

**AN ANALYSIS OF ENERGY POVERTY IN REGARD TO THE SOCIAL AND
ECONOMIC RIGHTS OF THE UGANDAN POPULATION**

BY

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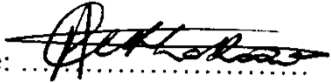
DECLARATION

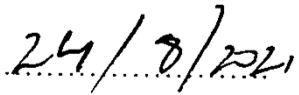
I **KATO JUSTUS** declare that this research work under the topic “an analysis of energy poverty in regard to the social and economic rights of the Ugandan population” is my original work and is presented for approval for field study.

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APPROVAL

This is to certify that, this dissertation entitled “an Analysis of Energy Poverty in Regard to the Social and Economic Rights of the Ugandan Population” has been done under my supervision and now it is ready or submission.

Signature: 
Dr. Anthony. C.K. Kakooza (Supervisor)

Date: 

DEDICATION

I would like to dedicate this work to my family.

ACKNOWLEDGEMENT

I would like to extend my sincere thanks to God almighty who sustained me throughout my stay at the University.

My appreciation further goes to my family and all my friends for the support, advice and encouragement. I would like to thank my supervisor Dr. Anthony. C.K. Kakooza, for the tireless effort and time devoted to me and the invaluable input. Thank you so much for your advice, guidance and encouragement during my research.

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LIST OF ABBREVIATIONS

EAPLC	East African Power & Lighting Company
UEB.....	Uganda Electricity Board
EAPLC.....	East African Power & Lighting Company
UTCL.....	Uganda Transmission Company Limited
UEDCL	Uganda Electricity Distribution Company Limited.
PPA.....	Power Purchase Agreement
IOC.....	International Oil Companies
UNBS.....	The Uganda National Bureau of Statistics
LPG.....	Liquefied Petroleum Gas
MIS.....	The Minimum Income Standard
ERA.....	Electricity Regulatory Authority
NOGP.....	National Oil and Gas Policy for Uganda

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ABSTRACT

The purpose of the study was to analyse energy poverty factors such as inadequate energy supply, excess and short capacity, energy inaccessibility, affordability and low revenue accrues in regard to the social, and economic rights of the Ugandan population. The United Nations under the Sustainable Energy for All and the associated Sustainable Development Goal (SDG) 7 commits all countries to enhance energy access for the over 1 billion people who do not have access to reliable energy, by the year 2030. The aim of this gender is to ensure access to affordable and reliable and sustainable and modern energy for all hence addressing energy poverty.

The study objectives involved identifying the causes of energy poverty in Uganda, identifying the implementation limitations facing the Uganda's energy sector in reducing energy poverty in Uganda and suggesting recommendations to increase on energy capacity and access in Uganda.

The research was done by employing qualitative, descriptive, and phenomenological research designs on a survey population that generally included community leaders, local residents, officers of UMEME and Electricity Regulatory Authority in Uganda.

In conclusion, the study notes that electricity is very important for Uganda for the growth and development of the state and economic transformation of the annual increasing population. It is also to note that electricity accessibility, affordability, and connectivity remain a challenge for Uganda.

In recommendation, the study suggest that the Ministry of Energy and Mineral Development (MEMD) which has the mandate to develop a coordinated master plan for generation and transmission, expand the grid systems should be responsible to plan for the electricity sector. More to that, the Electricity Regulatory Authority should prevail upon the distribution, and supply of electricity, implore available technologies to curb losses and reduce unbilled energy. More still, the Electricity regulatory authority should strictly adhere to the standards and qualifications that a licensee should pose during the performance of the contract. Further, the government should encourage industrialization through extending tax incentives such as tax holidays and grants in order to increase the market for the unutilized electricity.

CHAPTER ONE

1.0. Introduction

Energy poverty has remained a challenge in sub-Saharan Africa for a long time. It is estimated that over 633 million people do not have access to electricity, and about 792 million people are projected to use traditional biomass for cooking on unimproved cook-stoves.¹ Electrification as a measure is expected to curb the challenge of electricity inaccessibility and a huge number of people are expected to benefit. However, the number of people using unimproved cooking facilities is to increase through 2030.

Energy poverty is defined as where the energy produced by a country is less compared to the market demand or where the energy produced is more than the Market demand, what is commonly known as short capacity and excess capacity or where the state has all the necessary natural resources to produce energy however, with limited funds to produce energy or where the energy that is produced is inaccessible to the users or where the energy produced can't be afforded by the population. This can also be best described in the form of accessibility, affordability, availability and reliability of energy to the people.

In recent years, there are number of challenges that have been registered from energy poor households in Uganda. These challenges include an increased risk of premature death because of pollution from indoor cooking stoves and biomass, reduced productivity gains which have resulted into poor quality of life. The energy- poorhouse holds earn little income and they spend a bigger portion of it to meet their basic energy needs. They also spend more time engaging in energy-intensive tasks such as farming using local practices, fetching firewood, and burning charcoal compared to wealthier households who have access to modern energy sources that can afford the energy to execute productive work.²

In addition, traditionally all efforts by developing states were directed towards addressing energy through promoting energy accessibility, affordability, and availability. This was centered on providing the population with electricity. This move is defined as a binary measure of energy poverty in which people are either “connected” or “not connected.” More recent research has shed light on the complex ways in which households use energy, showing that it

¹Wolfram, *Appliance ownership and aspirations among electric, grid and home solar households in rural Uganda*, 2016

²Stephane dla Rue Can et al, *Energy Efficiency as a means of Expanded Energy Access , A Ugandan RoadMap, 2018, published by Elsevier para 20, page 5.*

is determined by a variety of factors, including the affordability, reliability, and quality of the energy sources available.

Energy is also used in industrial production however the required energy production is either low that the largest percentage that is produced is absorbed by the industries than the domestic consumption or more energy production compared to industrial need. This in a way affects the government revenue collection and expenditure in that if all the energy generated is more than the established industries, then the government will lose out on the power purchase deal with the generation company.

1.1 Background to the study

The study seeks to analyze the effects of energy poverty on the social and economic rights of the Ugandan Population.

Energy poverty can best be described as where the energy produced by a country is less compared to the market demand or where the energy produced is more than the Market demand, what is commonly known as short capacity and excess capacity or where the state has all the necessary natural resources to produce energy however, with limited funds to produce energy or where the energy that is produced is inaccessible to the users or where the energy produced can't be afforded by the population. This can also be best described in the form of accessibility, affordability, availability and reliability of energy to the people.

Uganda's energy sector has undergone different reforms to achieve sustainable energy generation, stable energy supply, distribution and increased market consumption through raising standards of living and industrialization.

Briefly, in 1908 to 1954 Uganda largely depended on heavy fuel diesel generators. In the year 1993, Uganda passed an ordinance that allowed electricity commercial generation, transmission, distribution, and supply in Uganda. In 1935, the East African Power & Lighting Company (EAPLC) won the tender to supply the electricity and in 1948 the Uganda Electricity Board (UEB) took over the East African Power & Lighting Company (EAPLC)³. Due to government efforts to liberalize the energy sector, in 2004 3 bodies were created namely;

³Faustin Mugabe, *100 years of Electricity in Uganda*, Daily Monitor. (April 21st 2018)<https://www.monitor.co.ug/SpecialReports/110-years-electricity-Uganda/688342-4491242-pdxww5z/index.html>, accessed on 14th January, 2021.

UMEME, Uganda Transmission Company Limited and the Uganda Electricity Distribution Company Limited.

The Ugandan government developed a strategic plan to reform the energy industry. This was spear headed by the Ministry of Energy and Mineral Development Uganda. One must understand that Uganda's electricity is traded in a pool system whereby both independent and none independent power producers do have a common pool where all the electricity generated is centralized. From here, it's purchased under a common arrangement called take or pay in the power purchase agreement (PPA). It is then transmitted and distributed by the Uganda distribution company then other players such as UMEME come in to supply to the end users⁴.

Uganda has undergone sustained economic growth since the 1990s. The real gross domestic Product rose at an average of 6.5% annually during 1990-2018 and the GDP per capita grew slowly at 3.1% per annum.⁵ During this period, Uganda experienced an economic transformation that is Agriculture value-added in GDP declined from 53% in 1990 to 24% in 2018 and the industrial contribution to GDP grew from 10% to 20%.

Energy is a key contributor in the economic transformation of any state. This kind of transformation has been witnessed in the agriculture value chain that is, energy is used in transportation, manufacturing post-harvest and storage processing, cooling, chilling, drying and large-scale irrigation.⁶ Uganda has an installed capacity of 850 Megawatts of which, 645 MW is hydro and 101.5 MW Thermal Energy. More power plants are in development phases such as Karuma hydro which is a 600MW plant and the recently commissioned 183Mw Isimba Dam.

Energy accessibility in Uganda is at a ratio of 22% of the total population. This is as a result of high charges imposed by the supplier companies as determined by the Regulatory Authority in Uganda⁷. The rate of access to electricity is still low compared to other developing countries. Uganda is an energy resource-rich country with abundant resources of energy both renewables

⁴Linda Calabrese, *Supporting Economic Transformation, Industrial Development in Uganda. An assessment of the policy framework.* (December 2019, Page 6)

⁵ Linda Calabrese et al, *Supporting Economic Transformation, Industrial Development in Uganda. An assessment of the policy framework.*, 2019, Page 6)

⁶Max Walter et al, *Reality check #10, Powering Uganda's Transformation*, konarda, denauerStifung, Centre for Development Alternatives, part 3, chapter 3, page 29 para 300.

⁷ Cecilia Okoth, *Uganda to double its Electricity Capacity by 2019, New Vision*, (Kampala, 13th September 2017) https://www.newvision.co.ug/new_vision/news/1461557/uganda-double-electricity-capacity-2019. Accessed on 15th February, 2021.

and non-renewables though still faces energy poverty. This is characterized by, load shading, constant blackouts, acute power shortages, increased demand, inaccessibility, unaffordability of energy price to masses, and finally lack of funds to facilitate the exploitation of energy resources. This has extensively affected the economic growth of the state.⁸

Further, Uganda's discovery of commercially viable oil in 2006 sparked off development plans by International Oil Companies (IOCs) and the National oil company. These developments have raised the expectations of many Ugandans for participating and benefit in the oil industry. The Government of Uganda is undertaking several initiatives to ensure direct and indirect participation of Ugandan Citizens and enterprises in the sector to achieve lasting benefits for the country⁹. These initiatives include capacity building, employment of Ugandan Citizens, enterprise development, the use of locally produced goods and services and the transfer of knowledge and technology.¹⁰

1.2 Statement of the problem

Article 40(2)¹¹ provides for a right to every Ugandan to practice his or her profession and carry on any lawful trade, occupation or business and Objective VIII of the Constitution of the Republic of Uganda provides for the duty of the state to provide energy. Contrary, there is still a significant realization that all efforts have not accrued expected returns of constant energy supply, increased consumption, access, and revenue production. Due to this, Uganda remains at low rate of electricity access at about 19% overall and about 8% in the rural areas. It is on the world record that Uganda has the lowest per capita electricity consumption of about 215 kWh per capita per year¹² despite the installed capacity of 850 Megawatts and increased energy capacity in March 2019 following the commission of the Isimba Hydro plant to 1,177 MW. Also, the electricity tariffs are high compared to the income ratios of the Ugandan.

