open-ended questions formulated to elicit unstructured responses and generate discussion. Participants were free to respond to these open-ended questions as they wished, were allowed to diverge slightly from the script and the researcher was allowed to probe the responses. The interviews entailed both a framework and flexibility.[118]

3.5. DATA ANALYSIS

The researcher employed a thematic analysis method to analyse classifications and presentthemes or patterns that were identified from the collected data. The usefulness of thematic analysis lies in its ability to allow the research in linking the various concepts and opinions and iscredited for conferring accuracy and intricacy in the analysis.[119] Further, the researcher prefered the thematic analysis because of its ability to capture the unknowns since it does not require setting up of the categories in advance.

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[117] Michele J. McIntosh, (2015) *Situating and Constructing Diversity in Semi-Structured Interviews*, Global Qualitative Nursing Institute

[118] Michele, et al, supra

[119] Mohammed Ibrahim Alhojailan, (2012) *Thematic Analysis: Acritical Review of its Process and Evaluation*, The West East Institute

The interviews were transcribed. The researcher extensively and analytically read all the transcribed materials from the interviews to determine analytical categories. The researcher sought to note for each interview, any conceptual and theoretical understanding of the individual respondents with specific reference to aspects related to the research questions. The draft analytical categories were then assembled into a guide of analysis for coding. A detailed description of the categories were given.

The transcribed materials were coded by relating particular passages in the text to one category, in the version that best fits the textual passages. Each interview was accessed, assessed and classified.

All data was coded before identifying and reviewing the key themes. Coding involves subdividing the data and assigning it in to categories thus triggering construction of a conceptual scheme that suits the data.[120] Themes are patterns across data which are important to the description of a phenomenon. Each theme was examined to gain an understanding of the participant‟s perceptions and opinions. [121]

3.6. RELIABILITY AND VALIDITY

Reliability and validity are ways of demonstrating and communicating the diligence of the research process and the trustworthiness of the findings.[122]

The Researcher employed the system of member-checking. After the interviews had been transcribed, they were taken back to the participants for confirmation of the contents. After their

[120] Tehmina Basit, (2003), *Manual or electronic? The role of coding in qualitative data analysis*, Educational Research

[121] Uwe Flick, et al, *(2004), A Companion to Qualitative Research*, 2004, SAGE Publications Ltd

[122] Paula Roberts, et al, (2006) *Reliability and validity in Research*, Royal College of Nursing Publishing Company

confirmation, the transcribed interviews were analyzed. This helped to ensure trustworthiness of the data.

3.7. ETHICAL CONSIDERATIONS

The researcher sought for the consent of and explained the purpose of the data collection to the target participants. Nonetheless, it was anticipated that some participants may be skeptical to participate in the research on account of confidentiality questions. The researcher, from the onset, communicated and explained the rights of the participants including the right to withdraw their consent at any stage of the interview. Further, the researcher assured the participants of the confidential nature of the interviews and that their identities will be kept anonymous. Personal data collected was only limited to that which is vital for the research.

It was also expected that some participants may not be willing or equipped to answer all the questions posed. The researcher did not force the participants to answer each and every question where this arose.

Data collected was used strictly for academic purposes and was not used for any other purposes rather than of conducting this research. Any collected information was kept confident and not divulged to the public. All documents were kept in a safe location.

3.8. LIMITATIONS OF THE STUDY

The researcher expected to encounter some limitations in conducting this research. Some of the materials to be relied upon such as journal articles were not freely available on the internet. The researcher subscribed to some sites in order to access the materials.

Some participants did not fully trust that their identities will be kept confidential. As such, the researcher first identified herself properly as a student pursuing a Master of Laws Degree and

explained the purpose of conducting the research. The researcher also assured participants of confidentiality of their identities. Furthermore, the researcher wherever and whenever possible, gave the participants the option of leaving out any sections relating to personal information that could lead to exposing their identification.

CHAPTER 4: ANALYSIS

4.0. INTRODUCTION

This chapter gives an analysis of the International Instruments as well as Uganda‟s laws and policies aimed at reducing greenhouse gas emissions and fostering the transition to reliance on clean energy sources.

4.1. RECAP OF THE RESEARCH OBJECTIVES

4.1.1. Main Objective

The main objective of this research is to assess the efficiency of Uganda‟s policies and legal framework in implementing the transition from fossil fuels to clean energy.

4.1.2. Specific Objectives

The specific objectives are:

a) To examine the content and context of the laws and policies implemented by Uganda in a bid to curb greenhouse gas emissions and meet her obligations in the clean energy revolution.

b) To evaluate the effectiveness of the laws and policies aimed at achieving the global objectives of transitioning towards the agenda of the clean energy revolution.

c) To assess the content and context of international instruments in relation to the global transition towards the clean energy revolution as signed and ratified by Uganda.

4.2. BRIEF HISTORY OF THE CLEAN ENERGY REVOLUTION

The first international efforts to make matters concerning the environment a major issue can be traced in the United Nations Conference on the Human Environment, at which the Stockholm Declaration was adopted.[123] The Stockholm Declaration is credited for the ensuing discussions between industrialized countries and developing countries on the relationship between economic growth, air and water pollution, and the well-being of people.[124] It is from this conference that the United Nations Environment Programme (UNEP) was created.

Greenhouse gas emissions result from all kinds of uses of fossil fuels. It is key to note that fossil fuels have for long been the very basis of energy, making greenhouse gas emissions part of everyday life.[125] As such, the global energy sector is identified as the largest contributor to greenhouse gas emissions.[126] Research by scientists into climate change induced by greenhouse gases started more than 150 years before governments decided to address the apparent risks.[127]

Pursuant to several scientific meetings held between 1985 to 1987, the World Meteorological Organization (WMO) convened the First World Climate Conference to discuss matters concerning global climate change and global warming.[128] It was at this Conference wheregovernments agreed to establish the Intergovernmental Panel on Climate Change (IPCC). The IPCC was mandated to provide assessments of climate change science, possible social and

[123] The United Nations Conference on Human Environment of 1972

[124] https://www.un.org/en/conferences/environment/stockholm1972 accessed on 17th September, 2021 at 15:58HRS

[125] T. Jayaraman, The Paris Agreement on Climate Change: Background, Analysis, and Implications

[126] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies" in Victoria R Nalule (ed), *Energy Transitions and the Future of the African Energy Sector: Law, Policy and Governance* (Springer 2021)

[127] Jane A. Leggett, *„The United Nations Framework Convention for Climate Change, the Kyoto Protocol, and the Paris Convention: A Summary"*, Congressional Research Service 2020

[128] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies" ibid

economic impacts as well as potential response strategies.[129] It was the reports of the IPCC that led to the negotiation of the United Nations Framework Convention for Climate Change (UNFCCC). Subsequently, the Kyoto Protocol and the Paris Agreement also came into force to reinforce the requirements of the UNFCCC.

