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Presented by

NKUMBE ENONGENE REX

OVERCOMING THE CHALLENGES OF RURAL ELECTRIFICATION IN CAMEROON THROUGH STAKEHOLDERS' PARTICIPATION IN POLICY MAKING

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A Thesis Submitted to the Institute for Water and Energy Sciences
(including climate change) of the Pan African University
in Partial Fulfillment of the Requirements for the
Award of the Master of Science (M.Sc.)
Degree in Energy Policy

By

NKUMBE ENONGENE REX (B.Sc. (Hons) M.Sc. Political Science)
(PAUWES17/MEP05)

Supervisor: Prof. Hassan Qudrat-Ullah

October 2019

Pan African University

DECLARATION

I, **Nkumbe Enongene Rex**, hereby declare that this thesis represents my personal work, realized to the best of my knowledge. I also declare that all information, material and results from other works presented here, have been fully cited and referenced in accordance with the academic rules and ethics.

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CERTIFICATION

The undersigned certifies that they have r**e**ad and hereby recommend for the acceptance by the Pan African University Institute of Water and Energy Sciences, a dissertation entitled "**Overcoming the Challenges of Rural Electrification in Cameroon Through Stakeholders' Participation in Policy Making**", in fulfilment of the requirements of the award of the degree of Master of Science in Energy Policy (EP).

X _____

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DEDICATION

To the memory of my forebears

STATEMENT OF THE AUTHOR

By my signature below, I declare that this thesis/dissertation is my work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis, and completion of this thesis or dissertation. I have given all scholarly matter recognition through accurate citations and references. I affirm that I have cited and referenced all sources used in this document. I have made every effort to avoid plagiarism.

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BIOGRAPHICAL SKETCH

Nkumbe Enongene Rex is of Cameroonian nationality and is the first of five siblings. He grew up in Ekondo Titi where he did his primary and secondary education. After high school in Kumba, he moved to Buea. Enongene is a forward looking pragmatist and a crusader of development and social well-being. His commitment to local development is unwavering. He holds a Bachelor of Science (Hons.) Degree in Political Science and a Master of Science Degree in the same field, all from the University of Buea, Cameroon. A political Scientist by training, his zeal to delve into Energy Policy studies was inspired by the energy inequality existing in Cameroon and the energy security challenges the country is exposed to. Conducting his M.Sc. thesis on rural electrification challenges in Cameroon, he has acquired a mastery of the rural electrification sector. While at PAUWES, Enongene has acquired in-depth skills on Energy Planning, Security, off-grid and efficient solutions amongst others. He also masters the energy transition challenges, the EIA process and lobbying. He hopes to be of service to the African continent by applying his skills in the public and private sectors and the Academia.

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ABBREVIATIONS AND ACRONYMS

ADEID Action pour un Développement Équitable, Intégré et Durable

ADF African Development Fund

AER Agence d'Electrification Rurale

AfDB African Development Bank

ALUCAM

AU African Union

ARSEL Agence de Régulation du Secteur de l'Electricité

BAU Business as Usual

COPPER Comité de Planification et Programmation de l'Energie Rurale

EDC Electricity Development Corporation

ENEO Energy of Cameroon

ESRA Electricity Sector Regulation Agency

GENI Global Electricity Network Institute

IEA International Energy Agency

IPPs Independent Power Producers

IsDB Islamic Development Bank

JICA Japanese International Cooperation Agency

MINEE Ministère de l'Eau et de l'Energie

MWRE Ministry of Water Resources and Energy

MWRE Ministry of Water Resources and Energy

NC4D Nkong Credit for Development

NFC National Financial Credit

NGOs Non-Governmental Organisations

PANERP National Energy Action Plan for Poverty Reduction

REA Rural Electrification Agency

REEEP Renewable Energy and Energy Efficiency Partnership

REF Rural Energy Fund

RETs Renewable Energy Technologies

SDGs Sustainable Development Goals

SONEL Société Nationale d'Electricité

UNGA United Nations General Assembly

UNCHS United Nations Center for Human settlements

UNDP United Nations Development Program

UNEP United Nations Environment Programme

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ABSTRACT

Energy plays a pivotal role in shaping the growth of Cameroon and in its drive to become an emergent economy, the country's Vision 2035 does not fail to underscore the importance of this resource. With only about 20% of rural electricity access in the country, about 46% of the country's population risks economic stagnation. Since the creation of the Rural Electrification Agency in 1998, rural electrification rates have improved from 10.7% in 1997, to 20% in 2017. This slow growth in rural electrification access rates triggers this study by asking why there still is a slow rate of rural electrification in Cameroon. The objectives are to find out the challenges to rural electrification in Cameroon and propose a model for rural electrification. Being guided by the stakeholder theory, the study used the survey research design. With the study being qualitative, data collection was through primary and secondary sources with the semi-structured interview and personal observations as instruments for primary data collection. Imploring the purposive sampling technique, a sample of 10 respondents were selected for this study and data was analysed through in-depth content analysis. Findings showed the barriers to rural electrification in Cameroon to include limited co-ordination of the rural electrification sector, Lack of powers by the Rural Electrification Agency to make rural electrification policies, lack of funds, lack of grassroots and other stakeholder participation in the policy making process, insecurity and reliance on grid extension for rural electrification. It was recommended that a bottom-up rural electrification policy making process be adopted with the proposed model applied, decentralised generation should be promoted, subsidies and tax exemptions should be provided for RET equipment being imported into the country. Information, funds and technical expertise should be made available to local banks and cooperatives.

Keywords: Decentralised generation, energy policy, grid, off grid, rural electrification.

RÉSUMÉ

L'énergie joue un rôle central dans la croissance du Cameroun et dans sa volonté de devenir une économie émergente, la Vision 2035 du pays ne manque pas de souligner l'importance de cette ressource. Avec seulement 20 % environ de l'accès à l'électricité dans les zones rurales du pays, environ 46 % de la population du pays risque la stagnation économique. Depuis la création de l'Agence d'électrification rurale en 1998, les taux d'électrification rurale sont passés de 10,7% en 1997 à 20% en 2017. Cette lente croissance des taux d'accès à l'électrification rurale déclenche cette étude en se demandant pourquoi le taux d'accès à l'électrification rurale est encore faible au Cameroun. Les objectifs sont de découvrir les défis de l'électrification rurale au Cameroun et de proposer un modèle d'électrification rurale. Guidée par la théorie des intervenants, l'étude s'est appuyée sur le plan de la recherche par sondage. L'étude étant qualitative, la collecte des données s'est faite auprès de sources primaires et secondaires, l'entrevue semi-structurée et les observations personnelles servant d'instruments pour la collecte de données primaires. En appliquant la technique de l'échantillonnage dirigé, un échantillon de 10 répondants a été sélectionné pour cette étude et les données ont été analysées au moyen d'une analyse approfondie du contenu. Les résultats ont montré que les obstacles à l'électrification rurale au Cameroun comprenaient une coordination limitée du secteur de l'électrification rurale, le manque de pouvoirs de l'Agence d'électrification rurale pour élaborer des politiques d'électrification rurale, le manque de fonds, le manque de participation de la base et autres parties prenantes dans le processus décisionnel, l'insécurité et la dépendance de l'électrification rurale par l'extension du réseau. Il a été recommandé d'adopter un processus ascendant d'élaboration des politiques d'électrification rurale en appliquant le modèle proposé, de promouvoir la production décentralisée et de prévoir des subventions et des exonérations fiscales pour les équipements des TER importés dans le pays. L'information, les fonds et l'expertise technique devraient être mis à la disposition des banques et des coopératives locales.

Mots-clés: Production décentralisée, politique énergétique, réseau, électricité hors réseau, électrification rurale.

1. GENERAL INTRODUCTION

1.1 Background to the Study

Electricity and clean energy access is necessary for any society's development. Clean energy access is instrumental for economic activity, absolute health and wellbeing of communities (Chaurey & Kandpal, 2010). Meeting this energy needs is very necessary in order to attain the United Nations Sustainable Development Goals of which energy itself is one of them (UNGA, 2015). About 1.1 billion people worldwide lack access to modern electricity services. About 2.8 million people in developing countries spend several hours every day building fires, grinding grains, fetching water and collecting fuel for their cooking and heating stoves. Each year, approximately 4.3 million premature deaths occur due to household air pollution exacerbated by burning solids the traditional way. Without access to sustainable energy, development goals cannot be achieved (IEA, 2017). Access to electricity is particularly crucial to human development, as certain basic activities—such as lighting, refrigeration, running household appliances, and operating equipment—cannot be easily carried out using other forms of energy (Crousillat, Hamilton, & Antmann, 2010). It is estimated that 85% of the 1.2 billion people in the world living without access to electricity reside in rural areas, which is attributable to the marginalisation of the poor as well as their long distance from established electrical grids (Javadi, Rismanchi, Sarraf, Afshar, Saidur, Ping & Rahim, 2013). Sub Saharan Africa has 588 million people without access to electricity and has the highest rate of persons without access worldwide (IEA, 2016).