Ugandans still experience low electrification rate mostly as a result of lack of finances to help the electrification agencies extend services to rural areas, there is also high rate or reliance on

⁸Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives, part 3, chapter 3, page 29 para 300

⁹Stephane dla Rue Can et al, , *Energy Efficiency as a means of Expanded Energy Access* , A Ugandan RoadMap, 2018, published by Elsevier para 20, page 11..

¹⁰Linda Calabrese, Supporting Economic Transformation, Industrial Development in Uganda. An assessment of the policy framework. (December 2019, Page 6)

¹¹ The constitution of the Republic of Uganda, 1995, as amended.

¹²Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives, part 3, chapter 3, page 29 para 300

biomass, reliance on imported fossil fuels and frequent power outages. The inability of power utility agency to connect all customers who apply for connection is a major problem¹³. The researcher observed that it is not yet clear whether the government of Uganda has reduced on energy poverty by improving the economic and social rights of the population. The study seeks to examine this phenomenon.

1.3 Purpose of the study.

The purpose of the study was to analyse energy poverty factors such as inadequate energy supply, excess and short capacity, energy inaccessibility, affordability and low revenue accrues in regard to the social and economic rights of the Ugandan population. Energy is a driver to economic transformation of any state and once this is hit by poverty then the economic standards will depreciate causing low standards of living of the people. Therefore, the researcher undertook a study to analyse the effect of energy poverty on the social and economic rights of the Uganda's population.

1.4 Research objectives

The study was guided by the following research objectives;

1. To identify the causes of energy poverty in Uganda.
2. To identify the implementation limitations facing Uganda's energy sector in reducing energy poverty in Uganda.
3. To analyse the Electricity Act of 1999 and its impact towards Energy poverty
4. To suggest recommendations to increase on energy capacity and access in Uganda.

1.5 Research questions

The study was guided by the following research questions;

1. What are the causes of energy poverty in Uganda?
2. What are the implementation limitations facing Uganda's energy sector in reducing energy poverty in Uganda?
3. What impacts have been brought by the structural changes under the Electricity Act of 1999.

¹³Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives,part 3, chapter 3, page 29 para 300

4. What are the findings, recommendations and solutions to enhancing energy accessibility, affordability, availability and profitability Uganda?

1.6 Scope of the study

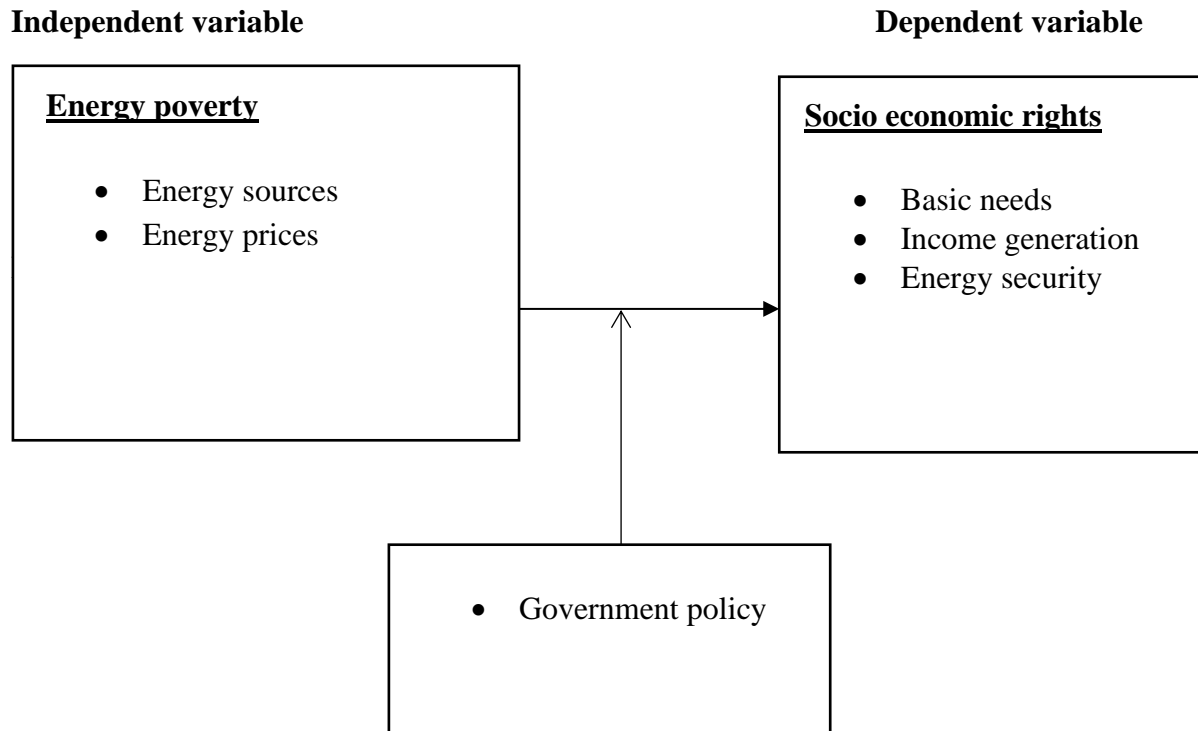
1.6.1 Thematic scope:

The study examined the concept of energy poverty as the independent variable and its related effects on the social and economic rights of people as the dependent variable. It therefore aims at establishing the relationship between the two study variables and this was done by examining by discussing the study themes namely, identifying the causes of energy poverty in Uganda, identifying the challenges facing Uganda's energy sector in poverty in Uganda and to also suggest recommendations to increase on energy capacity and access in the case districts.

1.6.2 Time scope:

The study explored data from 2000-2019. This was enough to gather the most relevant and reliable information about the study; this was also the time when the residents in Uganda faced social and economic rights challenges.

Figure 1: Conceptual framework showing the relationship between energy poverty and socio-economic rights



Source: Adopted from Jenkins (2014) and modified by the researcher

The conceptual framework reflects two variables namely energy poverty as the independent variable and socio-economic rights as the dependent variable. In other words, it's conceptualised that socio-economic rights depends on energy poverty. In this study, the dimensions of energy poverty include Energy sources and Energy prices can lead to a direct impact on socio-economic rights by affecting dimensions such as basic needs, income generation and energy security.¹⁴

1.7 Justification of the study

The study about energy poverty and social and economic rights of the population in Uganda warrants research. This is because; it has been observed that it is important to have a growing awareness of the population of Uganda of the importance to empower social and economic rights of people through reduction of energy poverty. It is important to note also that one of the factors that make electricity expensive to the end-users is the increase in the international oil prices which in the long run make thermal power generation very expensive. The prolonged procurement processes characterised with bureaucracy hinder the implementation of energy

¹⁴Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives, part 3, chapter 3, page 29 para 300

projects and as such masses have realised that the country's energy sector is facing considerable challenges which include acute power shortages, increased demand and a lack of new power-generation projects.¹⁵ Also to note, include there is a world transition to a low carbon economy which is likely to exacerbate the energy poverty challenges and Several governments transitioning their energy systems from conventional fossil-fuel sources to zero-carbon by 2050.

1.8. This Research will be structured into six chapters.

1.8.0. Chapter one introduces the study. It presents an overview of the background, Historical,

This chapter presents the introduction of the study, background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, and scope of the study and the significance of the study and the structure of the Research.

1.8.1. Chapter Two: Literature Review.

This section reviews literature review of the study of the existing literature on energy poverty

1.8.2. (iv) Chapter Three: Methodology; this part looks at the research methodology, bringing out the research design, study population, research instruments, data sources, ways of analysing data and research ethical considerations.

1.8.3. (v) Chapter Four: Data analysis and presentation; this analyses the questionnaire and interview response rates. It also presents an analysis of the main findings of the study including the interpretation and discussion thereof.

1.8.4. (vi) Chapter Five Over of international Energy policies and Uganda's energy sector.

1.8.5. (vi) Chapter Six: Conclusions and Recommendations; this section presents the summary of findings, limitations of the study, possible recommendations as well as outlines areas for future research.

¹⁵Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives,part 3, chapter 3, page 29 para 300

CHAPTER TWO.

LITERATURE REVIEW.

2.0. Introduction.

According to Hart¹⁶, literature review is “the selection of available documents on the topic which contain information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the topic and the effective evaluation of these documents in relation to the research being proposed” by Hart.¹⁷In this section the researcher reviewed literature relating to the topic and observed the missing gaps. The literature review therefore is aimed at filling these gaps about the energy poverty on the social and economic rights of the Ugandan population.

Morrissey defines energy poverty in from of ideas¹⁸. The first idea is the idea consumption habits of populations who are deemed poor by other measures. These measures include low income generation. There is a very much likelihood of low standards of living by such groups of people. The electricity consumption is reduced due to low incomes hence energy poverty. The second idea is that, energy poverty is itself a form of deprivation, that is, energy poor populations are those that lack access to the energy required to meet their basic needs. In order for the latter case to survive, they spend much of their time and resources on obtaining energy such as charcoal burning, firewood gathering and burning which expose them to undue risks such as risks from pollution or hardships such as having to walk long distances and spend significant amounts¹⁹ whereas these ideas give an understanding of energy poverty, there is a missing link that each of these ideas can't be independent of each other to define energy poverty. An example, a state could have available and accessible energy while the targeted consumers cannot afford installation and utilization costs of the power. Therefore, energy poverty is a broad definition that can't be exhausted in one paragraph.

Despite the fact that the government of Uganda has put up initiatives to see that the problem of energy poverty is cubed, the electricity accessibility by households is at about 16.2% while a big number of people are not connected. The government has subsidised the electricity

¹⁶ HART, C., *Doing a Literature Review: Releasing the Social Science Research Imagination*. London: Sage Publications 1998

¹⁷ HART, C., *Doing a Literature Review: Releasing the Social Science Research Imagination*. London: Sage Publications 1998.