Kidunduhu defines the notion of energy transition as the adaptation of energy systems to meet the challenges of carbon emissions.[130] She notes that the term energy transition is often synonymous with a shift to renewable energy.[131] The clean energy revolution is indicative of the global consensus about the threat of climate change. The principles of the revolution are entrenched in the UNFCCC, the Kyoto Protocol and the Paris Agreement as well as other related international instruments.

The concept of Development Law examines the connection between the law and development by identifying how the law can be applied as a strategic instrument in achieving sectoral, industrial or general development.[132] According to United Nations New Partnership for Africa‟s Development (NEPAD), the limitations of renewable energy in Africa include a poor institutional framework and infrastructure.[133] The role of an effective legal and regulatory framework in promoting renewable energy sources cannot be underestimated. The framework serves many purposes including being a basis for the setting up of renewable energy institutions

[129] ibid

[130] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies‟ supra

[131] ibid

[132] Michael Uche Ukponu et al, „Role of Law in the Energy Transitions in Africa: Case Study of Nigeria‟s Electricity Laws and Off-Grid Renewable Energy Development, in Victoria R Nalule (ed), *Energy Transitions and the Future of the African Energy Sector: Law, Policy and Governance* (Springer 2021)

[133] Iain Todd & Darren McCauley, *An Inter-Disciplinary Approach to the Energy Transition in South-Africa*, Springer 2021

and protecting renewable energy investments.[134] For the case of Uganda, the principles are also contained in various laws and policies including the Constitution,[135] the Energy Policy,[136] the Renewable Energy Policy,[137] the National Oil and Gas Policy,[138] the National Climate Change Policy,[139] the Biofuels Act[140], the National Environment Act,[141] and the National Climate Change Act[142].

4.3. THE LEGAL FRAMEWORK FOR EMISSIONS REDUCTION AND ENERGY TRANSITION IN UGANDA

4.4.1. The Constitution

The supreme law of the land in Uganda has several objectives and directives geared towards protection of the environment. The legal force of these objectives and directives derives from Article 8A of the Constitution which provides that Uganda is to be governed based on principles of national interest and common good as enshrined in the national objectives and directive principles of State policy.

The Constitution requires the State to promote sustainable development and public awareness of the need to manage land, air, and water resources in a balanced and sustainable manner for the present and future generations.[143] It also enjoins the State to protect important natural resources

[134] Victoria R Nalule, „How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue" in Victoria R Nalule (ed), *Energy Transitions and the Future of the African Energy Sector: Law, Policy and Governance* (Springer 2021)

[135] The Constitution of the Republic of Uganda, 1995, as amended

[136] 2002

[137] 2007

[138] 2008

[139] 2015

[140] 2018

[141] No. 5 of 2019

[142] 2021

[143] Principle XXVII National Objectives and Directive Principles of State Policy, The Constitution supra

including land, water, wetlands, fauna and flora, among others, on behalf of the people.[144] The natural resources are to be utilized in a manner that meets the development and environmental needs and specifically to take all possible measures to prevent and minimize damage and destruction to land, air and water resources in resulting from pollution or other causes.

The Constitution further makes provision for energy policies by requiring that the State promotes and implements energy policies which meet the basic needs of the people as well as the needs for environmental preservation.[145]

The significance of the national objectives has been recognized by the Supreme Court in the celebrated Constitutional Appeal case of **Amooti Godfrey Nyakaana Vs. National Environment Management Authority & 6 Others**,[146] which noted the weight of Article 8A of the Constitution. In this case, Retired Chief Justice Bart M. Katureebe held that the objectives in the Constitution go beyond merely guiding the interpretation of the Constitution but are in themselves justiciable. The Supreme Court thus found that the directives on protection of the environment ought to be read together with Article 39.

Article 39 gives every Ugandan a right to a clean and healthy environment. To this end, the Constitution mandates the Parliament to enact laws to provide for measures which are intended to protect and preserve the environment, manage the environment for sustainable growth and promote environmental awareness.[147]

[144] Principle XIII ibid

[145] Principle XXVII (iii) ibid

[146] Supreme Court Constitutional Appeal No. 5 of 2011

[147] Article 245 Constitution of Uganda ibid

Indeed, it is pursuant to this Article that the Parliament of Uganda has passed environmental laws such as the recent National Environment Act and the National Climate Change Act. The Constitution of Uganda lays a good foundation for protecting the environment and developing and enforcing policies that advocate for use of clean energy sources. The Cabinet has also passed several policies to ensure that Uganda meets her obligations in the clean energy revolution.

4.4.2. The Energy Policy

Prior to the development of this policy, Uganda‟s energy sector had no comprehensive and integrated policy framework. The practice was that the sector sought guidance from annual ministerial policy statements which accompanied the budget.

The Energy Policy was approved by the Cabinet in September of 2002. The policy recognizes that, compared to other economic sectors, the energy sector bears bigger environmental impacts and there is need to mitigate these impacts. It notes the country‟s under-exploited renewable energy such as wind, geothermal and hydrological resources.

In respect of solar energy, the levels of sunshine are noted as being favorable for most solar technology applications. Further, the wind energy average speeds are noted as being goodenough to support wind technology applications. As regards geothermal, the policy notes that although it had not yet been established in Uganda and no detailed studies had been conducted toestablish the economic resource potential, there was evidence indicating the existence of the resource in the Ugandan Rift Valley. This brings to bear the question of the reasons why despite being well endowed with clean energy potential, the same had not been harnessed.

Noted in the Energy Policy as the key issues in respect of use of new and renewable energy sources were the challenges of inefficient production and use of biomass resulting in

environmental and health impacts, low public awareness about renewable energy technologies, and underdeveloped markets in equipment and services due to high initial investment costs. Also noted was the lack of monitoring mechanisms to ensure quality control, inadequate financing mechanisms and other incentives, and inadequate data on the potential of indigenous renewable energy sources.

In this policy, Government undertakes to address the challenges through elaborate strategies and plans. Indeed, one of the broad objectives of the policy is to manage energy related environmental impacts. The Government undertakes to achieve this through promoting the use ofalternative and environmental friendly energy sources and technologies, sensitizing energy suppliers and users about the environmental impacts, working towards reducing energy-related emissions, promoting efficient utilization of energy sources, and strengthening the environment monitoring unit in the energy sector.

The Energy Policy recognizes the key role of biomass and the fact that it will remain a dominant source of energy in the foreseeable future, especially in rural areas. This is indeed a reality for most Sub-Saharan Countries in Africa including Uganda.

On the supply side, the objective under the biomass and other renewable energy sub-sector is to develop the use of renewable energy resources for both small and large scale applications. The strategies to be employed include supporting renewable energy technologies, facilitating financing schemes, ensuring certified performance and technical standards of producers and importers, including renewable energy in curricula of schools and other learning institutions, and promoting geothermal energy development and exploration, among others.