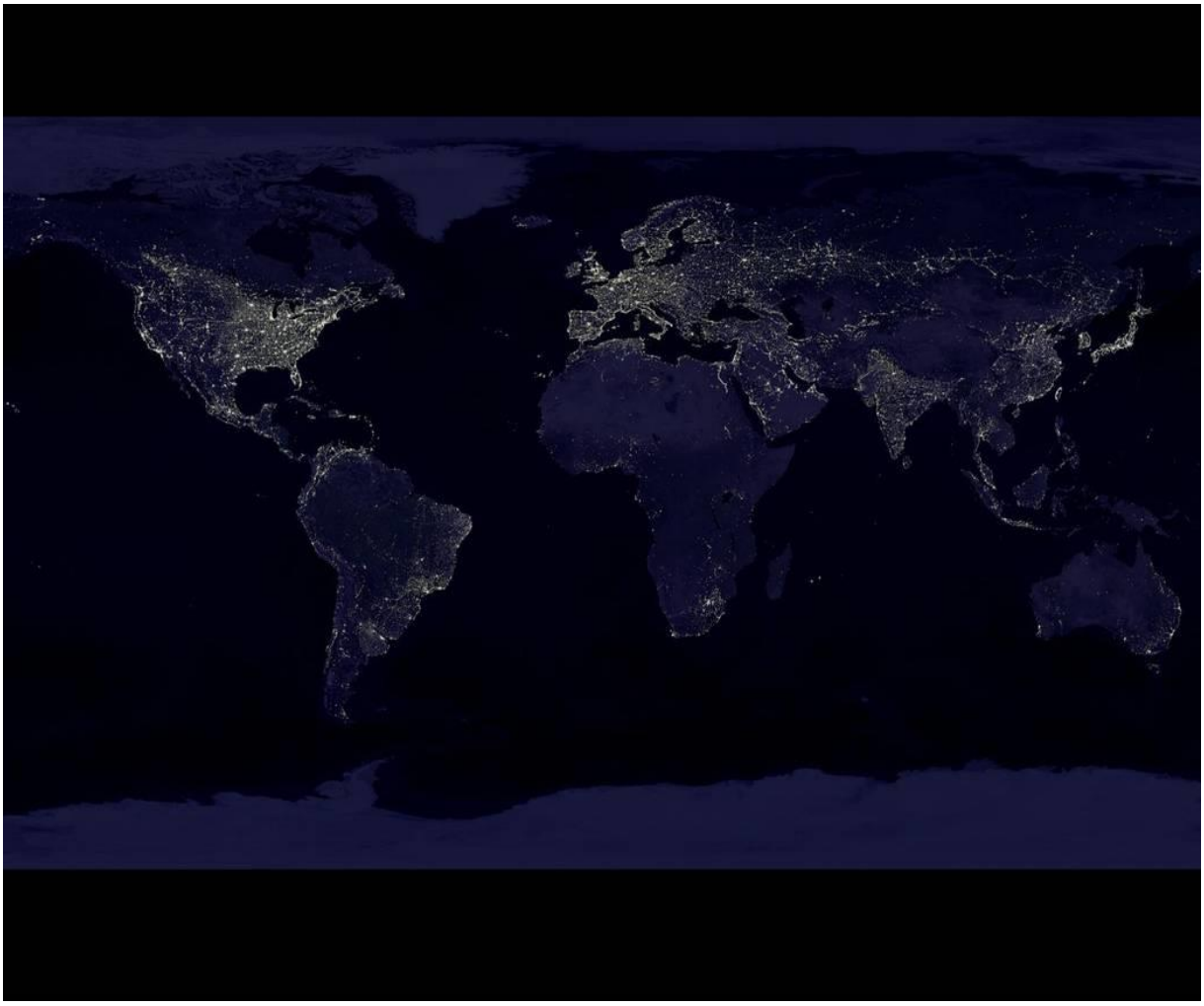

Figure 1: Energy Poverty Map (Burrows, 2017)

Cameroon is endowed with a great potential of energy resources: oil, natural gas, bauxite (iron ores), forestry, hydropower, wind, solar, biomass and geothermal. However, these resources have not been adequately harnessed especially renewables. The main sources of commercial energy in Cameroon are: hydropower, coal and petroleum, with 90% of the population using biomass (wood) for cooking, heating and lighting in remote areas (Buzanakova, 2014). The energy sector of Cameroon is diverse but despite the availability of these resources, Cameroon's economy is powered mainly by hydropower for electricity generation and petroleum products for transportations. Fossil products (paraffins) are mostly used in remote areas of the country where energy access is very low. In terms of energy consumption, the majority of energy used in the country comes from biomass and mainly traditional biomass.

1.2 Problem Statement

With the lowest levels of energy access and human development globally (UNDP, 2012), inadequate electricity services are perceived to be a primary barrier to socioeconomic development in Africa (Onyeji, Bazilian & Nussbaumer, 2012). Energy in Cameroon plays a pivotal role in shaping the economy of the country and in its drive to become an emerging economy, the country's Vision 2035 does not fail to underscore the importance of this resource. With reserves of oil and natural gas, Cameroon is following new policies to improve and develop the sources of energy. A rise in global competition has led to the expansion of the energy sector in Cameroon. Energy in Cameroon comprises of its oil and natural gas reserves, hydroelectric energy and other renewable resources. Major sources of commercial energy in Cameroon are petroleum, hydropower and charcoal. 90% of population use traditional solid fuels in residential sector for heating, light and cooking. According to different estimations between 65% and 88% of the urban population has access to electricity. Only about 14% of rural population has access to electricity. Cameroon has a potential number of renewable energy sources (IEA, 2014). Hydropower dominates electricity generation in Cameroon with 74.9%, with an installed capacity of 1558 MW in 2009. In 2015, total electricity generation was 6758 GWh and sectorial consumption was 5784 GWh, industry is the highest electricity consumer with 55.2%. By 2020, the Government aims to achieve a 48% countrywide electrification rate, a 75% electricity access rate and a 20% rural electrification rate (REEP, 2013).

Despite the moderate electricity access levels in Cameroon compared to neighboring countries, very few rural facilities (schools, clinics, businesses etc.) are electrified and electrification is mainly through grid extensions, which are often expensive, time consuming as it involved only government initiation, development and implementation. This lengthy government process mostly involved adopting laws and policies, budgetary allocations and adoptions in parliament, tenders and contracts awarding which are most often very corrupt in the African settings, delays in effective implementations for political reasons and the setting up of special agencies to manage such processes of which powers are never given to the agency to act directly still controlled from above. A true example of such agency is the Rural Electrification Agency (REA) in Cameroon in charge of development and implementations of

rural electrification projects of diverse origins which receives instructions from the Ministry of Water and Energy Resources of Cameroon. The Agency ensures the promotion and development of rural electrification across the national territory. It is especially in charge, in conjunction with the administrations, public and private agencies concerned, of contributing to the elaboration and implementation of Government policy in the domain of rural electrification in Cameroon (REA, 2015).

With rural electrification rates at 10.7% in 1997, The REA was created through Law No. 98/022 of 24th December, 1998 governing the electricity sector in Cameroon. Laden with the task of improving rural electrification rates in Cameroon for 20 years now, with rural electrification rates at 20%, one is tempted to ask the question; why is there still a low rural electrification rates in Cameroon?

1.3 Research Questions

To address the problem highlighted in this study, the following question will guide this study;

- How can rural electrification access be improved in Cameroon?
- What are the implications of no electricity access on rural areas like Mongossi?
- What factors hinder the improvement of rural electricity access in Cameroon?

1.4 Research Objectives

In answering the aforementioned question, this study sought to attain the following objectives;

- To ascertain the impacts of no electricity access on rural areas like Mongossi.
- To identify the factors hindering the improvement of rural electricity access in Cameroon.
- To design a conceptual model for increasing rural electrification rate in Cameroon.

1.5 Significance of the Study

Limited studies have been carried out on how relevant stakeholder participation is to the success of rural electrification policies in Cameroon. This research work will help increase the available body of knowledge in rural electrification policy making process of Cameroon. The research will be of great importance to policy makers by enabling them to analyse how best stakeholder can be engaged in policy making in Cameroon. The study will enable a concise assessment of the effectiveness of rural electrification policies in Cameroon.

It will help ascertain the impact of stakeholder participation in the policy making processes for rural electrification. It will also identify factors hindering the improvement of rural electricity access in Cameroon. The proposed conceptual model to be established will be an important guide to increasing rural electrification rate in Cameroon.

1.6 Scope and limitations

1.6.1 Scope

This work is limited between the periods of `1998-2019. 1998 was chosen as the take-off date because that is the Rural the Act creating the REA was enacted. This act created a body charged with promoting rural electrification. 21 years later, it is very important for us to access the challenges still stalling the fulfilment of this mandate of REA.

This study is concerned with Cameroon's rural electricity sector. It goes further to look at the challenges which Cameroon faces in providing electricity access for all, in line with SDG 7. The work equally proposes a stakeholder framework to enhance the rate of rural electrification progress in the country by involving relevant stakeholders in the electrification sector.

1.6.2 Limitations

Some government officials who were expected to participate in the study through interviews were reluctant to do so; most of those who accepted to be interviewed also compelled the researcher to ensure their identity be kept secret.

Being that the electricity sector in Cameroon is too vast, the researcher had to risk travelling on bad roads in order to have access to different respondents.

1.7 Organisation of the study

The study shall be organised into five chapters, chapter one will introduce the study by providing the background to the study, statement of problem, research questions, objectives of study, research hypothesis, significance of the study, scope and limitation of the study, definition of key terms and organisation of the study.

Chapter two shall review relevant literature and the theoretical framework.

Chapter three will present the research methodology of the study.

Chapter four will contain the data collection, analysis and interpretation.

Chapter Five will provide the summary of findings, conclusion and recommendations of the study followed by references and appendices.

1.8 Conclusion

The first chapter was the introductory chapter of the work which opens up the study, states the problem, research questions and objectives of the study. The chapter also delineates the scope, identifies the significance, limitations and the organisation of the entire study.

2. LITERATURE REVIEW

2.1 Introduction

This chapter covers two major sub chapters which are the review of related literature and the theoretical framework. Through this chapter, selected literature shall be discussed thematically and critically analysed to give the current study perspective and context. In particular, we will review literature on (i) public policy and decision making, (ii) Stakeholder theory, (iii) Cameron's Electricity sector and Evidence-based Decsion Making framework.

2.1: Background Concepts

Policy: a policy is a set of well drafted and designed plan of action addressing a specific issue towards attaining desired goals.

Rural areas: these are areas remotely located from urban centres and often characterised with unpaved roads.

Stakeholder: this refers to person or persons who can influence or be influenced by a policy or decision.

2.2 Review of Related Literature

Public Policy and Decision Making

Public policy has become a central topic of discussion in government attempts to meet the needs and services of their citizens across all countries. Policies follow a particular purpose for they are designed to achieve set goals and provide solutions to societal problems. More precisely, policies are government statements of what it intends to do or not to do, including laws, regulations, decisions, or orders. Public policy, on the other hand, is a more specific term, which refers to a long series of actions carried out to solve societal problems (Newton & van Deth, 2010). Hence, (public) policies can be conceived of as the main output of political systems. Policies can be classified in to several categories including;

1. **Distributive policies** relating to measures which affect the distribution of resources from the government to particular recipients.
2. **Redistributive policies** which are based on the transfer of resources from one societal group to another.
3. **Regulatory policies** which specify conditions and constraints for individual or collective
   behavior.
4. **Constituent policies** which create or modify the states' institutions.

The typology's main objective is to offer scholars support in building more specific theories since each of these four policy types is related to a varying degree of costs and potential opposition when the governments seek to modify the status quo (Knill & Tosun, 2011).

Wilson (1995) distinguishes between policies on the basis of whether the related costs and benefits are either widely distributed or narrowly concentrated. Each of the four possible combinations yields different implications for policy making. When both costs and benefits of a certain policy are widely distributed, a government may encounter no or only minor opposition, indicating majoritarian politics as the likely outcome. When, by contrast, both costs and benefits of a certain policy are concentrated, a government may be confronted with opposition of rivaling interest groups, which signals interest group politics. If costs are, however, concentrated and benefits diffused, a government may encounter opposition from dominant interest groups. In this case, entrepreneurial politics are the probable outcome. This implies that policy change requires the presence of 'political entrepreneurs' who are willing to develop and put through political proposals despite strong societal resistance. The fourth scenario entails a situation whereby costs are diffuse and benefits concentrated. In such a case, governments are likely to be confronted with a relevant interest group that is favourable to its reform endeavour, indicating that clientelistic politics is the likely outcome.

With the emergence of public policy as an academic discipline in the United States in the 1970s and 1980s, scholars seeking to understand public policy have often investigated 6 key elements (actors, institutions, networks/subsystems, ideas/beliefs, contextual factors and events) that interact in what is known as policy process (Cairney & Heikkila, 2014). The concept of policy process avails the idea that public policies are shaped at all stages by

different types of actors and institutions. These actors can establish relationships (be they formalised networks or not) according to their beliefs/interests in the defense of an idea, their actions being affected by the context in which they operate and influenced by external events. As such, analyzing the policy process entails understanding how these 6 factors interact and influence the trajectory of public policies throughout their phases or stages. As a result, Weible and Carter (2017: 27) argue that studying the policy process implies analyzing "*interactions that occur over time between public policies and actors, events, contexts, and outcomes*."