¹⁸ Morrissey, James, “*The energy challenge in sub-Saharan Africa: A guide for advocates and policy makers: Part 2: Addressing energy poverty*” Oxfam Research Backgrounder series (2017):

¹⁹ Morrissey, James, “*The energy challenge in sub-Saharan Africa: A guide for advocates and policy makers: Part 2: Addressing energy poverty*” Oxfam Research Backgrounder series (2017):

connection and not increasing the incomes of the domestic users which has impeded the problem inability to afford the initial connection charges. The high cost of modern sources of energy is the other cause of energy poverty²⁰. In Uganda, the cost of electricity has been rising despite expansion of electricity generation capacity. The high cost of electricity reduces its consumption in households and businesses tend raise cost of essential goods and services. This makes the goods and services unaffordable hence affecting the economic standards of the Ugandan population.²¹

The Uganda National Bureau of Statistics (UNBS) notes that, between 2017 and 2018, there has been a 22% increase in price of electricity for consumers of up to 50 kWh monthly and a 14% increase for consumers of up to 200kWh. Hence, many households cannot afford to use electricity for cooking but mainly use it for radio listening, television watching and lighting. The number of households using LPG is about 3% because in rural areas, there are poorly developed markets and distribution costs are high.²² The strike of covid 19 Pandemic has left many government sectors budget low as all the money has been allocated to the Ministry of Health. Projects that have been targeted towards enhancing energy accessibility to mention Rural Electrification Agency and others are likely to have a backward drop to their targets and projection of connections.

Furthermore, rural households living on less than a dollar a day cannot afford the initial cost of the cylinder and accessories costing about 100 US dollars. Rural people are also afraid to adopt LPG because of safety concerns. Once they adopt LPG, they may not afford to continue refilling the cylinder. Households in developing countries do not automatically switch to LPG when their income improves²³.

It's also to my understanding that local households are not only afraid of adopting to LPG prices but also the government cannot afford to manufacture and transmit it. Earlier 90s, gas

²⁰ Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²¹Max Walter et al, Reality check #10, Powering Uganda's Transformation, konarda, denauerStifung, Centre for Development Alternatives, part 3, chapter 3, page 29 para 300

²²Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²²Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²² Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²³ Frankfurt School, *UNEP Collaborating Centre for climate and sustainable energy finance*, (2012)

was flared off after extraction of oil now the international law is against it. If you are to make a cost benefit analysis of establishing and LPG project from Albertine region, you find that it is actually very expensive for the state to establish such a project and less profit as people can't afford using gas compared the nature bio energy. In most cases, they practice energy stacking using LPG or electricity to cook light meals, tea, dung for simmering, and fuel wood for cooking meals that take long to cook. In Uganda, the share of households using LPG is 1.2% in rural areas and 13% in urban areas while use of fuel wood predominates.²⁴

There is a connection between the standards of living and energy utilisation. The Minimum Income Standard (MIS) provides the annual incomes that are needed for the different categories of family in order to afford the necessary acceptable living standard in European countries²⁵. In countries where the energy is readily available for consumption, such people are considered to live better in better standards. There is an argument that goods and services necessary for decent living are influenced by prevailing standards and customs of a given society. Hence, they differ between cultures and evolve over time.²⁶

The living conditions in our homes are determined by factors such as good hygiene and ability to access basic needs. An assessment has recently been carried out on the global trends in regard to the energy accessibility in relation to living conditions. The energy usage relationship to the standards of living can be observed in aspects such as using energy for cooking and electricity, water provision and sanitation. It has been observed that the growth rate of the living conditions is less compared to the gross domestic product.

Further, the sloping trend of low living standards is more common among low income earners mostly in sub-Saharan Africa²⁷.

All essential vital services to man to improve their living standards are generated from energy. Some essential aspects of human welfare include long and productive life, enjoying good health, access to knowledge and education opportunities, ability to earn adequate income to provide households with adequate nutrition, shelter and other material, and aesthetic needs.

²⁴Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²⁵IEA, *accelerating energy efficiency in small and medium sized enterprises: (Powering SMEs to catalyze economic growth*, part 2, para 100, page 12 (2015)

²⁶Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

²⁷Jenkins, Glenn, *Off-grid solar PV: is it an affordable or an appropriate solution for rural electrification in sub-Saharan African countries?* Part 1, para 12, page 2, (2014)

With the availability of modern energy services, all these essential needs can be provided. Modern energy sources are also income generating ventures that can provide employment to people²⁸. Modern energy usage for cooking, driving, industrialisation and any other usage improves the environmental sustainability by curbing deforestation, charcoal burning and increasing energy efficiency. Energy poverty thus prevents people from meeting basic daily needs such as cooking, lighting, heating, cooling, and communication all of which are necessary for an acceptable quality of life.

The choice of energy fuels to be used in the household is dependent on the level of income affects. Wealthier households use cleaner fuels because they can afford those while poor-households traditional fuels because they cannot afford clean. The net living wage for rural Mt Uganda region is about 128 US dollar per month. This low income makes Uganda rural households to depend on firewood for cooking and also partly because most of the firewood is collected not bought²⁹. Hence low income leads to dependence on biomass fuels which is a measure of energy poverty.

Morrissey further suggest some of the ways how energy poverty can be controlled as; firstly, to focus on both the grid and distributed technologies. That grid will provide the cheapest energy and allow for the greatest penetration of renewable at the lowest cost.³⁰ I agree that this is a cheap however mini grids are also important because they are easy to connect renewable energy producers. Secondly, Support for distributed technologies must not only cover the higher up-front costs for the technology, but also support the development of the entire supply chain.³¹ For this, the all chain must be supported from generation, transmission, supply and distribution. However, the government should be careful while doing this move in order not to lose revenue by carrying out a cost benefit analysis³².

Thirdly, to ensure that electrification is sustainable, it must be accompanied by economic development.³³ Once a state has industrial development, it will have domestic market for all

²⁸Ministry of Energy and Mineral Development (MEMD) 2016: Estimated Cost Data from Usamah Kaggwa, para 44, 2020, page 4.

²⁹Mutenyo John, *Baseline Survey on Uganda's National Average Automotive Fuel Economy*, part 1, para 23, 2015, page 4, .

³⁰Morrissey, James, "*The energy challenge in sub-Saharan Africa: A guide for advocates and policy makers: Part 2: Addressing energy poverty*" Oxfam Research Backgrounder series (2017): Page9.

³¹ Ibid

³²Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

³³ Ibid

the power that is produce that is consumed by both people and industrial users hence avoiding issues of producing at excess capacity. Finally, Policy makers have long prioritized electrification over addressing energy needs for cooking, and current efforts promoting improved cook stoves will likely be insufficient to address energy poverty.³⁴ I support this and to centralize it to Uganda, it has come up with policies like rural electrification. The rural electrification agency is in efforts to extend electricity to rural areas however the incomes of the people in these areas are low and face a challenge of installation and utilization of electricity that passes through their land. The government should also establish incentives such as tax holidays and grants to both local and international players in the energy sector as to attract more energy investments and increase revenues.

2.2. Summary of literature gaps

Morrissey reveals that energy poverty is itself a form of deprivation, whereby energy poor populations are those that lack access to the energy required to meet their basic needs. However, they fail to disclose that it is possible for a country to have available and accessible energy yet its population cannot afford it.

Fawkes, 2016 indicates that there is low access to electricity at only 16.2% households having electricity while the rest are not connected. He also reveals that high cost of modern sources of energy also leads to energy poverty; however, he did not discuss what the government of Uganda has done to increase on access to electricity to at least every household.

Frankfurt, 2012, in a written article explained that rural households living on less than a dollar a day cannot afford the initial cost electricity connections and that rural people are also sceptic to adopt to liquid petroleum gas due to safety concerns. However, Frankfurt did not provide alternative options which can be used to reduce on the effects of energy poverty among the population.

³⁴ Ibid

CHAPTER THREE.

METHODOLOGY.

3.0 INTRODUCTION.

3.1 Research design

In the research approach, the researcher used a phenomenological approach which is based on commonality of lived experience amongst respondents with an aim of providing a clear description of the nature of energy poverty and socio-economic rights of the population by the respondents. The study measured attitudes, behaviors, and opinions of respondents about the study energy poverty its socio-economic impact on population and as such it used quantitative techniques of data collection since it involves collecting and converting data into numeric form, hence statistical computation of responses from respondents under the questionnaire instrument thus enabling the researcher to draw conclusions.

The researcher used a cross sectional study. The benefit of a cross-sectional study design is that it allowed the researcher to compare the many different variables at the same time. T Cross-sectional analysis has the advantage of avoiding various complicating aspects of the use of data drawn from various points in time. Further, the data analysis itself does not need an assumption that the nature of the relationships between variables is stable over time although this comes at the cost of requiring caution if the results for one-time period are to be assumed valid at some different point in time.⁸⁷

The study was qualitative in nature aiming at investigating energy poverty. The design was selected to describe in-depth, the measures taken by government in designing the environmental legislations. A qualitative research approach was adopted, in order to exploit the synergies offered by this kind of research methodology.⁸⁸ Primary Data was collected from the interviews and secondary data was collected through document review.

3.2 Research Population and Sampling Methodology

The study population comprised of residents in Uganda and was composed of a total of Political heads, local residents and officers of UMEME, Electricity Regulatory Authority and Uganda Transmission Company as technical personnel. These were chosen because they are expected to have enough knowledge required in understanding how energy poverty affects socio-

economic rights of the people since they have resided in the area for a justifiable period of time.

A total of 32 respondents were selected from the sample of, Electricity Regulatory Authority, Local residents and UMEME so as to obtain accurate information about the analysis of energy poverty in regard to the social and economic rights of the Ugandan population.

These institutions (ERA, UMEME, and LOCAL RESIDENTS) were picked for the study because they had primary information relevant to the study.

A total of 32 respondents were selected based on Krejci and Morgan (1970) sampling guidelines using non-probability methods of purposive sampling criteria. Table 4 below shows the different population categories targeted, sample and sampling methods that were used in the study. The corresponding sample size population of 34 is 32 respondents (*Attached in appendix*

This was selected based on Krejci and Morgan sampling guide lines⁹⁰ using the probability methods of purposive sampling criteria.

Using proportions, the sample size is obtained for the respective groups as follows;

$$\begin{array}{l}
 \text{ERA} \qquad \qquad \qquad 12 \times \frac{32}{34} \\
 \text{UMEME} = \qquad \qquad \qquad 8 \times \frac{32}{34} \qquad \qquad 8 \\
 \text{Local Residents} = \qquad \qquad \frac{14 \times 32}{34} \qquad \qquad 13
 \end{array}$$

A sample of 32 respondents in Uganda were selected to participate in the research exercise. This number is reasonable because it enabled the researcher to easily avoid elements of bias and it was easily accessed and availed with logical support. Sample (n) = 32

3.3 Sampling method

Purposive sampling is whereby the samples are selected with a purpose in mind. This was in one or more specific predefined groups the researcher is seeking to gather information about the topic under investigation. In this study, purposive sampling technique was used to select key respondents from, ERA and UMEME. because it was best suited for selecting information rich cases for in depth study.