4.4.2. The Renewable Energy Policy (REP)

This Renewable Energy Policy (REP) was approved by Cabinet in March 2007 with the vision of making modern renewable energy a substantial part of the national energy consumption. The overall goal of the Policy was to increase the use of modern renewable energy from the 4% to 61% of the total energy consumption by 2017. In order to support the vision and goal of the REP, objectives are created including one that requires the maintaining and improving of the responsiveness of the legal and institutional framework to promote renewable energy investments. The REP reinforces the Energy Policy especially as regards the commitments to renewable energy. The Policy elaborately provides a basis for the formulation of planning, implementation, and monitoring of renewable energy programmes in Uganda.

a) Renewable energy sources in Uganda

Renewable energy sources are defined in the policy as those which are replenished continuously by natural process. In Uganda, the renewable energy resource base includes solar energy, hydro power, biomass, wind, and geothermal, among others. These sources produce no carbon dioxide at all, save for biomass sources which produces only the carbon dioxide that has already been absorbed from the atmosphere when growing. The choice of renewables over fossil fuels derives from the increasing costs of fossil fuels for developing countries, the uncertain future of fossil fuels, and the emissions from coal and fossil fuels.

b) Challenges in introducing Renewable Energy Sources

The REP takes note of four challenges which call for the use of renewable energy sources. They include electricity supply deficit on the national grid, escalating oil prices on the international market, the need for electricity accessibility to the rural population through grid extension and

mini grids, and fulfilment of the government‟s commitment to reduction of greenhouse gas emissions under the Kyoto Protocol. These challenges, coupled with the commercial viability of renewable energy, informed the Government‟s decision on the need to develop this elaborate Policy.

Through this Policy, Government recognizes that although Uganda is greatly endowed with renewable energy sources, only large hydro resources have been considerably developed for electricity purposes. It is on this basis that the Policy takes note of the several issues that the Government needs to address in order to successfully introduce renewable energy sources into Uganda‟s energy mix. The issues include high upfront investment costs, inadequate legal and institutional frameworks to support investment in renewables, limited technical and institutional capacity to implement and manage the investments, inappropriate or inadequate financing mechanisms, limited awareness of the availability, benefits and opportunities within the public domain, inadequate standards and quality assurance, and insufficient information and data about renewable energy. The REP also goes further to identify the different challenges faced in introducing the different kinds of Renewable Energy Technologies (RETs).

c) Small Energy Power Projects

It notes that in relation to small renewable energy power projects, negotiating of feed in tariffs and Power Purchase Agreements (PPAs) on a case by case basis leads to low investor turn out.As a solution, the Policy provides for the publishing of feed in tariffs and having a standardized power purchase agreement. Government indicated its commitment to promoting decentralized off-grid electricity supply model through deploying locally available renewable energy sources such as small hydro, small solar, wind and biomass to meet the electricity needs of remote areas.

d) Solar Energy

The Policy also recognizes that the country records high levels of the solar energy resource throughout the year which are favorable for solar water heating and solar photovoltaic for basic electricity. However, exploiting this resource is presented with challenges which include the prohibitive costs of using solar for power generation. The REP aims at encouraging medium income household owners of residential and commercial buildings in urban areas to invest in solar technologies. For this, the Policy notes the need for legislation to be implemented by urban and local authorities.

e) Biomass

The Policy recognizes the dominance of biomass in Uganda. It is used to meet almost all the basic energy needs in rural areas, most urban households, institutions and commercial buildings. The REP attributes this trend of events to limited access to electricity and the high costs of petroleum products. Some of the challenges noted in the use of biomass include limited use of efficient wood fuel, charcoal stoves and biogas. Also noted is the lack of regulation of charcoal production and transportation and the common practices of disposal of biomass waste by burning. The Policy notes that legislation is required to curb open burning and disposal of biomass waste without extracting the energy content. The REP advocates for reduced consumption through efficiency in the use of these energy sources as well as the need for some sort of regulation in relation to biomass.

f) Geothermal

According to the REP, geothermal energy is viewed as being both environmental friendly and multidisciplinary in use since it can support development activities ranging from production to

processing of raw materials. The Policy identifies three areas with the potential of geothermal namely Katwe-Kikorongo, Burunga and Kibiro. It also proposes for the conducting of further studies countrywide to ascertain the potential of geothermal in Uganda.

g) Wind Energy

In respect of wind energy potential, the REP notes that there are moderate speeds in most areas of the country. The Policy relies on data collected by the Meteorology Department indicating that the wind energy resource in Uganda is sufficient for small scale electricity generation aswell as special applications like water pumping in the areas of Karamoja.

h) Biofuel

Furthermore, the Policy provides for the provision of incentives to biofuel producers and establishing of a testing facility at Uganda National Bureau of Standards (UNBS). It alsoprovides for the accelerating of legislation requiring petroleum companies to blend fossil fuels with bio fuels. This came to fruition by enactment of the Biofuels Act of 2018.

i) Biogas

The Policy advocates for increased use of biogas in an effort to increase energy supply and improve sanitation. Biogas is a non-poisonous and non-toxic gas which gives off no soot and no offensive smell. It is viewed as one of the options that can meet the cooking and lighting needsof families in rural areas. This resource is not well developed in Uganda.

j) Proposed Policy Actions

The proposed policy actions of the REP include supporting of public and private sector investments into renewable energy projects, ensuring electricity access to the rural population

and the urban poor, and supporting of renewable energy technologies, among others. To this end, the Policy aims at providing a conducive policy, legal and regulatory framework which attracts the private sector to invest in renewable energy development. It proposes that this be done through incentives such as guarantees or risk hedging mechanisms tax rebates, subsidies, and favorable power purchasing/ pricing terms, among others. Community participation is also notedas being key in renewable energy projects. This requires promoting of knowledge and acceptanceby the public of the renewable energy projects in their areas.

4.4.3. The National Oil and Gas Policy (NOGP)

This National Oil and Gas Policy was approved by Cabinet in January of 2008 to guide the oil and gas sector. The Policy supersedes the Energy Policy in oil and gas related matters. The Policy rightfully notes that oil and gas resources are finite and as such need to be exploited with the target of creating durable and sustainable social and economic capacity for the country. One of the issues identified in the Policy is the need to manage impacts of the oil and gas subsectoron environment and human development. To this end, one of the principles on which the policyis based is protecting the environment and biodiversity.

In relation to Uganda‟s energy sector, the policy notes the potential of utilizing oil and gas resources to support Uganda‟s energy mix. To this end, the policy notes the problem of electricity shortage due to limited hydropower generating capacity, climate change, and increase in demand. It thus provides the avenue of utilizing the oil and gas resources to generate electricity. The policy further supports the utilization of natural gas especially in homes as a way of reducing the use of biomass energy and its negative side effects.

This policy does well in noting the need to maximize returns while at the same time protecting the environment from the negative impacts of oil exploration and development especially given

the fact that the oil and gas activities are to be conducted in the biodiversity-rich areas of the Albertine Graben. One of the guiding principles of the NOGP is environment conservation and conservation of biodiversity.