Policy making is a long term public decision making process with six main complexities:

(i) The use of public resources and commons;
(ii) the involvement of multiple stakeholders in a "de facto" participative process;
(iii) The long time horizon;
(iv) The requirements of legitimation and accountability;
(v) The need for the deliberation act of deciding (including not deciding)
(vi) The impacts of decisions (De Marchi, Lucertini, & Tsoukiàs, 2016; Tsoukiàs, Montibeller, Lucertini, & Belton, 2013).

Decisions are made by individuals at all levels of an organisation which include choosing from two or more alternatives. Despite the fact that decision-making is often described to mean choosing between alternatives and this view is too simplistic. Effective decision making requires system thinking. A system is a set of interrelated and interdependent parts arranged in a manner that produces a unified whole. If we apply this thinking to decision-making we understand that there will be many economic, political, social and environmental factors both formal and informal which can have an impact on any decision-making process. Therefore, existing within a system, current policy decisions are not independent of decisions taken before, and policies under discussion today may have 'knock-on effects' leading to further policies tomorrow (Newton & van Deth, 2010).

Electricity situation in Cameroon

For more than a decade now, Cameroon has experienced a strong economic growth (growth rate of 5.9% in 2015), accompanied by a rapid increase in demand and consumption of electricity. National access to electricity increased from 37% in 1996 to 46% in 2002 and to 48% in 2007, above the average for Africa's resource-rich countries. According to different estimations between 65% and 88% of the urban population has access to electricity. Only about 14% of rural population has access to electricity. Hydropower accounts for 70% of the total electricity produced in the whole country.

Electricity demand

In 2015, electricity consumption represented 5784 GWh of which 20.1% was consumed by households, 23.2% by commercial service and 55.2 % by the industrial sector.

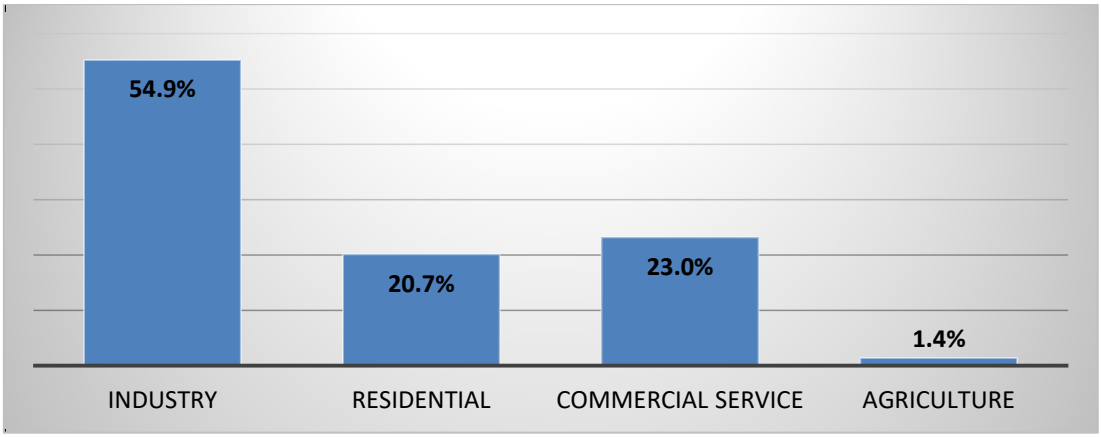

Figure 2: Cameroon electricity consumption by sector in 2014 (IEA, 2014a)

Nearly 60% of the electricity produced goes to the aluminum smelter at Edéa ALUCAM leaving just 40% for the remaining population. In 2007, the lowest covered region in electricity was the Far North, while the highest coverage rate was recorded in the South. Agglomerations of Yaoundé and Douala have the most beneficial coverage rate. For these regions, this rate of coverage had an average of 48.3% in the same year and proved to be 3.9 times higher in urban than in rural areas. The poorest regions, with the most critical poverty index appeared to be underserved in electrical energy. These regions were: the Great Northern regions (far North and North) and East region.

For each of the selected sectors (industry, tertiary buildings, residential and households), an analysis of electricity consumption and its forecast evolution were carried out, based on the trends of the past ten years, in order to compare the projected electricity consumption with a so-called business as usual (BAU) situation : to construct such a BAU scenario.

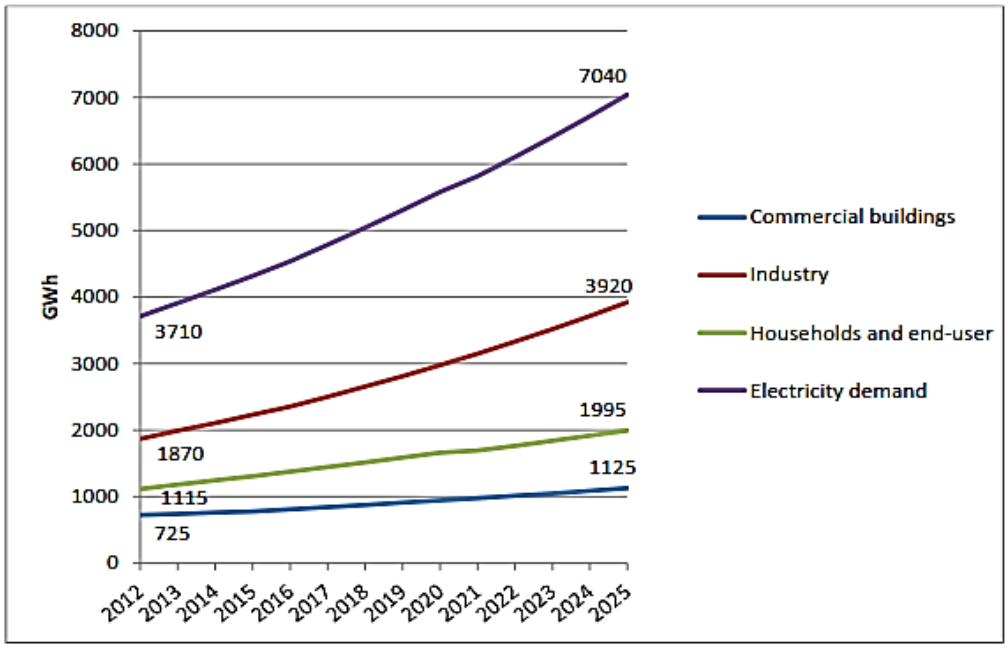

Figure 3: Consumption Projections on BAU (Business as Usual) baselines (Fuss, 2013)

This growth in demand for electricity is expected to continue rising over the next decade as seen in the 2012–2025 demand forecast (Fig. 11.), using business as usual scenario (BAU). The supplier of electricity (ENEO), responsible for the overall electricity system management (production, transmission and distribution), is actually struggling to meet the growing demand for power but is currently incapable of satisfying all needs especially during peak periods.

Electricity Production

Cameroon electrification rate is moderate despite limited access and affordability in most remote communities. The country presently has an electrification rate 55% with 10 million people without access to electricity in 2013. The urban and rural electrification rate was 88% and 17% in 2016, respectively. In 2015, total electricity production represented 6758GWh with a total installed capacity of around 1925.86 MW (on grid and off grid). Hydropower dominate electricity generation in Cameroon with 74.9%, followed by self-production 22%,

with an installed capacity of 1558 MW in 2009. Apart from hydropower as the main installed capacity, 298 MW currently results from thermal power plants. Biomass electricity production potential for Cameroon is estimated at 1072 GWh (IEA, 2014b)

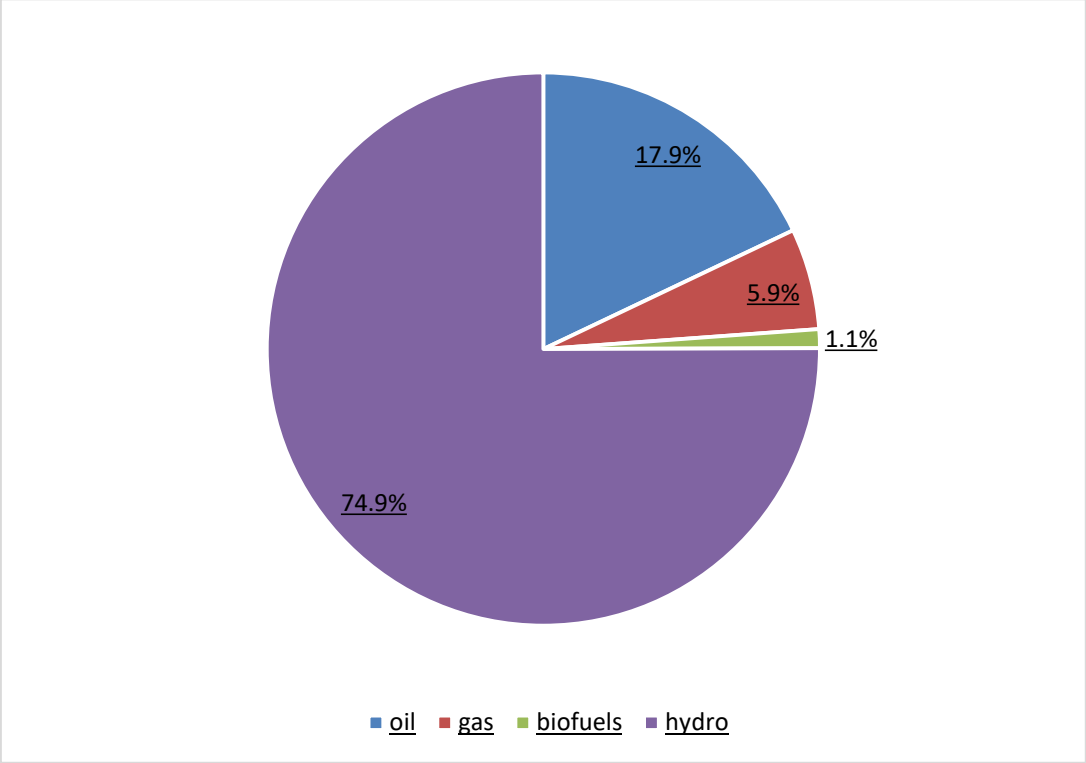

Figure 4: Cameroon's energy generation by sources in 2015 (IEA, 2014a)

Hydropower plays a major role in Cameroon's energy sector with 75% of electricity generation. According to Lighting Africa Policy Report 2012, the introduction and proper implementation of off-grid, low cost, reliable and durable lighting options (including renewables) in Cameroon will result in rapid growth in electrification rates and energy access in the rural and urban between 2010 and 2025. This is illustrated in the model growth of electricity access in Cameroon between 2010 and 2025.