The sampling methods are important in identifying the population of interest.³⁵ In this study, the following are the sampling methods that were employed. The researcher used purposive method of sampling to select respondents from electricity companies; these are expected to have first-hand information about the study variables. This method is important because it is dictated by the nature of the study which aims at getting information from specific respondents.

Simple random sampling was also used to select respondents from residents and local leaders. This method is important because it gave respondents equal chances of participating in the study and as such eliminating elements of bias.

3.4 Data Collection

The researcher used both primary and secondary sources of data collection for the study. Through Primary Sources the researcher conducted a number of interviews with key stakeholders whereas through secondary sources, data was collected by reviewing literature on existing materials on the subject matter.

3.5 Interviewing

The study used interview method of data collection because the issues relating to energy poverty are very sensitive and require informative respondents. This method was also used because the researcher hoped to have clarity over vital issues relating to the study, the interview method enabled a direct control over the flow of process since it is a verbal conversation between two people. Therefore, the purposes of the interview are to explore the views, experiences, beliefs and/or motivations of individuals on specific matters and are particularly appropriate for exploring issues where participants may not want to talk about such issues in a group environment.

The interview guide is a list of questions a researcher asks participants during the interview. The researcher designed structured interview guide where each respondent was asked the same question in the same order. The researcher clearly expressed the purpose of the interview to the respondents and kept them comfortable.

An interview is a conversation between two people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee.⁹¹In this

³⁵McCabe, *Populations and Selection: Limitations of Statistics (Presidential address)*".Published by Royal Statistical Society(2005)

method, by use of this tool, the researcher was able to obtain information in regard to an analysis of energy poverty in regard to the social and economic rights of the Ugandan population.

3.6 Questionnaires.

A survey questionnaire is a set of questions used in a survey. The survey questionnaire is a type of data gathering method that is utilized to collect, analyse and interpret the different views of a group of people from a particular population. The method was used because data can be collected relatively quickly since the researcher does not need to be present when the questionnaires are being completed. It helped me obtain straight to point information as guided by the questions.

3.7 Documentary Review

Document analysis involved reviewing existing published and unpublished information relating to the analysis of energy poverty in regard to the social and economic rights of the Ugandan population.

The document review involves systematic data collection from existing records. This method was used to gather information about the study variables that is energy poverty. This method was used because a lot of information can be reviewed to provide the most reliable and relevant information. I gathered all the information that is related to my research of different nature but specifically related to my research. The researcher reviewed material from the internet. Text books, reports, journals among others. This helped the researcher to access all the relevant information on the study. References from which data is drawn were recognized in this study. The study used a documentary review checklist to gather information objective by objective, in line with the variables of the study

3.8 Validity and Reliability

Validity refers to the degree in which our test or other measuring device is truly measuring what we intended it to measure. Reliability refers to the test's consistency among different administrations. The researcher used the Cronbach Alpha Value to measure the Reliability and the Content Validity Index to measure the Validity.

Having used these tools to measure the reliability and validity, the researcher was able to the figures of 0.663 for each and 0.84 respectively having it in mind that the lowest minimum

acceptable value is 0.500⁹³. This is a clear explanation that the instruments that were used where both valid and reliable.

3.9 Data Analysis

The researcher used the Qualitative data analysis method by identification of the qualitative findings and writing them in form of. The themes were then edited coded and arranged in different categories to generate useful conclusions and interpretations on the research objectives which were deduced for reporting in a narrative form.

Data collection methods are an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results.

3.10 Ethical Considerations

The research such as this may focus on topics that are sensitive and it would be difficult to illicit honest responses to some of the questions posed when a participant did not feel secure in knowing that their identity is protected. Privacy matters should be addressed from the inception of the research to the publication of the results. There should be safety nets put in place to guarantee confidentiality. The only amount of personal data that should be collected for the research is the minimal amount needed to ensure a proper sampling of the population.⁹⁴Its important to note that all the data that was collected from the respondents was strictly used for academic purposes and confidential that they are not any risk and appropriate documentation was kept.

The respondents, who for purpose of study preferred anonymity, were selected on the basis of their willingness to participate without compulsion and their informed consent was sought. The researcher explained to the respondents the purpose of the study and that the information they provide would be kept confidential. Furthermore, much as some of the ideas used by the researcher were his own, there was information read and that obtained from people interviewed about the topic. As such the researcher was able to explain where he got information from by way of citation and use of quotation marks respectively. This helped the researcher to maintain credibility of the literature to avoid plagiarism.

3.11 Limitation

There was a limitation of reliance on interview data. With the use of interviews, it was hard to control respondent behaviour because some of the interviewees were sensitive to minor

changes in interview wording. There were elements of item-nonresponsive as the answering process failed to proceed smoothly because the respondent lacked motivation or ability. Some respondents also gave responses such as; the questions are too difficult, not interesting, among others which the researcher found somewhat unsatisfactory of the expected findings. However, the researcher conducted reliability and validity tests to ensure the consistence and accuracy of the tools that were used.

Limited trust availed to the researcher was another challenge experienced during the study. Some respondents were hesitant to reveal as well as avail the researcher with information they believed to be confidential. To this end the researcher had to first assure the respondents of utmost confidentiality and secrecy of each one's details, and that the information they gave would be held with utmost concealment and strictly for academic purposes.

3.12 Chapter Summary

The chapter is basically considered to be the backbone of the research. This is so because it tackles the issues of why is the research study undertaken, how the research problem was formulated, the different types of data were collected, the particular method that has been used and why a particular technique of analysis of data used in order to come up with the different research findings.

In the research approach, the researcher used a phenomenological approach which is based on commonality of lived experience amongst respondents with an aim of providing a clear description of the nature of energy poverty and socio-economic rights of the population by the respondents. The study measured attitudes, behaviours, and opinions of respondents about the study energy poverty its socio-economic impact on population and as such it used quantitative techniques of data collection since it involves collecting and converting data into numeric form, hence statistical computation of responses from respondents under the questionnaire instrument thus enabling the researcher to draw conclusions.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the findings on the “to analyse energy poverty factors such as inadequate energy supply, excess and short capacity, energy inaccessibility, affordability and low revenue accrues in regard to the social and economic rights of the Ugandan population, with a particular focus on Uganda”. In order to effectively conduct a valid analysis of data, the researcher used descriptive statistics like tables and charts to depict the relevant data.

4.1 The background information of respondents

This section presents the background information that was collected from respondents.

Out of the 32 questionnaires distributed among 32 respondents, only 26 were filled and returned, representing 72.1% response rate which is acceptable in making conclusions since it is above .70 or 70%. The 26 filled questionnaires are the basis of reporting in this chapter and the subsequent chapters

4.1.1 Gender of respondents

The respondents were asked to identify the gender in which they belonged to, responses to the question are summarized in table 4.1

Table 4.1: Gender

	Frequency	Percent
Male	12	47.5
Female	20	52.5
Total	32	100.0

Source: Primary data

According to results in table 4.1, it is revealed that 52.5% of the respondents were females while 47.5% were males. This means that most of the data gathered for the study was provided by females, the results also show that both male and female respondents were well represented in terms of gender and hence the study did not suffer from gender bias.

4.1.2 Age of respondents

Respondents were asked to identify the age group that they belonged to, results to the question are summarised in table 4.2

Table 4.2: Age (in years)

	Frequency	Percent
20-30 Years	12	32.7
31-40 Years	10	36.6
41-50 Years	5	23.8
Above 50 Years	5	6.9
Total	32	100.0

Source: Primary data

As seen in table 4.2, results show that 32.7% were aged between 20-30 years, 36.6% were aged between 31-40 years, and 23.8% were aged between 41-50 years while 6.9% were aged above 50 years. This is an indication that respondents were well distributed in terms of age.

4.2 Other information

4.2.1 There is lack of adequate modern energy for basic energy needs

The respondents were asked whether there is lack of adequate modern energy for basic energy needs. The responses are presented in table 4.3

Table 4.3: There is lack of adequate modern energy for basic energy needs

	Frequency	Percent
Strongly disagree	12	6.9
Disagree	5	7.9
Not sure	5	11.9
Agree	5	30.7
Strongly agree	5	42.6
Total	32	100.0

Source: Primary data

The results in table 4.3 indicate that there was a combined percentage of 73.3% who generally agreed to the statement, this can be interpreted to mean that there is energy poverty which prevents people from meeting basic daily needs such as cooking, lighting, heating, cooling, and communication all of which are necessary for an acceptable quality of life. During an interview session, a key respondent expressed that;

“Surprisingly, a number of households in Uganda still lack sufficient energy in terms of traditional and modern energy sources. Many households suffering from energy poverty are seen on a daily basis through use of firewood, also in cases of power outages, there is lack of electricity access which is a big issue”.

4.2.2 To what extent do the regions lack physical availability of certain energy types

The respondents were also asked to identify the extent to which Uganda lack physical availability of certain energy types. The results are presented in table 4.4

Table 4.4: Extent the regions lack physical availability of certain energy types

	Frequency	Percent
Large extent	12	24.7
Medium extent	10	64.4
Small extent	10	10.9
Total	32	100.0

Source: Primary data

According to results in table 4.4, it is indicated that majority of the respondents that is 64.4% had a medium extent response, while 24.7% had a large extent response and 10.9% had a small extent response, however, despite the difference in respondents’ responses, it can be concluded that lack of physical availability of certain energy types is a major contributing factor to problems of energy poverty in Uganda. It was revealed that despite the construction of Isimba dam in these regions which serve as host communities for one of the large power plant stations in the country, the people still rely on traditional cooking fuels such as paraffin, wood, charcoal and dung because they do not have access to electricity access. It was observed some residents cannot afford the modern energy sources such as electricity or solar, the connection fee for electricity is high and the process is very slow even when costs have been paid.

4.2.3, Is there low access to electricity in Uganda

The respondents were asked whether there is low access to electricity in Uganda. The results showed that 84.2% of the respondents generally agreed that there is low access to electricity, an approximate of only 16.2% households have electricity while the rest are not connected. The Government has made efforts to subsidize connections to many households however, many residents cannot afford the initial connection fees, hence low access. A percentage of

23.2% expressed concern about the high cost of modern sources of energy which has also reduced on the access to alternative energy sources.

Despite an increase in grid electricity access over the last couple of years, a large number of the relatively widely dispersed rural population in Uganda is unlikely to be able to access the national grid in the near term. This leaves a viable space for off-grid energy solutions to play an important role in providing quick access to reliable and modern lighting and energy services to households.