The policy takes note of the need to ensure mutual benefit and survival of the environment, human development and biodiversity. The licensed oil companies are enjoined to protect the environment. The role of government in this regard is to legislate, regulate and monitor compliance with these requirements. The strategies proposed in the NOGP for achieving this objective include ensuring availability of institutional and regulatory framework to addressenvironmental issues, ensuring capacity and facilities for monitoring purposes, and requiring the return of all oil and gas sites to their original condition. In noting the impacts on the environment, the policy places controls on venting and flaring except in emergency situations. This is intended to conserve the environment from greenhouse gas effects. It also supports control measures against the release of hazardous gases, chemical wastes and spills. These have since been codified into the oil and gas laws of Uganda.[148]

4.4.4. The National Climate Change Policy (NCCP)

The National Climate Change Policy whose main theme is transformation through climatechange mitigation and adaptation acknowledged that recognizing and addressing the challenges of climate change is crucial for sustainable economic and social development. The goal of the policy is ensuring a harmonized and coordinated approach towards a climate-resilient and low- carbon development path for sustainable development. The objective of the policy is ensuring that all stakeholders address climate change impacts and causes through appropriate measures while promoting sustainable development and a green economy.

[148] The Petroleum (Exploration, Development and Production) Act, 2013; the Petroleum (Refining, Conversion, Transmission and Midstream Storage) Act, 2013

The NCCP takes note of the rising average temperature is the semi-arid areas of Uganda and the increase in hot days as compared to cold days. It also recognized the interlink between economic development and addressing climate change. The priority emphasis of the Policy is climate change adaptation while climate change mitigation is secondary. One of the adaptation policy priorities is promoting sustainable energy access and utilization as a means of sustainabledevelopment.

Among the energy sector specific priorities for adaptation to climate change effects, the challenges noted include predominant reliance on biomass energy from firewood and charcoal, electricity shortages, and increasing energy demand. The specific strategies for the energy sector include diversifying energy sources by promoting renewable energy sources which are less sensitive to climate change such as solar, biomass, mini-hydro, geothermal, and wind. The other proposed strategy is promoting energy-efficient firewood cook stoves, solar, and liquefied petroleum gas cook stoves.

The NCCP takes note of the need to develop legal and regulatory framework for purposes of providing legitimacy, regulating conduct and establishing sanctions which can ensure compliance. To this end, the policy provided two options namely, either amending the National Environment Act to cater for climate change or enacting a standalone Climate Change Law which prioritizes climate change issues.

4.4.5. The Biofuels Act (BFA)

This Act came into force on 4th June, 2018.[149] Biofuels are defined under the Act as biodiesel, bioethanol and other fuels made from biomass and primarily used for the motive, thermal, and power generation.[150] Pursuant to the Renewable Energy Policy, the BFA requires for petroleum products supplied in Uganda to be blended with biofuels.[151]

The Ministry of Energy is tasked with promoting and planning for the implementation, expansion and sustainability of the production of biofuels, creating awareness of biofuels, determining the appropriate amount of biofuels to be blended in a petroleum products, granting licenses, monitoring utilization of biofuels, and setting and ensuring compliance with national standards in liaison with UNBS.[152]

The BFA requires a person granted a license to produce biofuels to establish quality assurance systems and to submit to the licensing authority data and information on the stocks, production and sales.[153] In the same vein, a person who has been granted a license to blend biofuels in petroleum products is required to comply with established quality assurance systems, and submit to the licensing authority, data on the stock, production and sale of biofuels.[154] The Act also enjoins licensees to comply with environmental laws and occupational safety and health public laws in conducting their work.[155]

[149] Section 1 of the Biofuels Act, 2018
[150] Section 2 of the BFA ibid
[151] Section 3 of the BFA ibid
[152] Section 4 of the BFA ibid
[153] Section 12 (1) of the BFA ibid
[154] Section 13 of the BFA ibid
[155] Sections 12 and 13 of the BFA ibid

4.4.6. The National Environment Act (NEA)

In ensuring observation of the principles of environment management, the NEA enjoins the National Environment Management Authority (NEMA) to take into account the productivity of available renewable resources and the finite nature of non-renewable resources.[156] The principles of environment management include ensuring optimum sustainable yield in the use of renewable natural resources.[157]

In respect of energy, the National Environment Act provides for the promotion, conservation and efficient use of energy.[158] This is to be achieved through promoting research in appropriate renewable sources of energy and energy efficiency, creating incentives for the promotion of renewable energy sources, and promoting measures for the conservation of non-renewable sources of energy.[159]

4.4.6. The National Climate Change Act (NCCA)

This Act became law on 14th August 2021 upon assent by the President of Uganda and will take effect on the date that will be appointed by the Minister responsible for Climate Change. It gives the UNFCCC, the Kyoto Protocol, and the Paris Agreement force of law in Uganda, save for those provisions which apply to developed countries.[160]

The Department in charge of climate change is tasked with ensuring that Uganda meets her obligations and realizes her benefits under the UNFCCC, the Kyoto Protocol and the Paris Agreement, as well as coordinating, monitoring and evaluating the actions and programmes of

[156] Section 5 (1) of the National Environment Act No. 5 of 2019
[157] Section 5 (2) (d) ibid
[158] Section 65 ibid
[159] ibid
[160] Section 4, National Climate Change Act, 2021

the Government on climate change.[161] The Department is also mandated to develop a Framework Strategy for Climate Change from which a National Climate Change Action Plan shall be developed.[162] This process is further decentralized where by District Climate Change Action Plans are required.[163] At the District level, the natural resources department is in charge of climate change matters and ensures implementation of the action plan.[164]

The NCCA provides for measurement of emission and requires that the amount of greenhouse gas emissions to be removed from the atmosphere be determined every two years in accordance with internationally acceptable reporting practices under the UNFCCC, the Protocol and the Agreement.[165] These measurements are to be included in a national inventory.[166]

The Act recognizes that energy is central to the issues of climate change. The National Climate Change Advisory Committee established under the Act is comprised of technical experts including those from the ministry of energy and minerals as well as environment and natural resources among others.[167] This committee is in charge of providing independent technicaladvice on climate change science, technologies, and interventional programs and best practices for risk management, among others.[168]

[161] Section 14 ibid
[162] Section 5 and 6 ibid
[163] Section 8 ibid
[164] Section 18 ibid
[165] Section 10 ibid
[166] ibid
[167] Section 16 of the NCCA
[168] ibid

The NCCA also provides for climate change litigation where by an application may be filed in the high court against Government, an individual or an entity whose actions or omissionsthreaten efforts towards adaptation or mitigation of climate change.[169]

4.4. THE INTERNATIONAL INSTRUMENTS

International instruments related to matters of climate change are several. However, this research focuses on the three major ones, namely, the United Nations Framework Convention for Climate Change (UNFCCC), the Kyoto Protocol and the Paris Agreement. It is important to note that Uganda is party to all the three instruments.