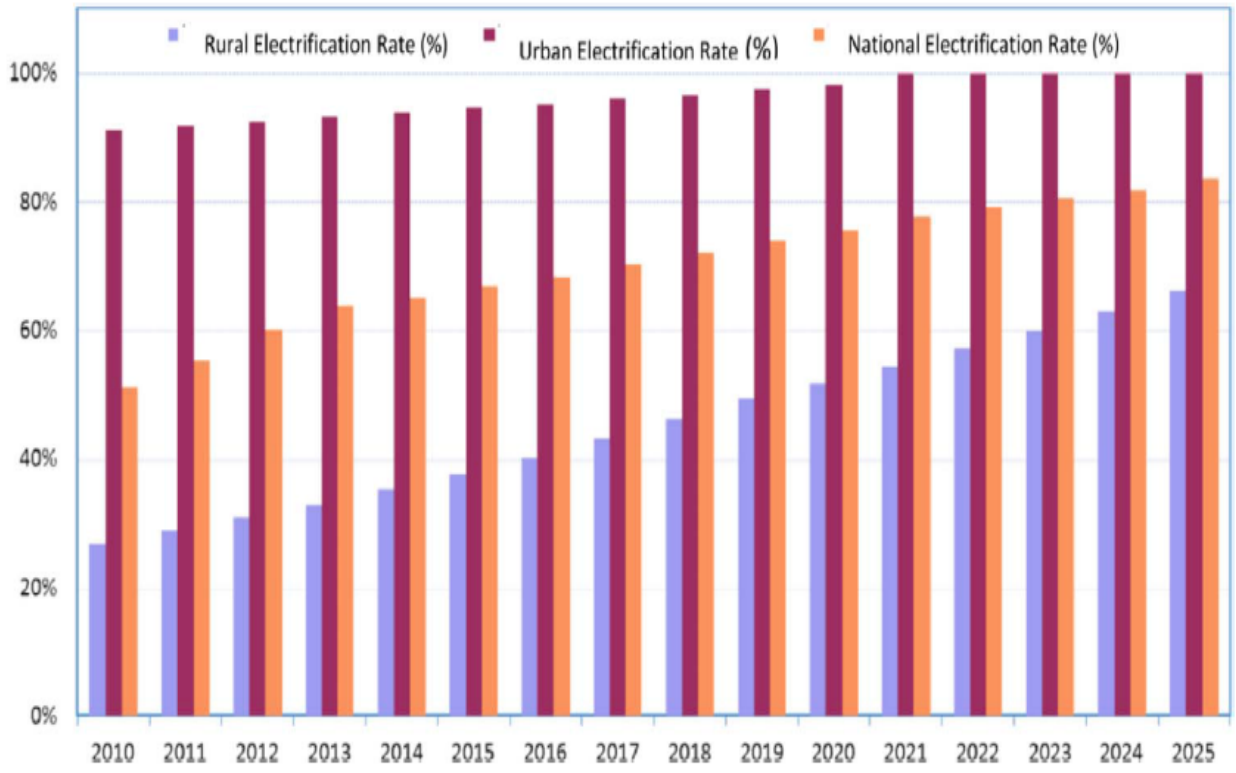

Figure 5: Model growth of electricity access in Cameroon between 2010 and 2025 (Lighting Africa, 2012)

Cameroon has an on-grid total installed capacity of around 1323.96 MW, of which approximately two thirds is hydropower and the rest is thermal (604.96 MW). Cameroon's hydropower installed capacity has not varied widely since the early 2000s. Cameroon counts with three large scale hydropower plants with a total capacity of 719 MW which consists in three plants; Song Loulou (384MW), Edéa (263 MW) and Lagdo (72 MW) combined with three upstream reservoirs on tributaries to the Sanaga river (Mbakaou, Mape, Bamendjin) with a total storage capacity of 7.6 billion cubic meters.

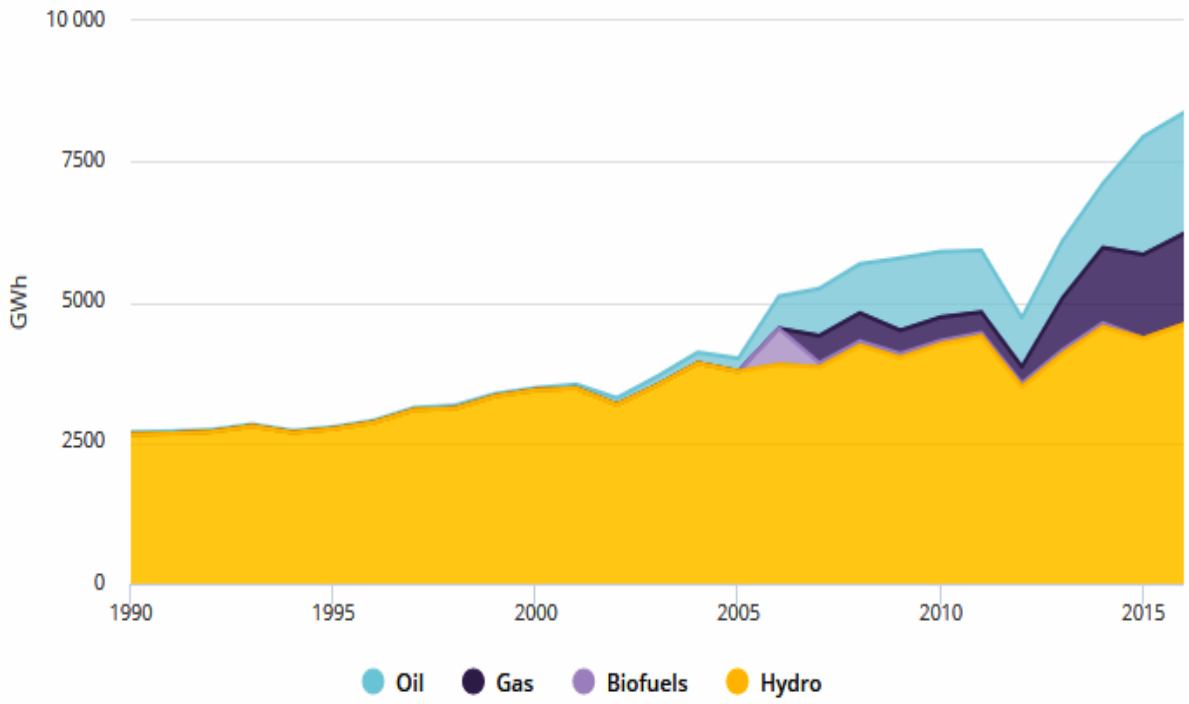

Figure 6: Electricity generation by source(IEA, 2016)

In 2010, additional 586 MW of thermal capacity were installed for self-generation, of which 562 MW are onshore and 24 MW are offshore. Furthermore, there are 26 isolated diesel grids with a total installed capacity of 15.3 MW and a total power output in 2011 of 42,765 MWh. A number of micro- and pico-hydropower projects with a total installed capacity of 515.5 kW have also been developed by Action pour un Développement Équitable, Intégré et Durable (ADEID). The country's installed capacity stand at 1442MW (Business in Cameroon, 2018).

Electricity Sector structure in Cameroon

The present existing structure and legal framework of the electricity sector in Cameroon is a product of progressive reforms of 1998 and 2011. The 1998 Electricity Law3 was succeeded by a complementary Electricity Decree in 2000. These laws enabled the liberalisation and privatisation of Société Nationale d'Electricité (SONEL), the state-owned power utility. In 2001, AES purchased a 56 percent share of SONEL, creating AES SONEL. As part of the privatsation, AES SONEL and the Cameroon state signed a concession agreement (Castalia, 2015). In 2014, AES sold its interest in AES SONEL to Actis. The company was renamed ENEO Cameroon. ENEO Cameroun operates three distinct grids:

- The Southern Interconnected Grid: a 225kV network connecting the major hydropower stations to large aluminum factories as well as Yaoundé and Douala, the country's largest cities and main consumption areas

- The Northern Interconnected Grid: 110kV and 90kV structures dispatching the power generated by Lagdo power station to cover the region's modest demand

- The Eastern Interconnected Grid: a low voltage distribution grid of 30kV.

A map showing the major existing network and load centers is presented in Figure 7

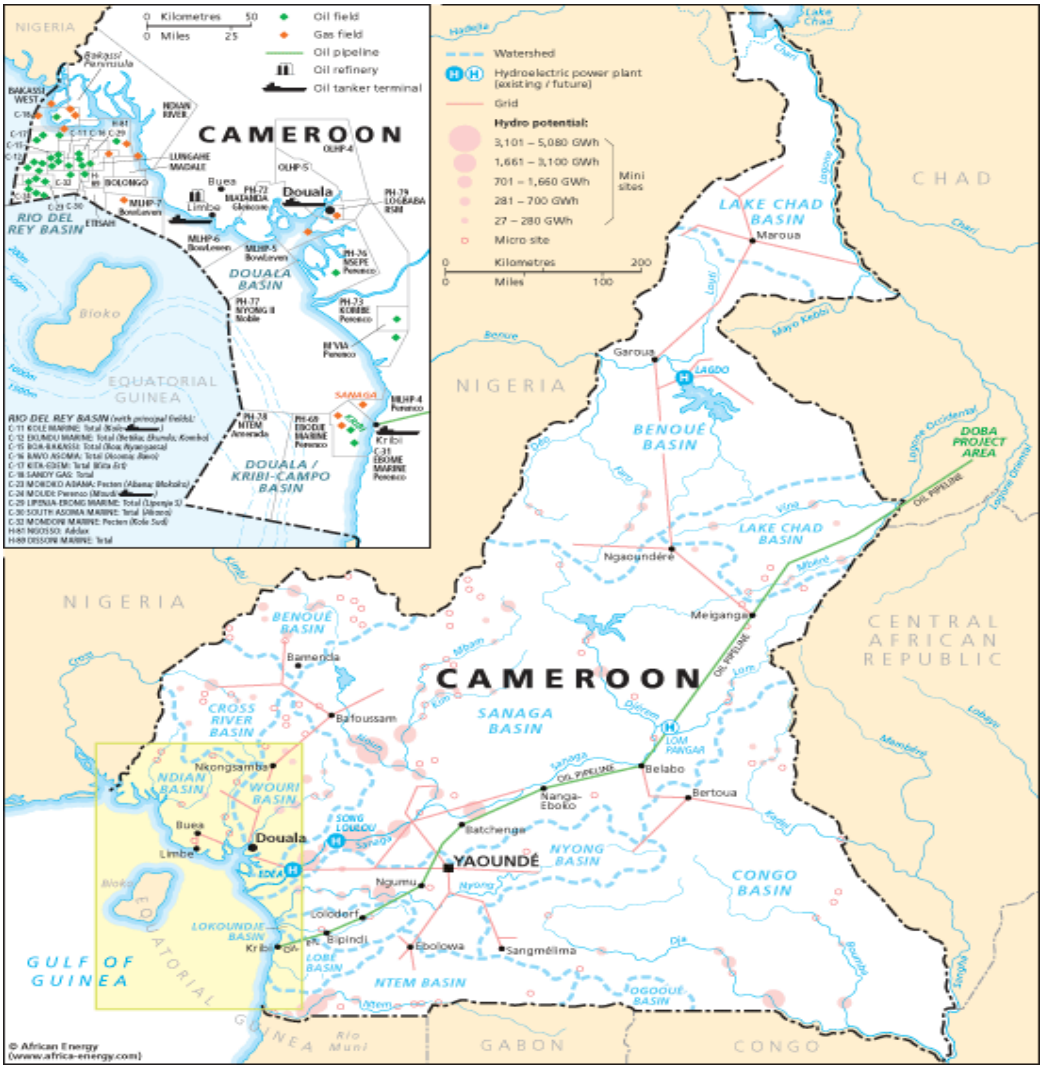

Figure 7: Existing network and load centers in Cameroon ***(GENI, nd)***

Other Important Electricity Sector Actors

Other than ENEO, the main entities in the power sector in Cameroon include:

- **Ministry of Water Resources and Energy** (Ministère de l'Eau et de l'Energie, **MINEE**): The MINEE is responsible for implementing government action in the energy sector and monitoring energy sector activities

- **Rural Electrification Agency** (Agence d'Electrification Rurale–**AER**): AER promotes and develops rural electrification projects across the country by providing financing to communities and operators. AER is a public institution established by Decree in 1999 (Decree 99/193 of 8th September 1999). AER is under the technical authority of the MINEE and the financial supervision of the Minister of Finance . In 2013, a Decree of the President of the Republic reinforced the AER mission (Decree no. 2013/204 of 28th June 2013). AER's tasks and responsibilities were identified more precisely in the decree's section on rural electrification.