The Uganda National Bureau of Statistics (UNBS) suggests that there was an increase in the price of Electricity between the year 2017 and 2018. That this increased to about 22% for consumers of up to 50 kWh monthly and a 14% increase for consumers of up to 200kWh. Such increasing electricity prices make it difficult for many households to afford to use electricity for cooking instead they use it on things that consume little electricity such as listening to radio listening and watching television. The number of households using LPG is about 3% because in rural areas, there are poorly developed markets and distribution costs are high. Rural people are also afraid to adopt LPG because of safety concerns. Once they adopt LPG, they may not afford to continue refilling the cylinder.

4.2.4 A high number of residents can afford to utilize modern sources of energy

The respondents were also asked whether a high number of residents can afford to utilize modern sources of energy. The results are presented in table 4.5

Table 4.5: A high number of residents can afford to utilize modern sources of energy

	Frequency	Percent
Strongly disagree	12	29.7
Disagree	5	38.6
Not sure	5	10.9
Agree	5	13.9
Strongly agree	5	6.9
Total	32	100.0

Source: Primary data

The results in table 4.5 indicate that 29.7% strongly disagreed, 38.6% disagreed, 10.9% were not sure, 13.9% agreed while 6.9% strongly agreed respectively. The results also indicate that there was a combined percentage of 68.3% who generally disagreed to the statement. This can

be used to conclude most of the residents in Uganda cannot afford modern sources of energy. During an interview session, a key respondent expressed that;

“Just one unit of electricity costs shs. 675, on that add the monthly tax which is always increasing, now it is 3,700. We usually run out of electricity at any time without even money to re-load. For those who can use LPG, the costs are also high as the gas runs out so fast, it is not a source of energy that can be maintained consistently, basically everything is high because even the installation of solar energy can be managed by few”.

This means that many residents cannot afford modern sources of energy.

4.2.5 There is a challenge of high electricity charges in addition with low transparency of tariffs

The respondents were also asked whether there is a challenge of high electricity charges in addition to low transparency of tariffs. The responses are presented in table 4.6

Table 4.6: There is a challenge of high electricity charges in addition with low transparency of tariffs

	Frequency	Percent
Not sure	12	10.9
Agree	10	35.6
Strongly agree	10	53.5
Total	32	100.0

Source: Primary data

The results in table 4.6 show that 10.9% of the respondents were not sure to the statement, 35.6% agreed while 53.5% strongly agreed respectively. The results show a combined percentage of 89.1% generally agreed to the statement respectively UMEME charges for electricity consumption are considered high. It was revealed that more than 85% of Uganda’s population lives in rural areas. Almost all of them depend on biomass (wood and crop residues) for cooking and heating often using inefficient methods and appliances. Even in urban areas of Uganda, a vast majority of the population use charcoal for cooking. Electricity is available only to 9% of the total population and 3% in the rural areas. It was also revealed that many consumers are not aware and are still ignorant about some charges such as the monthly shs 3,700 tax for UMEME Touch pay (Yaka), this charge accumulates every month in case it is not cleared regardless of the yaka payment.

4.2.6 Energy projects have enough funds for financing projects

The respondents were asked whether energy projects have enough funds for financing their operations, the results are presented in table 4.7

Table 4.7: Energy projects have enough funds for financing projects

	Frequency	Percent
Strongly disagree	12	27.7
Disagree	5	31.7
Not sure	5	9.9
Agree	5	12.9
Strongly agree	5	17.8
Total	32	100.0

Source: Primary data

According to results in table 4.7, it is indicated that 27.7% of the respondents strongly disagreed, 31.7% disagreed, 9.9% were not sure, 12.9% agreed while 17.8% strongly agreed respectively. The results show that there was a combined percentage of 59.4% of respondents who generally disagreed; since this is the majority response it can be interpreted to mean that in a bid to reduce on energy poverty, the government emphasised construction of energy projects such as Isimba dam project in Uganda, however, this has still not yet improved on access of energy to the people, mainly due to limited funds which can ensure effective implementation of the project.

4.2.7 High tariffs in the sub-sector have led to depressed demand

The respondents were also asked whether high tariffs in the sub-sector have led to depressed demand. The results are summarised in table 4.8

Table 4.8: High tariffs in the sub-sector have led to depressed demand

	Frequency	Percent
Strongly disagree	12	9.9
Disagree	5	12.9
Not sure	5	5.0
Agree	5	32.7
Strongly agree	5	39.6
Total	32	100.0

Source: Primary data

The results in table 4.8 indicate that 9.9% of the respondents strongly disagreed, 12.9% disagreed, 5.0% were not sure, 32.7% agreed while 39.6% strongly agreed respectively. It is seen that majority of the respondents generally agreed to the statement, this could mean that the demand for electricity and other energy sources is declining due to the high tariffs. During an interview session, a key respondent expressed that;

“High tariffs in the sub-sector have led to depressed demand. The licensing of expensive thermal generation plants and Bujagali HPP to boost generation capacity during the time when the country was faced with a power shortage, continues to keep the tariff high irrespective of the other interventions Government is making to reduce the tariff”.

4.2.8 There is poor control and enforcement of energy provisions

The respondents were also asked whether there is poor control and enforcement of energy provisions. The results are summarised in table 4.9

Table 4.9: There is poor control and enforcement of energy provisions

	Frequency	Percent
Strongly disagree	12	13.9
Disagree	5	12.9
Not sure	5	15.8
Agree	5	26.7
Strongly agree	5	30.7
Total	32	100.0

Source: Primary data

According to results in table 4.9 it is seen that 13.9% of the respondents strongly disagreed, 12.9% disagreed, 15.8% were not sure, and 26.7% agreed while 30.7% strongly agreed respectively. There was a combined percentage of 57.4% of respondents who generally agreed, this can be implied to mean that there is poor monitoring and control about energy provisions. Respondents revealed that UMEME field officials are reluctant in providing instructions on how to effectively and safely use the electricity equipment such as re-loading of power on the Yaka meters. Many respondents revealed that they had gone several days without power due to ignorance on how to make the payments.

4.2.9 The main challenge facing Uganda in its role within the energy sector

The respondents were asked to identify the main challenge facing Uganda in its role within the energy sector. The responses are presented in table 4.10.

Table 4.10: The main challenge facing Uganda in its role within the energy sector

	Frequency	Percent
Economic challenge	12	13.9
Globalisation challenge	5	12.9
Political challenge	5	15.8
Financial challenge	5	26.7
Total	32	100.0

Source: Primary data

According to results in table 4.10 it is seen that 13.9% of the respondents agreed to economic challenge, 12.9% agreed to globalisation challenge, 15.8% agreed to political challenge, and 26.7% agreed to financial challenge. The largest percentage agreed that the main challenge facing Uganda in the energy sector is the financial challenge, the respondents stated that the distribution grid is grappling with vandalism, old transformers and illegal connections and energy losses of about 30%. These issues, coupled with high cost of generation, have made electricity expensive and unstable. In addition, inadequate public financing to develop electricity supply projects to match growing demand. The government prefers to maximise private investment in infrastructure in order to allocate more resources to the social sector.

CHAPTER FIVE.

Introduction.

5.0. Energy poverty in Uganda

Uganda has abundant energy resources, especially hydrological energy and this has not solved the problem of its energy poverty that is widely spread throughout the country.³⁶ Uganda is facing many energy poverty challenges such as acute power shortages, low energy supply, non-exploitation of the available energy resources; limited power generations, high electricity tariffs and lack of inadequate accessibility of energy. The energy resource investments for the renewable energy have high upfront cost of technologies and establishment.

5.1. A brief background of the Electricity Sector and Establishment of the Electricity Act 1999

In 1993 the government of Uganda Enacted a Public Enterprise Reform and Divestiture (PERD) Act, under which it agreed on projects and programs with the objective to reduce government equity holding in the public enterprises and strengthening of the private sector” (Government of Uganda, 1993). As part of the privatization reforms, the government enacted the Electricity Act of 1999. The Act transformed the sector into what is has become today and provided the legal basis for the establishment of the various players at generation, transmission, distribution and supply. The generation and distribution sectors were opened up to competition as the Act allowed for private investment³⁷. Consequently, independent power producers and distribution companies entered the market. Act established the Electricity Regulatory Authority (ERA) as the independent regulator.

5.2. An analysis of the Electricity Act of 1999 and its structural changes towards Energy poverty.

In recent years, the government of Uganda has promulgated a new Electricity Act and other relevant laws. It created an independent Electricity Regulatory Authority (ERA), which has established a strong track record in ensuring the financial viability of the sector. The state-owned Uganda Electricity Board was ‘unbundled’ into separate entities responsible for

³⁶Robert Bacon et al, Expenditure of low-income households on energy, Evidence from Africa and Asia, Executive industries Development series, world Bank, 16, June, (2010) page 5.

³⁷Fawkes et al, *Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

generation, transmission and distribution, and the generation and distribution facilities have been concessioner to the private sector³⁸.The major structural changes that this law established included, opening the Electricity sector to private company players such as the Independent power producers, the establishment of the rural electrification program and the Electricity Regulatory Authority.³⁹ These are going to be discussed as follows.

5.3. Electricity regulatory authority

Section 4 of the Electricity Act 1999 establishes the Authority called the Electricity Regulatory Authority. This authority is comprised of five members⁴⁰ and its functions include;

To Issue License for the generation, transmission, distribution or sale of electricity, for ownership or operation of transmission systems, to make and enforce directions to ensure compliance with licenses issued under this Act to establish a tariff structure and to investigate tariff charges, whether or not a specific complaint has been made for a tariff adjustment, to approve rates of charges and terms and conditions of electricity services provided by transmission and distribution companies, among others.⁴¹

Reference to the tariff review report of the fourth quarter of 2020, which shows the results of the Authority’s review of the Licensees’ Fourth Quarter of 2020, the Tariff revenue requirement evaluation, determinations and the reasons informing the determinations for the Fourth Quarter of the year 2020.The Electricity regulatory Authority using the Quarterly Tariff Review Adjustment Methodology 2014, as at 321st Meeting approved the 2020 Base Tariffs shown in Table 2.

The table 2: Showing the electricity user end tariffs

	End-User Retail Electricity Tariffs (Ush/kWh)						
	Domestic	Commercial	Medium Industrial	Large Industrial	Extra Large	Street-Lights	Weighted Average
2020 Approved Base Tariffs	751.7	649.4	575.2	362.4	302.2	370.0	494.4

³⁸Bailis et.al,*Mortality and greenhouse gas impacts on biomass and petroleum energy futures in Africa*, 2005 Vol.308, JO. Science (New York, N.Y)

³⁹Fawkes et al,*Best practices and studies for industrial energy efficiency improvement-an introduction for policy makers*, part 4, para 50, page 12, (2016)

⁴⁰Section 5 of the Electricity Act, Cap 145, Laws of Uganda, 2000.

⁴¹Section 11 of the Electricity Act, Cap 145, Laws of Uganda, 2000.