4.4.1. The United Nations Framework Convention for Climate Change (UNFCCC)

As the name suggests, this Convention serves as a "framework" by providing a structure for collaboration and operates as the first qualitative step. It was adopted at the Earth Summit held at Rio de Janeiro in Brazil in 1992 but the Convention came into force in March 1994. The UNFCCC recognized the need for global concerted efforts in achieving the objectives of the Convention through abatement of greenhouse gas emissions and the facilitation of adaptation to the adverse effects of climate change in order to achieve sustainable development.[170]

The objective of the Convention is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that prevents interference with climate change.[171] The Convention requires state parties to protect the earth‟s climate system on the basis of equity and in accordance with the common but differentiated responsibilities and capabilities of the parties.[172]

[169] Section 26 NCCA
[170] Jane A. Leggett supra
[171] Article 2 UNFCCC
[172] Article 3 (1) UNFCCC

Parties are enjoined to take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.[173]

The commitments of state parties include developing of national inventories of anthropogenic emissions and removal of greenhouse gases, formulating and implementing of measures to mitigate climate change by addressing anthropogenic emissions and removing greenhouse gases, promoting and cooperating in practices that control, reduce of prevent emissions, among other commitments.[174]

State Parties have certain common obligations such as reporting and mitigating human-related greenhouse gas emissions, and co-operating in adapting to climate change. However, there was a bifurcation of obligations and commitments where by high income countries are required to do more frequent reporting, and provide finances and technology transfer, among others. [175] What the UNFCCC did not do was provide quantitative and enforceable objectives and commitments for state parties.[176]

The UNFCCC established the Conference of the Parties (COP) which serves as the supreme body and conducts regular reviews of the implementation of the UNFCCC and other related legal instruments that are subsequently adopted by the parties.[177] The Conference of Parties convenes annually to review the progress in dealing with climate change issues.[178] Relatedly, it also established the secretariat which is charged with organizing the sessions of the Conference of the

[173] Article 3 (3) UNFCCC
[174] Article 4 UNFCCC
[175] Jane A. Leggett supra
[176] Jane A. Leggett supra
[177] Article 7 UNFCCC
[178] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies" supra

Parties and other subsidiary bodies, compiling and transmitting reports, preparing reports on activities and reporting them to the COP, among others.[179]

4.4.2. The Kyoto Protocol to the UNFCCC

The Kyoto Protocol was the first subsidiary agreement to the UNFCCC which bound 37 high income countries and the European Union (Annex 1 parties) to reduce greenhouse gas emissions.[180] The United States of America was never party and Canada also withdrew before the end of the first commitment period partly because the non-Annex 1 parties had objected to commit to quantified GHG reductions.[181]

The Protocol was adopted in December 1997 but came into force in February of 2005. It reinforced the UNFCCC by providing binding obligations on emissions reduction.[182] It enjoins the Annex 1 parties to take certain actions in order to achieve their quantified emission limitationand reduction commitments. The actions include enhancing energy efficiency in relevant sectors of their national economies, researching, promoting, developing and increasing use of new and renewable energy forms, and progressively reducing or phasing out of fiscal incentives, tax exemptions, and subsidies in all greenhouse gas emitting sectors, among others.[183]

The Protocol assigned to the Annex 1 parties, amounts of greenhouse gas emissions which they ought not to exceed and further required the listed countries to make demonstrable progress, by 2005, in achieving their commitments under the Protocol.[184]

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[179] Article 8 UNFCCC

[180] Jane A. Leggett supra

[181] Jane A. Leggett supra

[182] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies" supra

[183] Article 2 Kyoto Protocol

[184] Article 3 Kyoto Protaaocol

The Protocol also made provision for the non-Annex 1 parties by for instance requiring them to formulate cost-effective national and regional programmes to improve the quality of local emission factors.[185] They are also required to formulate, implement, publish and regularly updatenational and regional measures for the mitigation of and adaptation to climate change.

The Protocol introduces the clean development mechanism which is to assist the non-Annex 1 parties in achieving sustainable development and contributing to the ultimate objective of the UNFCCC.[186] Under this mechanism, the non-Annex 1 parties can obtain funding for project activities resulting into certified emissions reduction.

One of the most notable of the Assessment Reports of the IPCC after the Kyoto Protocol was the 4th Assessment Report which indicated that global warming was undoubtedly due to greenhouse gas emissions originating from human activity.[187] The report also noted that if these emissions were to be left unchecked, there would be an unacceptable increase in the earth‟s temperature. During the 17th Conference of Parties (COP17) held in Durban in 2011, the parties agreed to come up with an instrument under the UNFCCC with legal force and is applicable to all parties. This culminated into the Paris Agreement.[188]

4.4.3. The Paris Agreement

This was the second major subsidiary agreement under the UNFCCC under which parties were enjoined in a common framework with common guidance. This landmark Agreement was adopted at COP21 on December 12, 2015 in Paris, France but it came into force in December of 2016. It obliges parties to strive to keep the increase in global temperatures to well below 2℃

[185] Article 10 Kyoto Protocol

[186] Article 12 Kyoto Protocol

[187] The Fourth Assessment Report of the IPPC, 2007

[188] Jane A. Leggett supra

above pre-industrial levels and to make efforts to limit temperature increase to 1.5℃ above pre-industrial levels.[189] It also aims at increasing adaptation to climate change adverse effects,fostering climate resilience and low greenhouse gas emissions development without threatening food production.[190] It has been noted that most underdeveloped countries are more concerned with adaptation mechanisms as opposed to mitigation.[191]

Parties to the Agreement are required to submit Nationally Determined Contributions (NDCs) indicating ambitious efforts of how they intend to mitigate GHG emissions and enhance their removal.[192] The communication of the NDCs is done every five years and must contain information sufficient for clarity, transparency and understanding.[193] The plans communicated under the NDCs may either be actions or outcomes. Actions refer to interventions taken or mandated to be implemented such as laws, directives, and regulations. On the other hand, outcomes refer to intentions to be achieved by way of specific results such as increasing clean energy supply to a given level.[194]

The Agreement further requires that successive NDCs represent progression beyond the country‟s current NDCs.[195] Parties are allowed to adjust their submitted NDCs for purposes of enhancing their levels of ambition.[196] The communicated plans of adaptation to climate change are recorded in a public register.[197] Although the NDCs are not legally binding, parties are required to account and there is regular review of the pledges by State parties. As a strategic

[189] Article 2 (1) (a) Paris Agreement
[190] Article 2 (1) (b) Paris Agreement
[191] T. Jayaraman supra
[192] Article 3 Paris Agreement
[193] Article 4 (8) & (9) Paris Agreement
[194] Katherine Ross, et al, (2015) *Assessing the Post 2020 Clean Energy Landscape*, World Resources Institute,
[195] Article 4 (3) Paris Agreement
[196] Article 4 (11) Paris Agreement
[197] Jane A. Leggett supra

commitment to the climate goals, Uganda‟s target is ensuring a 22% reduction in carbon by 2040.[198]