- **Rural Energy Fund (**Fond Énergie Rurale **–REF):** REF was created by presidential decree in 2009. It is not a legal entity and is managed by AER. The main purpose of REF is to grant a partial subsidy to priority investment programs involving rural electrification.

- **Electric Sector Regulation Agency** (Agence de Régulation du Secteur de l'Electricité–**ARSEL**): ARSEL was established by the 1998 Electricity Law governing the electricity sector. Decree N°. 99/125 of 15th June 1999 organises the functioning of ARSEL in regulating the electricity sector. Its principal tasks are to:

    - monitor the sector's activity

    - approve tariffs and determine electrical standards

    - examine concession and license applications

    - authorize electricity generation and distribution

    - protect consumers; and

- promote competition and facilitate private sector involvement in the sector.

- **Electricity Development Corporation** (**EDC**): EDC is a state-owned company created by decree (Decree no. 2006/406 of 29th November 2006) that develops the electricity sector including all hydroelectric projects in the country. EDC is mainly in charge of building and operating of dams as well as operation and maintenance of storage dams (barrage-réservoirs).

The purposes of EDC are to:

- manage, on behalf of the State, public assets in the electricity sector;

- study, prepare or implement any infrastructure project in the electricity sector assigned by the State

- promote and develop public and private investment in the electricity sector.

- **The Committee of Planning and Programming of Rural Energy (COPPER):** The Committee of Planning and Programming of Rural Energy (Comité de Planification et Programmation de l'Energie Rurale) was established by presidential decree in 2009. It has as main purpose ensuring the proper allocation of resources and subsidies administered by the FER. The COPPER is chaired by the Minister of Water and Energy.

The power market structure in Cameroon is presented in the figure below.

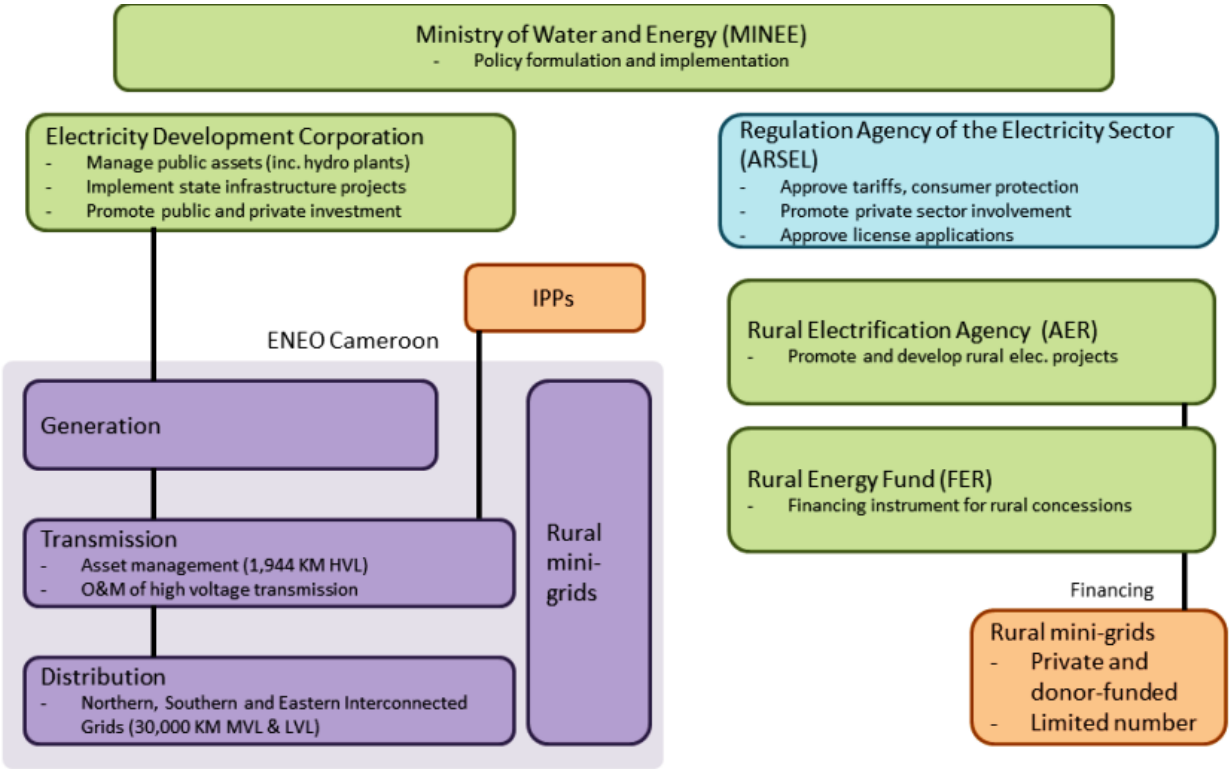

Figure 8: Cameroon Power Market Structure (Source: Adapted from Cascadia, 2015)

Rural Electrification in Cameroon

Rural electrification is the process of providing electricity access to households or villages in remote areas. It includes the provision of electricity to areas with highly dispersed potential consumers and low demand (Niez, 2010). Rural electrification may include village level input into the social and economic development, utilised by households, farms, and establishments. It is likely to lead to socio-economic changes such as employment, incomes, productivity especially in agriculture.

Research in rural electrification show the potential for private and semi-private actors in enhancing access to energy in poor remote, inaccessible areas. The poor returns and technical difficulties in rural electrification call for the need to establish an autonomous division within the utility and devolving more responsibility to the local organisations such as local communities and cooperatives (Hisham, 2010). Here, the author highlights an important role the private and semi-private actors can play in rural electrification.

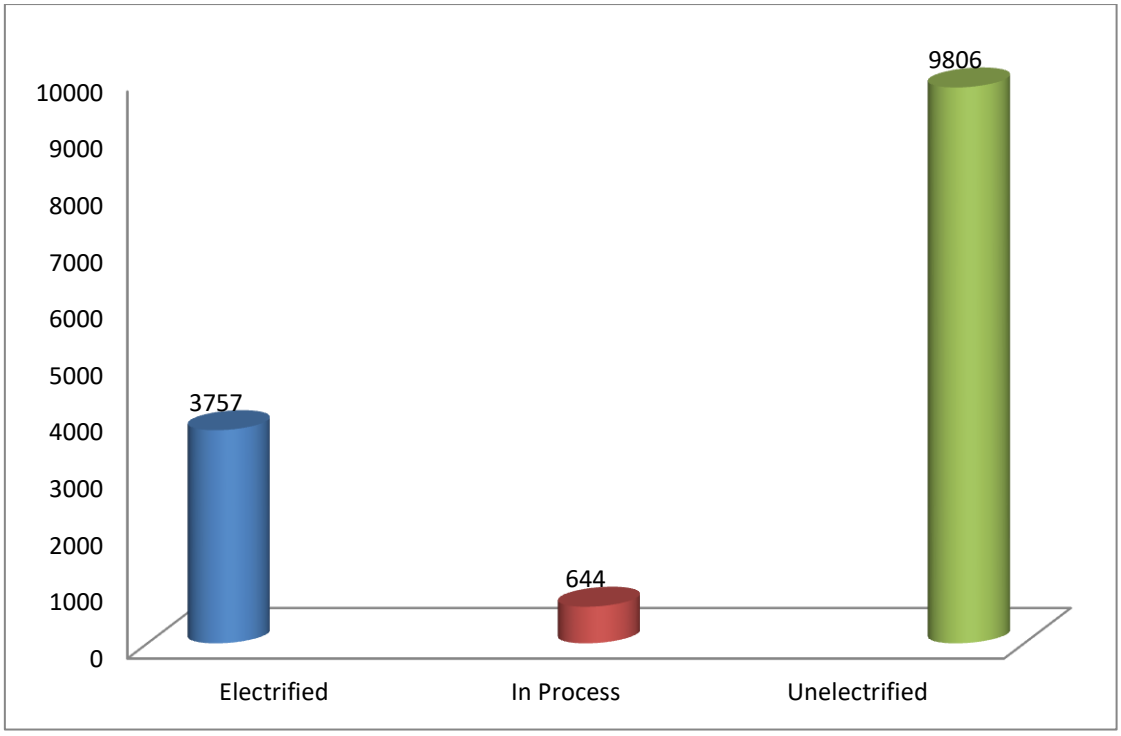

Figure 9: Rural Electricity Situation in the 14,207 identified Localities (Source: Adapted from the Rural Electrification Master Plan, 2016)

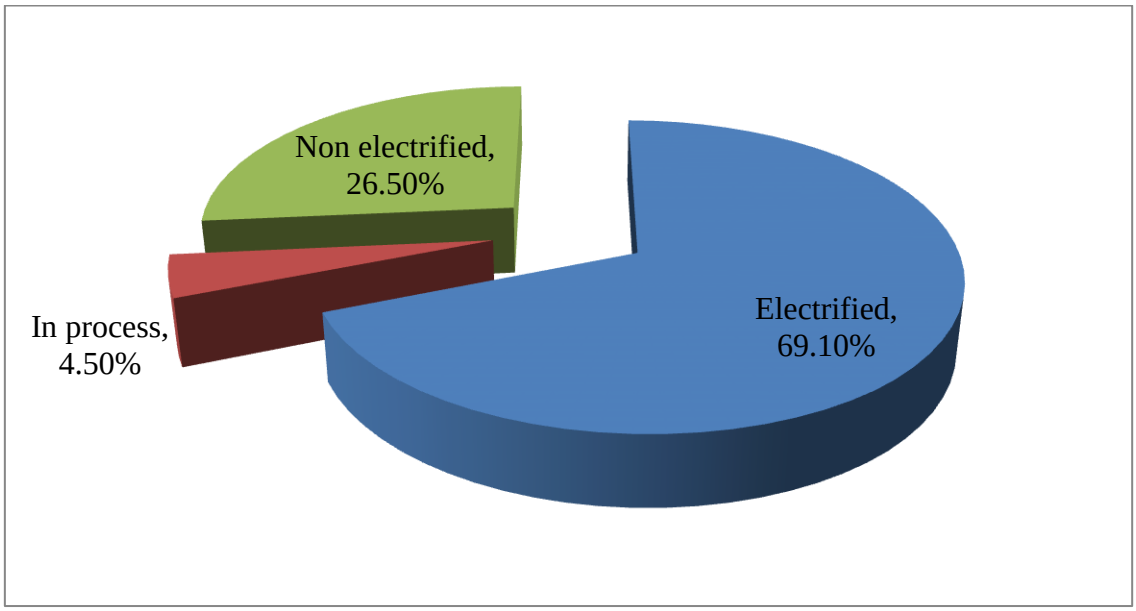

Figure 10: Electricity access rate for electrified localities (Source: Adapted from the Rural Electrification Master Plan, 2016)

Despite the moderate electricity access levels in Cameroon compared to neighbouring countries, very few rural facilities (schools, clinics, businesses etc.) are electrified and electrification is mainly through grid extensions (Cascadia, 2015). Grid extensions are often expensive, time consuming as it involved only government initiation, development and implementation. This lengthy government process mostly involved adopting laws and policies, budgetary allocations and adoptions in parliament, tenders and contracts awarding which are most often very corrupt in the African settings, delays in effective implementations for political reasons and the setting up of special agencies to manage such processes of which powers are never given to the agency to act directly still controlled from above. A true example of such agency is the REA in Cameroon in charge of development and implementations of rural electrification projects of diverse origins which receives instructions from the Ministry of Water and Energy Resources of Cameroon.