The domestic tariffs of Shs 751.7 per Kwh as portrayed in the 2nd column is very high compared to the domestic gross income of Ugandans. This is the reason why Ugandans cannot afford to utilise electricity hence energy poverty. The Authority through its functions as stipulated under the act should reduce this value to about 500shs per Kwh, a suggested value from my respondents. The Uganda Peak Domestic Demand in July 2020 stood at ~601.42 MW and the registered Peak System Demand in July 2020 (including export of 15.93 MW to Tanzania and 57.99 MW export to Kenya) stood at 675.34 MW. Load shedding in July 2020 was recorded at 161.60 MWh.

The load shedding was as a result of; the shutdown of the Nalubaale Power Plant and a unit at Kiira Power Plant to spill a small island at the Kiira spillway. Secondly was the Transformer Capacity Constraint at Namanve, caused by a shutdown of Transformer to cure a severe oil leakage and the operation of Under Frequency Relays, caused by an unstable grid.⁴² Load shedding is one of the major factors of Energy poverty. The electricity regulatory authority has powers to review the Generation, transmission licenses,⁴³ that is to ensure that the licensees comply with the conditions of their licences including the quality, efficiency, continuity and reliability of the supply services. Other than things of Natural cause, the authority has capacity to intervene where the licensee can't perform and if they don't do it then energy poverty is likely to increase under load shading.

5.4. The Electricity Act of 1999 also establishes the Rural Electrification Strategy.

The Minister shall prepare a sustainable and coordinated rural electrification strategy and plan for Uganda for the approval of the Cabinet.⁴⁴ This is one of the best strategies to enhance electricity accessibility to the Rural areas hence reducing Energy Poverty. The Act establishes a fund under Sec 64 which includes monies appropriated by parliament, in the researchers view including tax payer's money. The question is, is it a viable project to reducing Energy poverty?

The minister is required to furnish the report once in each year, submit to Parliament indicating the progress and achievement of the plan which shall contain information relating to: the expansion of the main grid, the development of isolated and mini-grid systems for relatively concentrated areas with a potential for productive use, the renewable energy power generation

⁴²Tariff Review Report for the Fourth Quarter of 2020 by Electricity Regulatory Authority, Page 10, REP/25/020/013.2020-10-19.

⁴³Sec 11(2)(c)(ii) Electricity Act, Cap 145, Laws of Uganda, 2000.

⁴⁴Sec 63(1) Electricity Act, Cap 145, Laws of Uganda, 2000.

for sale to the main grid and for mini-grids, the installation of solar photovoltaic systems for isolated settlements that cannot be economically connected to the grid.⁴⁵

In the annual report of 2014-2015, Hon. Eng. Irene Muloni Minister for Energy and Mineral Development indicated that the rural electrification programme has achieved extensive national coverage. So far, 109 district headquarters have been electrified, with only three left including Kabong, Kotido and Buvuma⁴⁶

In order to have a bright picture of the coverage, the report indicates a map showing the coverage.

⁴⁵Sec 62, Electricity Act, Cap 145, Laws of Uganda, 2000.

⁴⁶Rural Electrification Annual report 2014-2015, Page 7

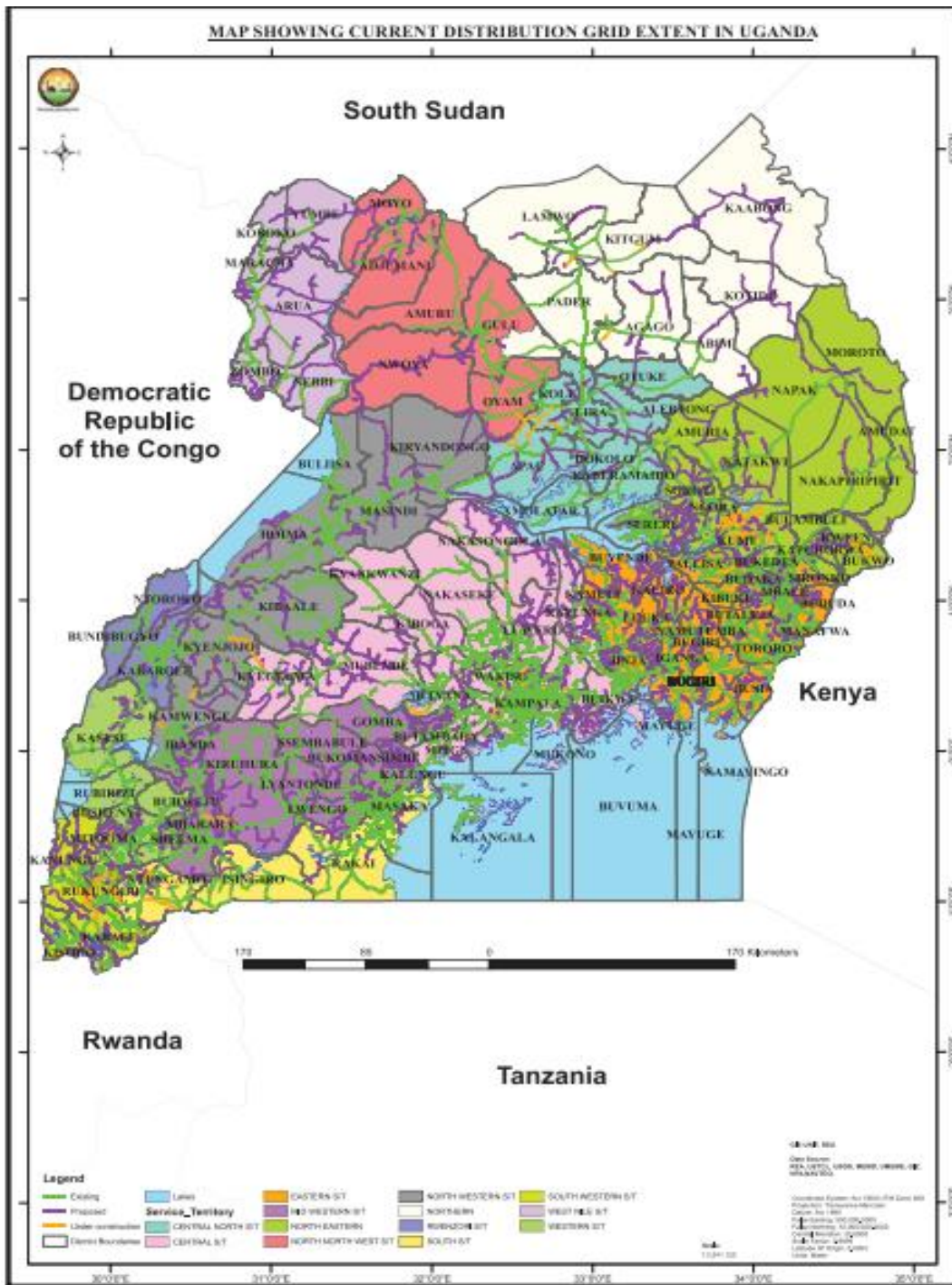


Figure 2: Showing current distribution grid extent in Uganda

Source: Extracted from the Rural Electrification Annual report 2014-2015, Page 6.

The Green lines are those existing grids, the Purple Lines are proposed and the yellow are those under construction. The view is that the grids under construction are less compared to the proposed. This could be because of limited financing in the sector. Once the country has a less

distribution of the grids then there is a likelihood inability of the state to distribute electricity to its citizens causing low sales and losses compared to the purchased power.

We applaud the efforts taken by the rural electrification agency through transformation of lives of Uganda's rural communities by extending electricity services. However, there is a persistent problem of house hold connectivity. Affordability of prices by local households and business to have electricity connectivity installation is still a major problem.

The government developed the Electricity Connections Policy (ECP) of low connection rates and aims to achieve a 60% level of access to electricity for Uganda by 2027. The policy was approved by Cabinet in January 2018 but officially rolled out later in November the same year.

The government developed the Electricity Connections Policy (ECP) of low connection rates and aims to achieve a 60% level of access to electricity for Uganda by 2027. The policy was approved by Cabinet in January 2018 but officially rolled out later in November the same year. The objectives of the policy are to Increase number of connections made annually from the current average of 70,000 to 300,000 connections, Increase electricity demand on the main grid by 500MW by 2027.

The policy is designed to provide free single-phase electricity connections to houses and business premises that are within 90 meters of a low-voltage electricity pole. This allows for no-pole and single-pole service connections as before the connection services were at UGX 650,000/=

How to benefit from the policy

1. The house or business premises must be wired by a certified wireman, who will provide a wiring certificate upon completion.
2. An application for a connection is then submitted at the area office of the respective electricity distribution company; A fee of UGX20,000 is charged for inspection of the house of business premises;
3. If the house or business premises pass the inspection, an electricity connection will be provided without any additional charge.

This is drastic change towards achieving electricity connectivity to the end users and also to reduce wastage of electricity purchased by the government and unused basing on the facts that

With an installed generation capacity of 1182.2 MW and a low demand of 650MW, a lot of the power generated goes unused, which is a cost to Government. The question is, the time frame within which an application for connectivity is approved and the actual connection. From the local residents, connectivity takes a long time and sometime it never happens. Such a problem can only be regulated by the Electricity Regulatory Authority which is given power to regulate the whole electricity sector.

ERA can cause the market players to pay refund of this Ugx 20,000 where the entity fails to perform within a stipulated time as advised to the end user. ERA encourage public private partnerships and development partners that can provide financial support towards electricity distribution, installation and connectivity in the rural areas. The Ugandan government has also collaborated with the East African Community on regional power interconnection. This regional approach is expected to benefit all countries involved by diversifying supply sources and reducing investment costs⁴⁷.

5.5. Challenges facing Ugandan government in reducing energy poverty

The Uganda energy Sector has undergone through several transformation and achievements since 1997 even though there are persistent challenges that are still ongoing. The energy sector planners have concentrated to urban areas and semi urban areas of the provision of modern electricity, development and expansion of grids. Uganda being a low income generation country with low industrialisation, the utility rate for the use of power remains low, the supply is also inadequate because of the slow growing generation capacity and poor infrastructures for transmission and distribution. The government needs to encourage large scale investments and create forums for prudent utility practices. It's important to note that it's not easy to achieve Sustainable development in Uganda because its incompatibility with the poverty prevalent in the country. As a way to address poverty energy poverty issues in the country, the government has the challenge of expanding access to affordable, reliable and adequate energy supplies as a way to address poverty issues.