Provisions of the Paris Agreement such as those relating to reporting are binding on all parties but the Agreement also contains some provisions which are not mandatory but rather recommendations or collective commitments whose liability cannot be visited on one party.[199] The Agreement also provides for parties which are developed countries to provide financial resources to assist developing countries mitigate and adapt to climate change.[200] To this end, it was agreed that $100 billion is to be collectively collected annually.[201] The parties who are not developed countries are also encouraged to voluntarily provide financial support where possible.[202]

The journey to tackling the problem of climate change is a long one. In 2018, the IPCC made calls for rapid and far-reaching unprecedented changes in all aspects of society in order to achieve the target of limiting global warming to 1.5℃.[203] In spite the existence of the UNFCCC, the Kyoto Protocol, and the Paris Agreement, 2020 statistics indicate that globally, the share of primary energy produced from renewable energy source is only 11%.[204]

4.5. THE RELEVANT SUSTAINABLE DEVELOPMENT GOALS (SDGs)

The United Nations has developed 17 Sustainable Development Goals (SDGs) which provide agreed targets and indicators for transformation of the world, to be achieved by 2030. The SDGs

[198] Uganda‟s First Biennial Update Report to the United Nations Framework Convention On Climate Change, September 2019

[199] Jane A. Leggett supra

[200] Article 9 (1) Paris Agreement

[201] Jane A. Leggett supra

[202] Article 9 (2) Paris Agreement

[203] Iain Todd & Darren McCauley supra

[204] BP Statistical Review of World Energy 2020, 69th edition

that are deemed of most relevance to this research are SDG3 on good health and well-being and SDG7 on affordable and clean energy.[205] Uganda was one of the first countries to incorporate SDGs in its 2015/16–2019/20 National Development Plan.[206] SDG3 is specifically aimed at reducing illness and morbidity from hazardous chemicals and air pollution.

According to Bernard, there is consensus that clean energy is one of the most important means to improve the quality of life. It has also been found that increased access to affordable and reliable clean energy is fundamental to social and economic development. This is because the affordable and reliable clean energy results into better use of the available resources, achieving of potential development at individual and societal levels, reducing poverty, and promoting human health and independence.[207]

Under the Sustainable Development Goals and Paris Agreement, two objectives were created. The first is the objective to achieving universal energy access by 2030 and the second is keeping global warming below 2°C.[208]

[205] https://www.un.org/development/desa/disabilities/envision2030.html accessed on 25th June 2021 at 20:41HRS

[206] https://www.ug.undp.org/content/uganda/en/home/sustainable-development-goals.html accessed on 25th June 2021 at 20:51HRS

[207] Bernard, T, 2012. *Impact analysis of rural electrification projects in sub-Saharan Africa*, The World Bank Research Observer

[208] Bella Tonkonogy et al, (2018) Blended Finance in Clean Energy: Experiences and Opportunities, Climate Policy Initiative

CHAPTER FIVE: FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.0. INTRODUCTION

This chapter discusses the conclusions of the research and the limitations of the research. The chapter also makes recommendations for further research.

5.1. DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1.1. Findings on the Energy Policy

It is important to note that although the policy takes note of the legislative and regulatory gaps in the energy sector, in specific reference to new and renewable energy sources, it advances that in the short term, there will be no specific regulation. By the time of developing this policy, emphasis was put on awareness, quality control and standards with the Government undertaking to establish regulatory system. While this was an understandable position in 2002, it does not answer the question why, to date, most of the undertakings in this policy have not been legislatedupon.

5.1.2. Findings on the Renewable Energy Policy

This is one of the detailed energy policies in Uganda. It elaborately provides for the different renewable energy sources, the challenges surrounding them, and the actions that can be taken in order for Uganda to take benefit from these renewable energy sources. It should be noted that the Policy notes one of the barriers to RETs as being a lack of standard procedure and legalinstruments for new renewable energy investments, coupled with the existence of many institutions involved in the renewable energy technology development but without well established procedures.

As such, one of the policy objectives is developing, implementing and maintaining and continuously improving the legal and institutional framework that responds to prevailing conditions in order to maintain interest in investment in renewable energy projects. The policy proposed that by mid-2007, legislation and regulations were to be put in place to require urban authorities to incorporate solar water heating in building plans. Nonetheless, most of these policies have not been legislated upon in order to give them the force of law.

Lessons can be taken from countries which have enacted renewable energy laws. Kenya enacted the Energy Act which elaborately provides for renewable energy.[209] The Act provides for the preparing of resource maps and a renewable energy resources inventory, promotion of renewable energy technologies, establishment of the Renewable Energy Resources Advisory Committee. It also makes specific provision for resources including the licensing and offences under geothermal, renewable energy feed-in tariff system, and coal.[210]

Similarly, Gambia has also legislated on renewable energy.[211] The law requires the Ministry of Energy to recommend and annually report on national targets for the use of renewable energy resources, and establish and manage a registry to monitor renewable energy facilities.[212] The Act introduces incentives such as tax exemptions on renewable energy equipment.[213]

The Renewable Energy Act of Gambia established a tax-exempt Renewable Energy Fund which serves many purposes including promoting, developing, managing and utilizing of renewable energy sources, promoting renewable energy projects, providing financial incentives , feed-in tariffs, subsidies and equity participation, conducting scientific, technological and innovative

[209] The Energy Act of Kenya, 2019

[210] Part V of the Energy Act of Kenya 2019

[211] The Renewable Energy Act of Gambia, 2013

[212] Section 3 of the Renewable Energy Act of Gambia, 2013

[213] Section 14 of the Renewable Energy Act of Gambia, 2013

research into renewable energy, developing infrastructure for renewable energy, and capacity building for renewable energy development, among others.[214]

These laws which are specific to renewable energy resources indicate the deliberate efforts of these countries in transitioning to clean energy sources. Uganda can borrow a leaf on some aspects such as an inventory of the renewable energy resources, setting and reporting on national targets, the establishment of a Renewable Energy Fund, and the introduction of incentives, whichare some of the fundamental policies in the transition to clean renewable energy sources.

5.1.3. Findings on the National Oil & Gas Policy

The policy advances the importance of oil and gas, its contribution to the energy sector, and how the resource can be exploited while protecting the environment. What it makes no mention of is how the country will transition from reliance on oil and gas for energy purposes when the resource gets exhausted and depleted. The future of fossil fuels is threatened by several factors including the fall in oil prices, the economic effects of the Covid19 Pandemic, pressure from activists of climate change and energy transition, and withdrawals from funding of fossil fuel projects. Planning for a transition and doing so ahead of time, is the way to go.[215]

Nalule rightfully notes fossil fuels cannot be discontinued without finding cheaper alternatives and accordingly, the role of fossil fuels in the transition cannot be ignored. In this regard, she notes that revenues from fossil fuels can be deployed in financing and investing in clean energy projects while natural gas resources can contribute to mitigating climate change effects. [216] One

[214] Sections 5 and 8 of the Renewable Energy Act of Gambia, 2013

[215] Victoria R Nalule, „How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue‟ supra

[216] Victoria R Nalule, „How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue‟ ibid

of the key steps in achieving this is adjusting the legal and regulatory frameworks.[217] Uganda needs to develop policies of transitioning from reliance on oil and gas so as to avoid last minute reactive legislation.