Mission of the REA

The Agency ensures the promotion and development of rural electrification across the national territory. It is especially in charge, in conjunction with the administrations, public and private agencies concerned, of contributing to the elaboration and implementation of Government policy in the domain of rural electrification in Cameroon.

In this capacity, it has as missions:

- approve the plans and rural electrification projects initiated by regional and local authorities;
- appropriate and popularize renewable energy;
- propose any measures likely to attract investors in the field of rural electrification in Cameroon;
- collect information on various investment opportunities in the field of rural electrification and disseminate to interested parties

- conduct surveys and studies leading to economically feasible technical solutions in rural areas in accordance with approved standards and norms (AER, 2015).

The REA then created the Rural Electrification Master Plan (PDER) two years after its creation with the following set assets.

- Comprehension diagnostic of the electricity market in Cameroon;
- Identification, analysis and evaluation of optimum systems of supply of rural needs;
- More than 100 projects studied with a high productivity rate these, projects involve:
    - Network extensions; solar energy; mini hydraulic; fuels-efficient generating sets; Biomass.

Cameroon's Rural Electrification Master Plan contains studies that were financed by the Bank and the World Bank-funded National Energy Action Plan for Poverty Reduction (PANERP). The project is fully in keeping with the ongoing electrification programme backed by Cameroon's donor community and aims to strengthen and extend power transmission and distribution systems to 423 new localities with almost 335,000 new consumers, especially rural dwellers. The total project cost was estimated at US$ 58.99 million and its implementation will span a 60-month period from 2010. This project was sponsored by the African Development Fund (ADF), Japanese International Cooperation Agency (JICA) and the Cameroon government (AfDB, 2009). The government of Cameroon has received funding from the Islamic Development Bank (IsDB) covering the costs of the rural electrification project, Phase II (IsBD, 2017). The government intends to use part of the funds for payments for the construction of medium and low-tension power distribution lines and the connection of the beneficiary households. it aims at improving the power distribution rate to 98% from the current 18%, and at a total cost of 600 billion CFA Francs.

Stakeholder participation

Due to the plethora of shortcomings deriving from top-down development efforts, participation has come to be recognised as an absolute imperative for development (Lekunze, 2001). Nevertheless, the concept of participation has remained an elusive one. Brohman (1996) posits that it has been given multiple meanings and connected to multiple methods of

implementation in the last few decades. To him, there still exist many unanswered questions about who participates, what they participate in and how they participate and for what reasons they participate.

Participatory policy making is a general approach with the overall goal being to facilitate the inclusion of individuals or groups in the design of policies via consultative or participatory means to achieve accountability, transparency and active citizenship (Rietbergen-McCracken, 2011). This push for participation can either take a top-down or bottom-up approach. This participatory process can entail seven different levels (Karl, 2002);

- *Contribution:* voluntary or other forms of input to predetermined programmes and projects.
- *Information sharing*: stakeholders are informed about their rights, responsibilities and options.
- *Consultation:* stakeholders are given the opportunity to interact and provide feedback, and may express suggestions and concerns. However, analysis and decisions are usually made by outsiders, and stakeholders have no assurance that their input will be used.
- *Cooperation and consensus building*: stakeholders negotiate positions and help determine priorities, but the process is directed by outsiders.
- *Decision making*: stakeholders have a role in making decisions on policy, project design and implementation.
- *Partnership:* stakeholders work together as equals towards mutual goals.
- *Empowerment:* transfer of control over decision-making and resources to stakeholders.

The participatory process can equally be a once-off exercise for a particular policy process, or part of a systemic participatory governance approach by the organisation/government in question. Permanent structures such as committees that include citizens' groups, community members, etc. can equally be involved. The policy itself can be local, national or international (Rietbergen-McCracken, 2011).

Participation is a complex multidimensional concept involving different stakeholders. Fleming (1991) suggests that participation emphasises the decision-making role of the community. At

the community level, participation helps to improve the design of policies so that they correspond to the needs and conditions of the people to whom they are directed (Cornia, Jolly & Stewart, 1987). Fenster (1993) distinguishes between economists' definition of community participation, which is the equitable sharing of the benefits of projects; and social planners definition as community's contribution to decision-making.

A much more realistic interpretation of community participation is given by Paul (1986:2) which he sees to be *"an active process by which beneficiaries influence the direction and execution of a development project with a view to enhancing their well-being in terms of income, personal growth, self-reliance or other values they cherish"*. This therefore brings us to the question of participation, as either induced, or spontaneous.

However, caution should be given to the frequently abused term `participation` because the bottom-up approach in itself has got several limitations. While many development programs have been promoted by rhetoric about decentralisation and participation, in practice, they have generally been either tightly controlled by the state or outside development institutions. Most states still fear that grassroots organisations (especially the youth) will generate popular empowerment beyond state control. This claim is supported by Fowler (1991), who states that *"the imposition of outside concepts of participation has often undermined indigenous forms of political organisation and democratic practice, thereby reproducing paternalistic and authoritarian patterns of domination"*. In several cases, participation that is not spontaneous is top-down and vice versa.

Quoting Midgley (1986), Brohman (1996) asserts that spontaneous participation *"comes closest to the ideal mode of participation as it reflects voluntary and autonomous action on the part of the people to organise and deal with their problems unaided by governments or other external agencies"*.

Notwithstanding, many development agencies contend that participation is their objective simply in a bid to gain project favour or donor support, few have actually put effective participation in practise. For participatory strategies to begin achieving their potential, the poor need to be genuinely empowered through major changes to the status quo and the equitable distribution of power to all actors including the young people.

Conyers (1985) and Moser (1989) view another distinction between participation as a means to improve projects results and participation as an end in itself. As UNCHS (1984:6) argues, more people will benefit and the outcomes will respond better to the needs of the beneficiaries with participation as a means to improve project results than with the later because people contribute their ingenuity, skills and other untapped resources.

According to UNEP (2001), stakeholder participation describes a process, which aims to bring together all major actors in a new form of communication, negotiation and decision-making on a particular issue. Such a process should be based on democratic principles of transparency and participation, and recognizing the importance of achieving equity and accountability. It should comprise dialogues on policy, consensus building, decision-making and implementation of practical solutions.

> Stakeholder processes have therefore emerged because there is a perceived need for a more inclusive, effective manner for addressing the urgent sustainability issues of our time. For participation to be effective, it must be broad based and involve all stakeholders including the young people equally into all the stages of the process.…….This is imperative for the success of any development project (Lekunze, 2001:14).

Stakeholders greatly influence project success, more especially when it concerns complex projects with heterogeneous stakeholders, and as such, understanding their impact is essential to manage and implement projects (Liang, Yu & Guo, 2017). Stakeholder management largely accounts for the success of projects, particularly that of complex projects (McElroy & Mills, 2000). Stakeholders can be defined as an individual or a group of individuals, who are influenced by or able to influence a project (Freeman, 1984). The strong cooperation of stakeholders is necessary for project success, since a project can be considered a temporary organisation of stakeholders pursuing an aim together (Jaspen & Eskerod, 2009). McElroy and Mills (2000) claim the purpose of stakeholder management is to realise project success through the continuing development of their interrelationships. Therefore, identifying how stakeholders influence project success is an important and fundamental issue of stakeholder management.

The definition of rural electrification keeps getting complicated as new ideas, devices and systems are emerging into the energy sector market. The choice of technology and strategies

used for rural electrification depends on the targeted country, community, business, and farm or household that benefits from the process (IEA, 2010). Other factors likely to influence choice include customer and load density, relative distance to the national grid, landscape, and availability of natural resources such as the sun, wind, water and forests, economic and financial aspects. Rural electrification programs and strategies may vary in generation techniques, its costs and quality of the services delivered depending on the degree of urbanisation of the target group (IEA, 2010).

Stakeholder theory

Stakeholder theories derive from analysis of ideas of fairness and reciprocity. Central to most interpretations of the theory is the idea that stakeholders are interdependent with theory and able to forge symbiotic relationships (Gibson, 2012). Stakeholder awareness is primordial to an organisation's success therefore, an organisation has to recognise the local community and various stakeholder groups in order for mutual benefits to take place (Podar & Jancic, 2006).

Considered as an alternative view to the neo-classical economic theory of the organisation (Hendry, 2001), stakeholders theories introduce the perception that in a monopolistic-competition environment, operations which provide nothing more than an organisation's self-interests can have a negative or even harmful, influence on society (Casidy, 2003). Stakeholder theories argue that an organisation will be observed by the society in which it is located through various interactions with its stakeholders. They hold the view that an organisation is observed as an entity through a group, or a chain of implicit and/or explicit interactions, between itself and individuals and other organisations. According to the stakeholder theories, organisations are involved in the social system and are obliged to enter or exchange interactions with different social subjects and as such the organisation's management must balance different stakeholders' interests and align them with the organisation's strategic goals (Casidy, 2003). The theory sees decision makers are individuals or groups with appropriate levels of authority who are accountable to the higher-level management (Too and Weaver, 2014).

Underlying assumptions

The ideas of stakeholder management was initially introduced by Freeman (1984) in a book named "Strategic Management: A Stakeholder Approach" where he presented the idea that corporations have stakeholders and outlined the basic features of the stakeholder concept. Since the publication of Freeman's classic book, many other books and articles emphasising this concept have been written. Examples of the classic articles in the field are written by Donaldson and Preston (1995); Mitchell, Agle, and Wood (1997); T. J. Rowley (1997); and Frooman (1999). Increasingly, stakeholders are not just referred to in academic texts, but also though mainstream media and government communication (Friedman & Miles, 2002).