Environmental damage and Energy development in Uganda cannot be undermined as the two are intricately related. If a compulsion is made between the energy sector and other economic sectors, energy sector has the biggest impact on the. Hence, the great need for Environmental Management Authorities to heavily scrutinise the energy investments in Uganda before

⁴⁷Nathan, Sustainable energy technologies solutions for poverty reduction in south Asia, (2007)

establishment. There is an inter-linkage between the energy sector in Uganda and other sectors because of its vital input and out at all levels of production to transportation. This makes the energy sector a major contributor to Uganda's revenues, and before a decision is taken to affect the sector, it's always on the back of the decision makers that it will have a direct bearing on the performance of the other sectors. There are institutional and legal weaknesses, especially in the areas of the downstream petroleum industry, renewable energy, energy conservation and efficiency and atomic energy applications.⁴⁸

Further, the Ugandan energy sector faces short and medium term challenges despite the significant structural reforms implemented in the power which are affecting the growth and development of the sector. UMEME Ltd has a huge mandate designated to it under the concession agreement though the company has failed to fulfil the fundamental terms and conditions therein. The power lost in the grid is continuous which affects the electricity sector. The power tariffs charged have increased from 100 Ugandan Shillings (USh) per kilowatt hour (kWh) since 1999 when the electricity sector was unbundling from the monopoly of the Uganda Electricity Board to about USh385 per kWh in 2011⁴⁹. The companies with tenders to supply power have not done their best there is insufficient power supply and electricity consumers continue to be billed on an exploitative estimation regime with power meters that are not tested.

In East African, Uganda's electricity tariffs are very high compared to other member states. Its pricing of power is categorised in four groups to mention; domestic, street lighting, commercial and industrial. Domestic consumers pay US Shs 751.7 per Kwh, street lighting costs USh364 per kWh, while commercial users pay USh358 per kWh. Medium industrial consumers pay USh333 per kWh, and large industries pay USh185 per kWh. If you compare these tariffs with Kenya, electricity consumers pay an equivalent of USh38 for the first 50 units (kWh). This kind of electricity subsidisation is key in attracting local consumers. The other categories of electricity tariffs are divided into three groups, costing between USh166 and 345 per unit. In other East African countries, domestic consumers in Tanzania pay an equivalent of only USh52 per unit and in Rwanda consumers are charged USh389 per unit.⁵⁰

It's hoped that with the discovery and production of oil in Uganda will save it from foreign dependence of petroleum imports. It's estimated that about 85 per cent of Uganda's petroleum

⁴⁸Sebbit et.al,*National domestic energy survey for Uganda, International domestic use of energy conference, cape town*, (2011)

⁴⁹Uganda Bureau of Statistics,*National Population and Housing Census*, (2014)

⁵⁰ Ibid

imports are channelled through Kenya, and about 15 per cent through Tanzania⁵¹. The transport from and to sea ports is very expensive. Uganda being a land locked country all its imported merchandise is delivered by road transport. Because of this problem, government is promoting the construction of the East African crude oil pipeline, the standard gauge railway and renovating the existing water transport machines.

One of the most significant problems in energy industry that is affecting the local market is smuggling of petroleum products from other countries. The Uganda Bureau of Standards introduced a bio code marking for all imported petroleum products in the year 2000. This was intended to reduce on the smuggling and alteration of petroleum products. Consumption of petroleum in Uganda currently stands at 550,000m³ per annum, and is low compared to Kenya and Tanzania⁵². Consumption of petroleum grew at an average of 14 per cent per annum between 1993 and 1996, then slowed down to about 6 per cent per annum from 1997.

Electricity remains an important element in the social and economic transformation of a fast growing population like Uganda. However, the country is going through a low electricity transformation as the electricity access remains low to about 19% overall and about 8% in rural areas. And about 3.2% of the total population has access to modern cooking fuels. The limited access to and cost of electricity has affected delivery of social services, constrained the development of small-scale industrial and commercial enterprises and disillusioned larger-scale industrial and commercial investment in the country.⁵³

LEGAL FRAME WORK

This Sections looks at the legal framework of energy laws governing electricity production and consumption in Uganda and ultimately how these laws are implemented issues such as energy poverty in Uganda. This section also discussed the land reforms on which these laws have been implemented.

The Ugandan legal framework for the energy sector is compartmentalized, with no general law addressing issues in the sector overall. This section reviews the legal framework and looks at programmes and plans underway in the legal framework for the energy sector.

⁵¹UMEME,*Annual Report, Kampala UMEME Ltd*, (2014)

⁵²Norton, *Real life energy use in the UK: How occupancy and dwelling characteristics affect domestic electricity use, Energy and Building*.(2008)

⁵³Lee,*Household energy mix in Uganda, Energy economics*, (2013)

5.6. The Constitution of the Republic of Uganda 1995 (As Amended)

The Constitution of the Republic of Uganda is the supreme law of the country that lays down all the governing laws and any law that contradicts it is rendered null and void. Article 45 of the Constitution recognizes the fundamental human rights of Ugandans, electricity is a public good and its access and utilisation by Ugandans is a right that should be recognized and protected at whatever cost⁵⁴. Further Objective XIV of the Constitution provides for the state responsibility to observe social justice and economic development to all Ugandans.

Therefore, every Ugandan is entitled to developments from energy resources and the government should plan for the whole country. Whereas companies such as UMEME are given contracts to transmit and distribute electricity, the purchase price of this power should be in relation to the economic state of the population as to enforce affordability. However, is this feasible? The answer is no because the unit cost of power is so high to be afforded by the demand market. The initiative to increase exploitation of renewable energy resource is a good idea, however the Government should implement tax initiative policies like tax exemptions and subsidization to both local and international energy producing countries as to have unit cost production low so that the entire population can afford.⁵⁵

The Constitution also establishes land ownership. Article 237⁵⁶ of the Constitution provides that land in Uganda belongs to the Ugandan citizens and vests in them in accordance with the land Tenure system. In particular, free hold, Mailo land, Customary and lease hold. Further Article 26⁵⁷ of the Constitution provides right to property. This right is limited to the ownership of land where there exist minerals below and above surface.

In such occasions, the land vests back to the government and the land owner is subject to compensation. In most cases where the government does evaluation of the land for compensations, the value is not adequate compared to the value attached to the subject land. A good example is the fishing community along the albert region where the King Fisher project is being established. The people that are being resettled from these lands to Buhhuka flats are being hit by the financial illiteracy and losing their economic livelihood of agriculture. Further Courts of Judicature have handled a number of cases in regards to land acquisition and

⁵⁴ The 1995 constitution of the Republic of Uganda as amended,

⁵⁵ The 1995 constitution of the Republic of Uganda as amended,

⁵⁶ The 1995 constitution of the Republic of Uganda as amended,

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

compensation by the state in the view of establishing energy plants, transportations of energy such as the EACOP (East African Crude Oil Pipeline) and so many other ventures.

5.7. Electricity Act, 1999.

This Act sets the legal basis for the industry's restructuring, including the establishment of the Electricity Regulatory Authority (ERA). Section 4⁵⁸ provides for the establishment of the Electricity Regulatory Authority. This law provides for the powers, functions administration of the Electricity Regulatory Authority in regard to generation, transmission, distribution, usage and sale and to license and control of the Electricity Activities as provided under Section 10 and 11 of this Act. Section 10 (f) ⁵⁹ states that the Electricity Regulatory Authority can establish a tariff structure and to investigate tariff charges. It is in my opinion and understanding that whatever established tariff structure should be able to translate into cash revenue that will not require the investor to resort to a capital subsidy as to increase the revenues to the state and profits to the company. The Electricity Act,⁶⁰ also provides for liberalization of the energy sector to create competition from generation, transmission, distribution and sale of electricity as established under the Short Title of the Electricity Act. ⁶¹ This led to the unbundling of UEB which was a monopoly in regard to managing generation, transmission, distribution, sale, export and import of electricity. Further, it led to attraction of different companies both local and international to join the sector at generation hence increased energy generation and not forgetting the role-played independent power producers (IPP) such as Bujagali Energy Limited, Hydromax, Jacobsen among others.⁶²

5.8. The Petroleum (Exploration, Development and Production) Act, 2013

This Act derives from Article 244⁶³ in effect to regulate petroleum exploration, development and production also to create the Petroleum Authority, and a new National Oil Company also to provide for cession of petroleum activities, and payment of royalties and indemnities arising from exploration activities. The purpose of the National Oil Company is to undertake the

⁵⁸ Electricity Act, Cap 145, Laws of Uganda, 2000.

⁵⁹ Electricity Act, Cap 145, Laws of Uganda, 2000

⁶⁰ Electricity Act, Cap 145, Laws of Uganda, 2000

⁶¹ Electricity Act, Cap 145, Laws of Uganda, 2000

⁶² Electricity Act, Cap 145, Laws of Uganda, 2000

⁶³The Petroleum (Exploration, Development and Production) Act, 2013.

commercial interests of Government in the oil sector as established under Section 43⁶⁴ whereas the Petroleum Authority regulates the oil sector as established under Section 10 of the Act. The law also provides for determination of the royalties, bonus payments, licensing fees, local content hence enhancing gross domestic product.

Further the law also establishes the environment resettlement measures such as decommissioning fund so as to deter the impact of the petroleum activities to the environment and this is established under Part VI of this Act. Sec 112⁶⁵ tasks the licensed company to file a decommissioning Plan to the authority and Sec 113⁶⁶ establishes the decommissioning fund. This fund is to aid in the execution of the decommissioning plan. The state participates through Joint Ventures with the international oil companies, through licensing and regulation as provided under Section 124 of the Act⁶⁷. Under these Joint Ventures, the state enters into Production Sharing Agreements (PSA) with the international Oil Companies (IOC) in which the bonus payments and royalties are determined. Ugandans participate in the oil industry as elaborated under Section 125⁶⁸ of the Act under the provision of goods and services by Ugandans.

Energy Policies

5.8. The Renewable Energy Policy for Uganda, March 2007

This policy document was approved by the cabinet on the 29th March 2007. This document is comprehensive establishing the objectives for promoting sustainable utilisation of renewable energy, principles and objectives of the government towards renewable energy. The document provides information on the growth and development of renewable energy resources. This policy provides for the feed in tariffs and power purchase agreements that are standardised for electricity generators below 20MW. The vision of this policy is to make modern renewable energy a sustainable source and part of the energy consumption pool. It's a good policy with support towards establishment of modern energy.⁶⁹

Under objective VI of this policy, the government pledges to have a sustainable development of Renewable Energy through different ways to mention but a few, create a Renewable Energy

⁶⁴The Petroleum (Exploration, Development and Production) Act, 2013

⁶⁵The Petroleum (Exploration, Development and Production) Act, 2013

⁶⁶The Petroleum (Exploration, Development and Production) Act, 2013

⁶⁷The Petroleum (Exploration, Development and Production) Act, 2013

⁶⁸The Petroleum (Exploration, Development and Production) Act, 2013

⁶⁹The Renewable Policy for Uganda, 2007.