5.1.4. Findings on the National Climate Change Policy

The NCCP is a detailed policy on climate change. However, on matters specific to clean, it gives broad principles which require specific legislation in order to give them the force of law. It suffices to note that the proposals of the NCCP for the legal and regulatory framework for climate change came to fruition with the amendment of the National Environment Act and the enactment of the National Climate Change Act which gives detailed provisions on matters concerning climate change.

5.1.5. Findings in the Biofuels Act

The Biofuels Act was enacted pursuant to and encompasses the aspects contained in the Renewable Energy Policy. The BFA provisions on quality assurance in the production of biofuels and blending with petroleum products is a good effort in ensuring public trust inrenewable energy products.

5.1.6. Findings on National Environment Act

The National Environment is a detailed legislation in matters concerning the environment. It also introduces the aspects of research in and incentives for renewable energy sources. In relation to incentives, more specificity can be done like in the Gambian Renewable Energy Act which provides for incentives such as import tax exemptions for duly registered electricity projects, import duty exemptions on renewable energy equipment, corporate tax exemptions for 15 years

[220] ibid

for duly registered electricity projects, and sales tax exemptions for proceeds from the sale of carbon emission credits.[218]

5.1.7. Findings on the National Climate Change Act

One of the key milestones of the NCCA is that it gives force of law to the UNFCCC, the Kyoto Protocol, and the Paris Agreement. This further reinforces Uganda‟s commitment to mitigating and adapting to the effects of climate change. It creates forums for handling the emissions reduction and making the required reports in accordance with the international instruments.

However, the NCCA does not provide for the specific measure which the Minister is required to undertake to reduce carbon emission as obliged under Articles 3 and 5 of the Paris Agreement. The present Act is largely silent on how institutional structures shall effect reforms.

5.1.8. Energy Progression

Uganda and other developing countries are encouraged to consider „energy progression‟ rather than focusing on „energy transition‟. Whereas energy transition connotes the need to change, energy progression is more gradual and entails improving the existing sources of energy while also introducing new renewable energy sources.[219] This is against the backdrop of the fact that even the developed countries underwent the progressive nature of energy use.[220] Besides, the Africa Energy Outlook Report predicts that the continent‟s dependence on fossil fuels will

[218] Section 14 of the Renewable Energy Act of Gambia, 2013

[219] Victoria R Nalule, „How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue‟ supra

[220] ibid

continue even after introduction of renewable energy sources.[221] As such, renewable energy is not a cure-all for energy security.[222]

As Noreen notes, there is need for each country to develop its own pathway of energy transition, taking into consideration the unique circumstances, resources and needs.[223] In developed countries, the use of conventional energy sources is but history. On the other hand, Uganda still struggles with the predominant use of conventional energy sources such as charcoal and fuel.[224] Additionally, Uganda‟s oil and gas industry is relatively infant and there is need to balance capitalizing these reserves and constraining carbon emissions. Noreen suggests blended strategies which allow capitalization or reserves while limiting emissions.[225] As such, the transition of Uganda‟s energy sector ought to be gradual, now referred to as „energy progression‟.

5.1.9. The need for cogent legal and regulatory framework

It has been noted that whereas most African countries have put in place strategies and policies aimed at mitigation and adapting to climate change effects, these countries rarely follow with legal and regulatory framework which are in sync with the policies.[226] As noted in Chapter 4 of this Research, Uganda‟s Cabinet has approved several policies relating to energy transition to clean energy sources. However, although the policies noted the need for legislation to give the policies force of law, very few aspects of these policies have been legislated upon. Of the 26

[221] International Energy Agency, „Africa Energy Outlook 2040‟

[222] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies‟ supra

[223] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies‟ ibid

[224] Victoria R Nalule, „How to Respond to Energy Transitions in Africa: Introducing the Energy Progression Dialogue‟ supra

[225] Noreen Kidunduhu, „Energy Transition in Africa: Context, Barriers and Strategies‟ supra

[226] ibid

respondents interviewed, 19 were of the view that the existing policies need to be made laws in order to make their implementation smoother.

5.1.10. Deployment of subsidies to improve the competitiveness of Renewables

One of the major barriers to the energy transition is the failure of renewable energy sources to economically compete with fossil fuels. This is because predominantly, fossil fuels benefit from subsidies which are not available for renewable energy projects. A transition to clean energy requires some form of government intervention to overcome the markets which favour fossil fuels until the market drivers for renewable energy are fully developed.[227] Noreen proposes the gradual phasing out of subsidies on fossil fuels and introducing of financial and economic incentives to encourage investment in renewables.[228] Subsidies are aimed at reducing the consumer price for renewable energy with an aim of making renewable energy economically competitive.[229]

Whereas the Energy Policy, the Renewable Energy Policy and the National Environment Act have provided for incentives, this has not been followed by specific legislations to this effect.One of the respondents noted that the absence of specific incentives continues to derail the efforts towards making renewable energy an easy option for investors. Noreen notes that incentives for renewable energy must be targeted and not general and must be periodically revised.[230] Gambia has done this through their Renewable Energy Act.[231] David notes that the removal of fossil fuel subsidies cannot be done from day to the next. He proposes that a time

[227] David Ramin Jalilvand, Renewable Energy for the Middle East and North Africa: Policies for a Successful Transition, Friedrich Ebert Stiftung 2012

[228] ibid

[229] David Ramin Jalilvand supra

[230] ibid

[231] The Renewable Energy Act of Gambia, 2013

framework of about 10 years be set for purposes of phasing out those subsidies.[232] Uganda needs to gradually phase out subsidies on fossil fuels. Further, there is need for detailed legislation on the incentives available for renewable energy equipment and projects.