The use of the stakeholder theory approach is described as a powerful means of understanding the organisation in its environment. This approach intends to widen the management's vision of its roles and responsibilities beyond the profit maximisation function. (Mitchell et al., 1997). Donaldson and Preston (1995) detailed that the stakeholder model concluded that all persons, or groups with legitimate interests, participating in an enterprise do so to get benefits and there is no pre-set priority of one set of interests and benefits over another. Therefore, stakeholder theories argue that beside stockholders there are other external constituencies involved, including communities, community groups, trade unions, trade associations, environmental groups, governmental group, governmental bodies, associated corporations, prospective employees, prospective customers, and public at large, that need to be taken into consideration. Figure 1 presents the conventional stakeholder model of an organisation (Donaldson & Preston, 1995).

The basic idea of stakeholder theory is that the organisation has relationships with many constituent groups and it can engender and maintain the support of these groups by considering and balancing their relevant interests (Freeman, 1984; Jones & Wicks, 1999). Jones and Wicks (1999) outline the basic premise of stakeholder theory as follows:

- The corporation has relationships with many constituent groups (stakeholders) that affect or are affected by its decisions (Freemen, 1984);
- The theory is concerned with the nature of these relationships in terms of both processes and outcomes for the firm and its stakeholders;

- The interests of all (legitimate) stakeholders have intrinsic value, and not one set of interests is assumed to dominate the others (Clarkson, 1995; Donaldson & Preston, 1995);
- The theory focuses on managerial decision making (Donaldson & Preston, 1995)

Overall, a central and original purpose of stakeholder theory is to help managers to understand stakeholders and strategically manage them (Freeman, 1999). The managerial importance of stakeholder management has been emphasised in many studies that demonstrate just treatment of the stakeholder that is associated with the long term existence of the organisation (Donaldson & Preston, 1995; Jawahar & McLaughlin, 2001; Rowley & Moldoveanu, 2003).

While having its origins in strategic management, stakeholder theory has been applied to many areas and presented and used in a number of ways that are quite different and involve different methodologies, concepts, types of evidence and criteria of evaluation (Donaldson & Preston, 1995). As the interest in the concept of stakeholder is growing, the perspective on the subject is increasing (Friedman & Miles, 2002). In order to clarify the conceptual ambiguity in the field, Donaldson and Preston (1995) have developed a well-known and debated classification of stakeholder theory. They argue that stakeholder theory consists of three distinct alternative aspects: descriptive/empirical, instrumental and normative.

Evidence Based Decision Making

The use of evidence to inform policy is not an entirely new notion. Aristotle had long put forward the notion that different kinds of knowledge should inform rulemaking (Sutcliffe and Court, 2006).

Evidence-based decision making assists people to make well informed decisions regarding policies, programs, and projects by placing the best available evidence from research at the centre of policy making and implementation. This method is different from opinion-based decision making, which heavily relies on either the selective use of evidence or on the untested views of individuals and/or groups, often inspired by ideological standpoints, prejudices, or speculative conjecture. Policy research that relies on evidence-based decision making usually necessitates an in-depth expert analysis of an emergent policy problem based on empirical

data collected in the target context (Davies, 2004). Policy research is usually commissioned by a client who is involved or interested in influencing the debate around an upcoming policy decision (Young & Quinn, 2012). Policy research can consist of diverse methodological foci and can include, for example, a pilot study evaluation, or in-depth multidisciplinary case studies. Also, an analysis of the potential solutions available to address the problem is provided. Though there exist a strong commitment to academic integrity and evidence, "*policy research is by no means neutral in its analysis, but rather is shaped by the political context in which it is produced and used to propagate the values of those who produce and commission it*" (Davies, 2004). Sutcliffe and Court (2006) claim that "*Policymaking* is neither objective nor neutral; it is an *inherently political process"*. The non-apolitical nature of the policymaking process is a function of the people who pushed forward policies – politicians.

Some major issues affecting evidence-based policymaking include;

(i) Type of evidence used in the policymaking process: existing literature supports the fact that policy should be informed by a wide breadth of evidence, not just hard research. Key evidence issues should include the quality, credibility, relevance and the cost of the policy.

(ii) How evidence is incorporated into policymaking. Policy processes entail different steps, beginning with agenda-setting to formulation to implementation. Evidence therefore can influence the policymaking process at each step. However different evidence and different mechanisms may be required at each of the policy stages.

(iii) Other factors influence policymaking beside evidence. It is relevant to acknowledge that at every stage of the policy cycle, a number of different factors will also affect policy. This occurs both at an individual level – for example, a policymaker's own experience, expertise and judgement – and at an institutional level, for example in terms of institutional capacity. There are also a number of constraints, which will limit the extent to which evidence can affect policy – for example, the pressure to process information quickly (Sutcliffe and Court, 2006).

Factors affecting the Decision Making Process

A plethora of factors, other than research evidence commonly accepted to influence decision-making include the following:

- **Experience and personal views:** The appraisal of a decision maker and his/her close circle of advisors based on their personal views or professional experience is a very influential sources in any decision-making process.
- **A "resources-over-everything" perspective:** Funding availability and the organisational or agency capacity to deliver can also have a strong bearing on a decision. Maximising cost effectiveness or cost-efficiency is the aim in this case.
- **Existing political climate:** Governments in power often have a clear value-based agenda, for example, social democracy, neo-liberalism or socialism. Therefore, policy proposals that clearly fit into advancing the administration's values will easily garner acceptability from those in office and the chances of being adopted.
- **Habit and tradition:** Government institutions (parliament, judiciary, ministerial departments) often have established practices of doing things in relatively fixed ways. Institutional memory of "how we have always done things around here" will also be influential in any discussions of a policy change irrespective of facts.
- **Pressure groups, lobbyists, and opinion leaders:** Strong lobbying by influential individuals or groups can also affect how the problem and solutions are discussed and equally, influence the actual bargaining for the final decision.
- **Public opinion surveys and focus groups:** Assessing the reactions of the broader public or a specific community to policy option choices and even the language and framing of policy issues through surveys or focus groups is common and influential in the final decision for focused politicians (Young & Quinn, 2012).

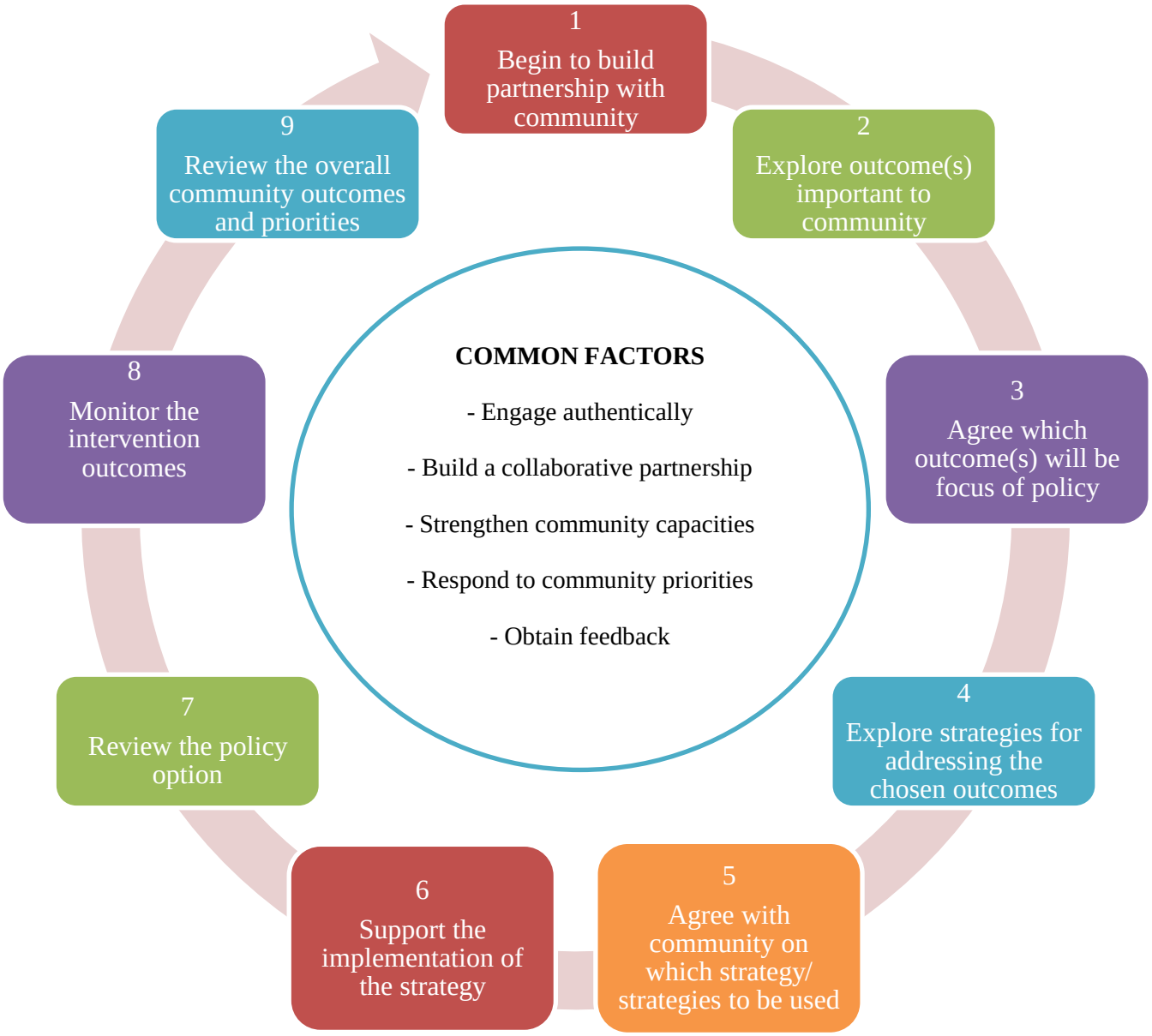

Figure 11: Evidence-based decision making framework (Source; Adapted from Moore, 2018)

Despite presenting the framework in a series of processes/steps, this schematic representation is mainly for guidance: in practice, the steps are not discrete, and the different processes flow into one another. To add, progress through the steps is not always sequential in nature and may be iterative, as there will sometimes be a need to circle back and repeat some earlier steps as part of a process of refocusing. The process allows for constant adjustments which rely on feedback. It is not assumed that the strategies will always work in the ways intended, and indeed assumes that there may need to be modifications (Moore, 2018). This flexibility is a

strength rather than a weakness, as the process of constant adjustments makes it more likely that the interventions will be manageable for the policymaker and specificities of each community take into consideration.

Following a policymaking process of this nature provides for the elimination of all pre conceived ideas of past policies. it provides for empiricism in the policy process as a very important component just like the political considerations.

Missing gap in literature

While a bulk of literature exists on stakeholder theory and on the developmental effects of rural electrification (Jimenez, 2017), there however exists no empirical work on challenges of rural electrification in Cameroon. Another evident gap is the lack of any existing model for rural electrification in Cameroon.