Department and an Energy Efficiency and Conservation Department in the Ministry of Energy and Mineral Development, establish a National Energy Committee at the National Level and District Energy Committees and District Energy Offices at the Local Governments, among others. This will aid the growth and development and utilization of renewable energy.⁷⁰

5.9. National Oil and Gas Policy for Uganda (NOGP), 2009

The National Oil and Gas Policy were published in February 2008 by the Ministry of Energy. This policy recognises the impact cause by the influx of the oil wealth and provides a potential mitigation measure for this negative impact. This law establishes internationally recognised measures for managing such impacts and developing finite resources into sustainable development outcomes.⁷¹

The National Oil and Gas Policy provides for ways of optimising the value chain for oil and gas production for a long term national strategy. The main objective of the policy is to eliminate poverty and to create a long term lasting value to the Ugandans. The NOGP also suggests transparency when dealing with the natural resources and accountability to those who have interests in the development of natural resources as a guiding principle in Uganda's future governance framework.⁷²

The NOGP also emphasises access to information and openness as a right that impacts greatly to the communities and states. it is important for the stake holders to have access to information for the benefit of protecting their interests. The NOGP also gives a guideline to the roles that have to be played by the different stake holders for them to achieve accountability and transparency when dealing with oil and gas resources. Therefore this policy promotes accountability and transparency in all stages of oil and gas activities such as management of revenues, licensing and procurement. This is all done in line with accepted national and international financial reporting standards.⁷³

It important to note that he Civil Society Organisations are recognised by this policy. It provides for the roles to be played by theses organisation in regards to the transparency and

⁷⁰ The Renewable Policy for Uganda, 2007.

⁷¹ The Nation Oil and Gas policy for Uganda, 2008.

⁷² The Nation Oil and Gas policy for Uganda, 2008.

⁷³ The Nation Oil and Gas policy for Uganda, 2008.

accountability and the same applies to the Cultural institutions. In comparison to other sectors, however, the specific role of CSOs is relatively vaguely described.⁷⁴

The NOGP provides for the standards for the oil and gas management in Uganda. This document establishes the more of principles for management of oil and gas than governance guide. The NOGP provides for the collection and distribution of revenues at local levels and the roles of the civil society organisations.⁷⁵

⁷⁴ The Nation Oil and Gas policy for Uganda, 2008.

⁷⁵ The Nation Oil and Gas policy for Uganda, 2008.

CHAPTER SIX.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter is divided into three sections. The first section discusses the summary findings of the study and the second section looks at the conclusions on the basis of the findings of the study. The last section draws recommendations from the study.

6.1. Summary of findings

Making reference to the study findings, it is clear that there is energy poverty which prevents people from meeting basic daily needs such as cooking, lighting, heating, cooling, and communication all of which are necessary for an acceptable quality of life, lack of physical availability of certain energy types is a major contributing factor to problems of energy poverty in Uganda.

In addition, it was revealed that the Government has made efforts to subsidize connections to many households however, many residents cannot afford the initial connection fees, hence low access, despite an increase in grid electricity access over the last couple of years, a large number of the relatively widely dispersed rural population in Uganda is unlikely to be able to access the national grid in the near term and most of the residents in Uganda cannot afford modern sources of energy.

The results also showed that more than 85% of Uganda's population lives in rural areas, in a bid to reduce on energy poverty, the government emphasized construction of energy projects such as Isimba dam project in Uganda, however, this has still not yet improved on access of energy to the people and that the demand for electricity and other energy sources is declining due to the high tariffs.

6.2 Conclusion

In order for Uganda to attain a middle income status, electricity is very critical for this fast population growing nation. It's a well known that electricity accessibility is low in Uganda to about 19% overall and 8% in the rural area and about 3.2% have access to the modern cooking fuels. This limited access to electricity high electricity tariffs have facilitated inadequate development of the small scale industries, local enterprises and have caused financial losses

the large scale industries. Also, no investor will invest in a country with low electricity generation, high electricity tariffs and inadequate accessibility.

There are different reforms that have been implemented by the government such as unbundling of the energy sector which have improved the sector through competition and invitation of private players. This has improved electricity accessibility. However the government needs to make the electricity affordable to the users by reducing the tariffs this shall help in meeting the Sustainable Development Goal 7 of the universal affordable clean energy.

6.3. Limitations of the Study

While carrying out this study, the researcher encounters the following challenges;

6.4. Time Constraints

Since the researcher is in full time employment, there was delays in the distribution and collection of questionnaires because of work related constraints. Giving equal attention to both activities poses a challenge. However, this was overcome by hiring of 2 research assistants with a research competence background. These were given some basic training on how to go about the research.

6.5. Cost of the Research:

The research involved a lot of travelling and telephone calls to coordinate the distribution of questionnaires and telephone interviews, which necessitated financial cover. The researcher had to dig deeper into his pockets to facilitate the completion of the research.

The subject of this study is highly technical and covers new areas hitherto irrelevant. As such, there is lack of locally available data yet internet access is poor and expensive. Since the Electricity sector has more than one structure. luckily, I managed to acquire much of the information on line which helped a lot even although most of the government departments like ERA, UMEME and Local residents even though they had less information on my subjective topic.

Companies' policies:

Due to some companies' policies, it was difficult to get some data from some respondents, this explains why out of the 32 questionnaires administered only 26 were returned. It turned out that despite the assurances of non-disclosure and assigning academic research as

a reason some respondents called back with apology, as they could not fill the questionnaires due to what they called ‘reasons beyond my paygrade.’

However, since the response rate was above 82% (see section 5.2.1) more than average the study proceeded with the returned questionnaires and accordingly interpreted and applied the respective findings.

6.6. Insufficient literature

The study was hampered by availability of insufficient published literature in the field of energy, especially on the subject of an analysis of energy poverty in regard to the social and economic rights of the Ugandan population. Also, because of the political nature of Electricity sector and energy resource, some data could not be accessed not because it did not exist but because those holding it fear for their safety. Because of the technical nature of the processes and activities, even some of the relevant present literature was difficult to synthesize and contextualize on behalf of the researcher whose skills were still developing. Also, the culture of secrecy by most government and operator offices hampered the study due to the reluctance to release some the relevant information. It should not be ignored also that financial and time constraint restricted the researcher’s extent of inquiry.

6.7. Recommendations

It should be observed that when it comes to the planning for the electricity sector, the Ministry of Energy should be in charge of developing a coordinated master plan for the whole chain of electricity plan from generation, transmission, distribution and supply to expand the system. This plan should be done with the advice from other sector players with the valid contracts and the Electricity regulatory authority to ensure that investors meet the required needs for the sector growth good operation network.

More resources should be allocated to the Rural Electrification Agency to increase on the rural electrification in order to fund the free connection policy. It important to note that the role of Uganda Electricity Distribution Company Ltd should be limited to save funds for the Rural Electrification Agency. Also the government should subsidise on the electrification tariffs in order to reduce the costs. This shall encourage the domestic consumers to utilise electricity.

The Uganda Electricity Regulatory Authority should assert it to the operators of the distribution networks to employ advance technologies in order to reduce losses caused by loss of Electricity

in the Network. Also the authority should be seen to work by asserting its mandate and powers derived from the law before grant of the licences to the sector players. This means that the authority should evaluate these companies and monitor their performances that in case of any breach they face the consequences under the law. This shall reduce on the deployment of incompetent companies such as UMEME in the sector. This shall improve on the power availability and accessibility.

The government should look for other forms of payment other than the common take or pay arrangements' for the power purchase. This kind of arrangement has caused the government to pay for Electricity that has been unused because of the strictness of the power purchase agreements thus leading to losses of revenues or otherwise the paid for electricity can be consolidated in a way that it's given to the domestic users. This is a win-win situation.

Further, the government should encourage industrialisation through provision of tax incentives such as tax holidays; provide subsidisation and grants to both local and international companies. As a matter of fact, the industries are the biggest consumers of power in Uganda and this shall increase the revenues to the government. Furthermore the economic standards of the domestic population should be improved in order to increase the domestic consumption of power,

6.8. To future academicians

The study also intends to help future researchers in gaining an insight about the Uganda's energy sector and how this has been distributed and accessed by the population

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APPENDIX 1

A SELF-ADMINISTERED QUESTIONNAIRE

Dear respondent,

I am **KATO JUSTUS** from the Institute of Petroleum Studies Kampala pursuing a Masters of in Oil and Gas laws currently undertaking my research. I am currently conducting a study about “the effects of energy poverty on the social and economic rights of the Ugandan population”. I am therefore kindly requesting you to fill this questionnaire and the information given will be confidential and strictly used for academic purposes only.

PART 1: please tick or fill where applicable.

BACKGROUND INFORMATION

What is your gender?

a) Male

b) Female

c) other

2. Age of respondent

a) 20-30

b) 31-40

c) 41-50

d) 50 and above

2) which district do you come from

.....

3) For how long have you been a resident in in that district?

Less than one year

1-5 years

5-7 years

7 years and above

PART 2: Other Information

1. Are you in support of the view that there is lack of accessibility and affordability of electricity in your area ?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

2. Do you believe that the tariffs established by the Electricity Regulatory Authority are high?

- a) Large extent
- b) Medium extent
- c) Small extent

3. Is there low access to electricity in Uganda?

- a) No
- b) Yes
- c) Not sure

4. A high number of residents cannot afford to use alternative forms of energy?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

5. There is a challenge of high electricity charges in addition with low transparency of tariffs?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

6. Energy Sector does not have enough funds for financing projects?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

7. Do you believe that the high tariffs in the sub-sector have led to depressed demand and in the long run loss to the state?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

8. Do you agree that there is poor control and enforcement of energy provisions?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

9. Do you believe that the government has put effort to overcome the challenges?

- a) Agree
- b) Strongly agree
- c) Disagree
- d) Strongly disagree

10. To what extent has Uganda been able to achieve success in its strategies?

- a) Large extent
- b) Medium extent
- c) Small extent

11. What is the main challenge facing Uganda in its role within the energy sector?

- a) Economic challenge
- b) Globalization challenge
- c) Political challenge
- d) Financial challenge
- e) Others specify

APPENDIX 2: Interview Guide

1. Do you believe people in Uganda face challenges related to energy poverty?

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2. How has energy poverty affected the population in the two areas?

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3. In your opinion, is Uganda geographically accessible to have adequate power?

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4. Do you think most people can afford power tariffs or you do not think so?

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5. Do you think the government has done enough to reduce on energy poverty?

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6. Do you agree that the efforts put by government are effective in their goal?

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APPENDIX 3: TIME FRAME

	Aug 2020	Sep 2019	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	April 2021
Finish proposal preparation									
Approval of the proposal									
Ethical clearance & approvals									
Administrative approvals in study sites									
Reconnaissance visits to the study sites									
Development of research study protocols									
Develop (adopt), pre-test & modify research tools									
Hiring and training of Research Assistants									
Data Collection									
Data management and analysis									
Dissertation writing									
Preparation of manuscripts for publication									