5.1.11. Need to legislate and regulate biomass

Projections have indicated that in Sub-Saharan Africa, biomass including charcoal and firewood, shall continue to be a significant source of energy in households.[233]Moreover, their levels of income notwithstanding, some people continue to use biomass as a backup to modern alternatives.[234] Extreme tendencies of perceiving biomass as a critical problem rather than a potential solution for energy supply are in vain. It is recommended that the Energy Policies of African Countries should cater for biomass as a fuel given that electricity has not successfully replaced biomass.[235] Catherine and Reto note the increasing advocacy for formalizing of the charcoal value chain.[236]

Uganda is no exception. Biomass is projected to remain a major contributor to the country‟s energy demand for decades to come.[237] Despite the high levels of reliance on biomass in the country, biomass remains unregulated. It would be impractical to plan for energy transition without catering for biomass. Catherine and Reto suggest for the introduction of restrictive

[232] David Ramin Jalilvand supra

[233] Catherine Nabukalu and Reto Gieré, „The Status and Future of Charcoal in the Energy Transition Era in Sub-Saharan Africa: Observations from Uganda, in Victoria R Nalule (ed), *Energy Transitions and the Future of the African Energy Sector: Law, Policy and Governance* (Springer 2021)

[234] ibid

[235] ibid

[236] ibid

[237] Marvin Tumusiime, „Transitioning to a Low-Carbon Economy and Renewable Energy Developments in Uganda: Challenges and Opportunities for Small-Scale Renewable Energy‟ in Victoria R Nalule (ed), *Energy Transitions and the Future of the African Energy Sector: Law, Policy and Governance* (Springer 2021)

charcoal policies to limit or curb production such as bans on production from freshly felled trees, export quotas and bans, and limitations to the tools used in tree harvesting.[238]

5.1.12. Standard Controls and Quality Assurances for Renewables

Tumusiime notes that one of the major challenges posed to the transition efforts is the problem of counterfeit renewable energy products in local markets.[239] This problem presents itself in the form of untested substandard products which emit carbon just like fossil fuels.[240] Moreover, differentiating counterfeit products from the genuine ones is no easy task. This disorients public trust in renewable energy products. Fourteen respondents cited the need for these controls and cracking down on counterfeits in order to build a trusted market for renewable energy products.

Legislation would come in handy by requiring certification from UNBS in liaison with the Ministry, Department or Authority concerned with a particular type of renewable energy. Accredited products have the capacity of rebuilding public trust.[241]

5.1.13. Measures to reduce carbon emissions

The Paris Agreement requires parties to take action to implement and support the existing framework through policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, sustainable management of forests and enhancement of forest carbon stocks in developing countries, and other alternative approaches.[242]

As noted in chapter 4, the National Climate Change Act is largely silent about how institutional structures shall effect the necessary reforms. There is need for the NCCA to be clearer as to what

[238] ibid

[239] Marvin Tumusiime, „Transitioning to a Low-Carbon Economy and Renewable Energy Developments in Uganda: Challenges and Opportunities for Small-Scale Renewable Energy“ supra

[240] ibid

[241] ibid

[242] Article 5 Paris Agreement

measures the Minister shall undertake to reduce carbon emission as obliged by the Paris Agreement. The present Act is largely silent on how institutional structures shall effect reforms

FINAL CONCLUSION

Uganda has established policies and enacted laws to guide the country on its journey of reducing carbon emissions and transitioning to clean energy sources. However, the bulk of the content is in the policies which do not have force of law. There are also crucial areas such as incentives which require specific legislation. If efforts are put into filling the identified gaps, Uganda‟s pathto clean energy can be made clearer.

5.2. LIMITATIONS OF THE STUDY

5.2.1. Time Constraints

The researcher‟s work commitments are very demanding and time-consuming. As such, she faced a challenge in dividing her time between the research, work, family, and other obligations. The researcher had to conduct part of the research at odd hours of the day.

5.2.2. Broad Topic

The research topic examined many policies and laws including the Energy Policy, the National Oil and Gas Policy, the Renewable Energy Policy, the Biofuels Act, the National Environment Act, and the National Climate Change Act. The research also examined various kinds of renewable energy sources such as solar, wind, geothermal, and biomass, among others.

The researcher found analysis of the policies, laws and different kinds of renewable energy sources to be both very demanding and time consuming.

5.2.3. Costly Research Activities

The researcher incurred costs in obtaining materials for research, getting internet connectivity, printing and photocopying materials for research, as well us moving to different places to conduct interviews with respondents.

5.2.4. Conducting interviews amidst the Covid-19 Pandemic

Conducting physical interviews in the midst of a world pandemic was very challenging as most institutions had restrictions in physical meetings. Some intended respondents were hesitant or unwilling to participate in the interview because of the risks posed by the pandemic. The

researcher had to resort to e-interviews which were helpful and surprisingly less cumbersome. This is something that future researchers can adopt.

5.3. RECOMMENDATIONS FOR FUTURE RESEARCH

5.3.1. Transition Risks

Further research is needed to analyze the risks presented by Uganda‟s transition to clean energy with a focus on mitigating the transition risks or de-risking the transition.

5.3.2. Subsidies for Renewable Energy

There is also need to research into the different kinds of subsidies that can be deployed in Uganda to improve the economic competitiveness of Renewable Energy.

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APPENDICES

Appendix I: Interview Guide

INTERVIEW GUIDE FOR FIELD RESEARCH ON THE EFFECTIVENESS OF UGANDA'S LAWS AND POLICIES ON THE REDUCTION OF GREENHOUSE GAS EMISSIONS AND THE TRANSITION TO CLEAN ENERGY IN UGANDA'S ENERGY SECTOR

PART 1: INTRODUCTION OF RESPONDENT

My names are KATUUTU CHARLOTTE, a student pursuing a Master of Laws Degree in Oil and Gas Management 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 policies and legal framework on the reduction of greenhouse gas emissions and the transition to clean energy in Uganda‟s energy sector. The purpose of this research is to identify any gaps and make appropriate recommendations. You are kindly requested to participate in this interview by sharing your views and experiences which will contribute to resourceful ideas that will inform this research.

It is also worthwhile mentioning that your participation is voluntary and you reserve the right of withdrawing your consent of participating in this interview at any stage of the study. You also have the right to decide on either disclosing particulars of your real identity or omitting to fill thesection on personnel data. Further note that your personnel details and all information which you will give during this interview will be kept confidential and solely used 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 to minimizing the dependence on energy sources that increase the emission greenhouse gases while maximizing transition to clean energy sources?

……

……

……

Does your organization have a department or division which is dedicated to reducing the reliance on greenhouse gas emissions while supporting the adoption cleaner energy fuels?

……

THE POLICIES

In your assessment, how would you rate the effectiveness of Uganda‟s policies in minimizing greenhouse gas emissions and facilitating the transition to clean energy?

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

NO.	POLICY	1	2	3	4	5
1.	The Energy Policy					
2.	The Renewable Energy Policy					
3.	The National Oil and Gas Policy					
4.	The Climate Change Policy					

Are there any areas of institutional or regulatory nature that require improvement? If yes, which are they and if no why?

……

……

……

……

How do you propose those gaps can be remedied?

……

……

……

……

Any other information you would like to share

……

……

……

……

In your assessment, rate the effectiveness of Uganda‟s laws in facilitating the reduction of greenhouse gas emissions and facilitating the transition to clean energy?

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

NO.	**ACT OF PARLIAMENT**	**1**	**2**	**3**	**4**	**5**
1.	The Biofuels Act					
2.	The National Environment Act					
3.	The National Climate Change Act					

Are there any areas in the laws that require improvement?

……

……

……

……

What proposals do you propose for addressing those gaps?

……

……

……

……

Is there a need to create laws apart from or in additional to 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 matters of greenhouse gases and clean energy that you think would require further legislation? If yes, state the area and explain why.

……

……

……

……

Any other information you would like to share

……

……

……

……

Thank you for participating and sharing your knowledge and ideas