2.3 Theoretical framework

To better understand the impediments and nuances of successful rural electrification policy decision making, our theoretical framework is based on the stakeholder theory and evidence based decision making as seen in the figure below:

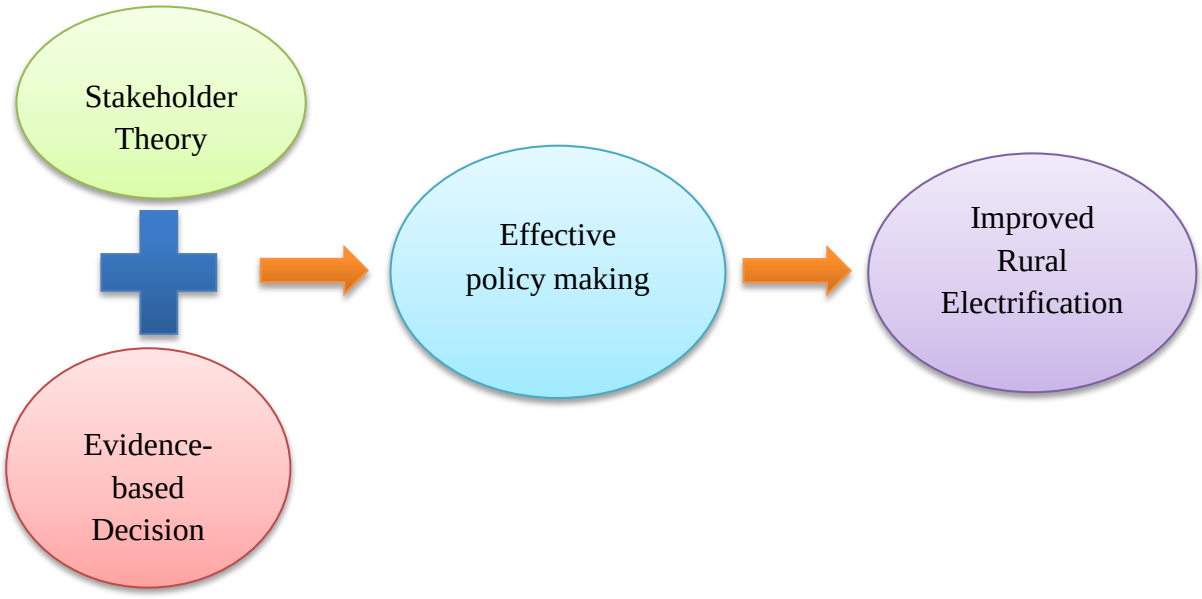

Figure 12: Theoretical framework of the study

The Stakeholder Theory is used to inform the group decision making or participatory approach and evidence-based approach will allow for the collection of data as evidence for this study in order to attain the set objectives of the study.

2.4 Conclusion

This chapter contained two major sub chapters. Here, selected literature relating to the study was reviewed and critically analysed to give the current study perspective and context. The reviewed literature included (i) public policy and decision making, (ii) Stakeholder theory, (iii) Cameron's Electricity sector and Evidence-based Decision Making framework. The theoretical framework was also presented in order to better guide the succeeding chapter below.

3. METHODS

3.1 Introduction

This chapter clearly outlined the research methodology the study used in gathering relevant data. This is a way to systematically solve the research problem. This chapter showed in detail the manner in which the researcher sought to address the problem.

3.2 Research Design

Being qualitative, the study has made use of the exploratory research design given the fact that it carries out in-depth studies and analyses of issues relating stakeholder participation in policy making for rural electrification in Cameroon.

3.3 Sampling Technique

The researcher used the Purposive Sampling technique by selecting key respondents who have concise and appropriate knowledge relevant to the subject matter.

3.4 Sources of Data Collected

An amalgamation of both primary and secondary sources were used for data collection. Being a qualitative research, primary sources will include data collected from interviews and personal observations while secondary sources will consist of reviews from books, journal articles, blogs and websites.

3.5 Instrument for Primary Data Collection

The interview is the instrument that was used for data collection in this study. The interview guides were framed to suit the requirements of the study. The interview guides were designed for collection of data relevant to the research questions outlined in the study.

3.6 Validity of the Instrument

To validate an instrument is to ensure that the instrument measures what it is set out to measure.

After designing the interview guide, the researcher submitted the questions to the supervisor who carefully read through to affirm the questions and also provided appropriate modifications. With this done, the instrument achieved its first validation. Thereafter, the researcher carried out the content validity by carrying out a pilot test with two respondents not included in the sample, but were part of the population. The responses from the pilot test determined the success of the questions in answering the research questions and appropriate modifications were made.

3.7 Population of the Study

The population of this study was comprised of key government ministries and stakeholders relevant to the energy sector. They included; the REA, Ministry of Water Resources and Energy, National Financial Credit, Nkong Credit for Development (NC4D), Schneider Electric, Yandalux Cameroon Sarl, Globeleq Cameroon, GIZ Cameroon, Sinohydro Corporation Ltd and SNV Cameroon.

3.8 Sample Size

A sample size of 10 respondents selected to represent the institutions was used for this study in order to get clear and concise data on the subject matter in this study. The ten respondents were carefully selected persons who have a mastery of knowledge on the rural electrification sector, and provided the respondent with credible and factual information relevant to this study.

3.9 Administration of the Instrument

Before the interviews were administered, the researcher collected a research permit from the school (PAUWES), which was be presented to each respondent so as to earn their confidence regarding the purpose of the data needed from them. The interviews were conducted by the researcher with the respondents directly on a face to face basis.

3.10 Method of Data Analysis

Data collected for this study will be analysed through in-depth content analysis. Quantitative data collected in the study was mainly with respect to the demographic variables of the respondent population.

3.11 Ethical Considerations of the Study

Interview procedures and issues to be discussed were clearly explained to the interviewees beforehand. This ensured that respondents know the subjects of discussion and also be comfortable discussing them.

Ensuring the happiness of interviewees, interviews were conducted at locations decided by them. As regards confidentiality concerns, respondents were guaranteed of their anonymity while they participated in the study. Their identities were withheld and never to be disclosed by the researcher.

Before conducting interviews, permissions to record respondents were sought. But following the heightened levels of tensions and political instability in the country, most of the respondents refused to be on record; and for those who accepted, disclosing the recording to any third party was refused.

The researcher also took into consideration his own safety. Contact details of places visited on days of interviews were left with the researcher's guardian.

3.12 Conclusion

This chapter sought to discuss the how of the research by detailing out clearly how the researcher intends to go about data collection. The chapter looked at the respective aspects of the methodology and ensured that the methodology selected was instrumental in attaining the set objectives of the study.

4. RESULTS AND DISCUSSION

4.1 Introduction

This chapter presented the results of data collected, analysed the data and concluded with discussion of results. Here, the implications of no rural electricity access and the barriers to improving access were discussed. Also, a stakeholder model for rural electrification in Cameroon was proposed.

This data presentation is done on a sample size of 10 institutions. Of the intended 10 respondents, 7 agreed to participate in the study and 3 other institutions declined to participate in the study, giving a 70% response rate.

4.2 Results

4.2.1. Demographic Data of Respondents

In the course of collecting data for this study, the following demographic variables were assessed.

Table 1: Distribution of respondents according to gender

Gender	**No. of respondents**	**Percentage (%)**
Female	2	28.57
Male	5	71.42
Total	**7**	**100**

Source: Field Survey, (2019)

Table 1 above shows that majority (71.42 %) of the respondents are male while 44 % are made up of male. The male respondents' majority shows how the Cameroonian public technical sectors have for long been dominated by the male gender.

Table 2: Distribution of respondents according to age group

Age groups	**No. of respondents**	**Percentage (%)**
18-27	1	14.32
28-37	2	28.56
38-47	2	28.56
48-57	2	28.56
58 and above	0	0
Total	**7**	**100**

Source: Field Survey, (2019)

As seen in Table 2 above, the seemingly even distribution of respondents by age groups is reflective of the fact that the sector is not reserved for the old as some other public sectors in Cameroon.

As concerns the marital status of respondents, 6 of the respondents were married and 1 was single. The pie chart below clearly illustrates this information.

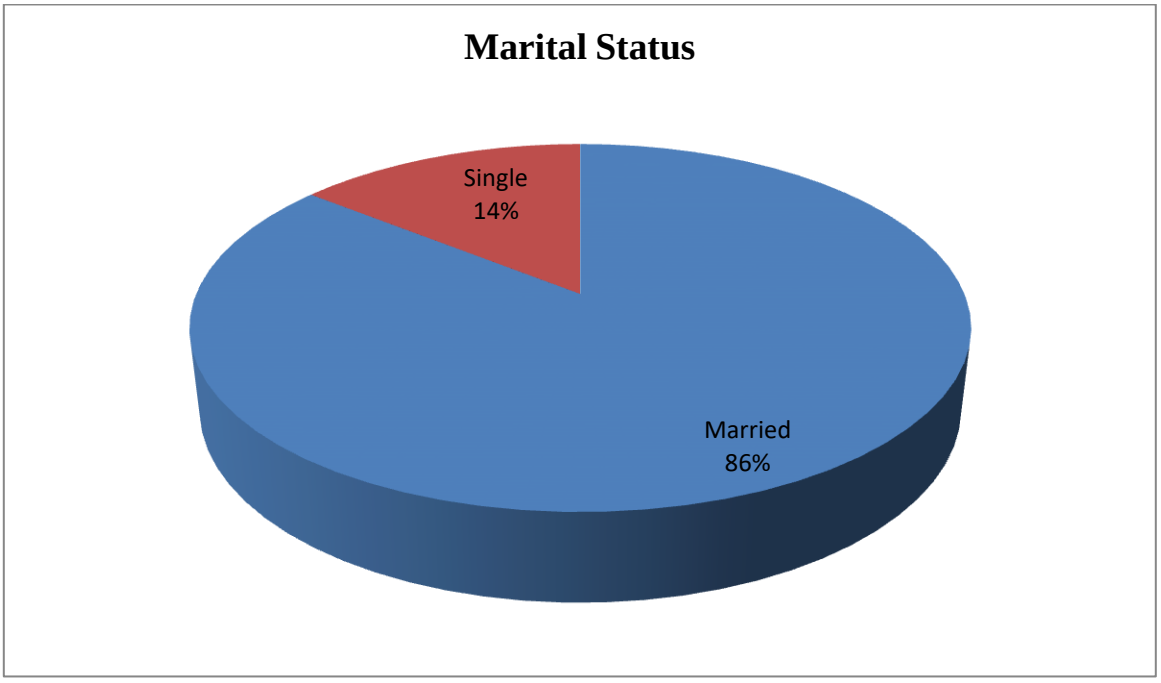

Figure 13: Marital status of respondents (Source: Field survey, 2019)

Table 3: Distribution of respondents according to level of education

Educational level	**No. of respondents**	**Percentage (%)**
Primary	0	0
Advanced Level	2	28.6
Bachelor's degree/Diploma	4	57.1
Post graduate degree	1	14.3
Total	**7**	**100**

Source: Field Survey, (2019)

Looking at Table 3 above, it is evident that, majority (57.1 %) of the respondents are holders of the Bachelor degrees/professional diplomas. Distributions like these were expected because being a technical field, professional education in Cameroon is more specialised after Secondary school.

Occupation of respondents

Based on the different stakeholders in the electricity sector in Cameroon, the respondents were from diverse occupations. This was instrumental and valuable to the study for it ensured diverse experiences in the rural electrification sector in the country.

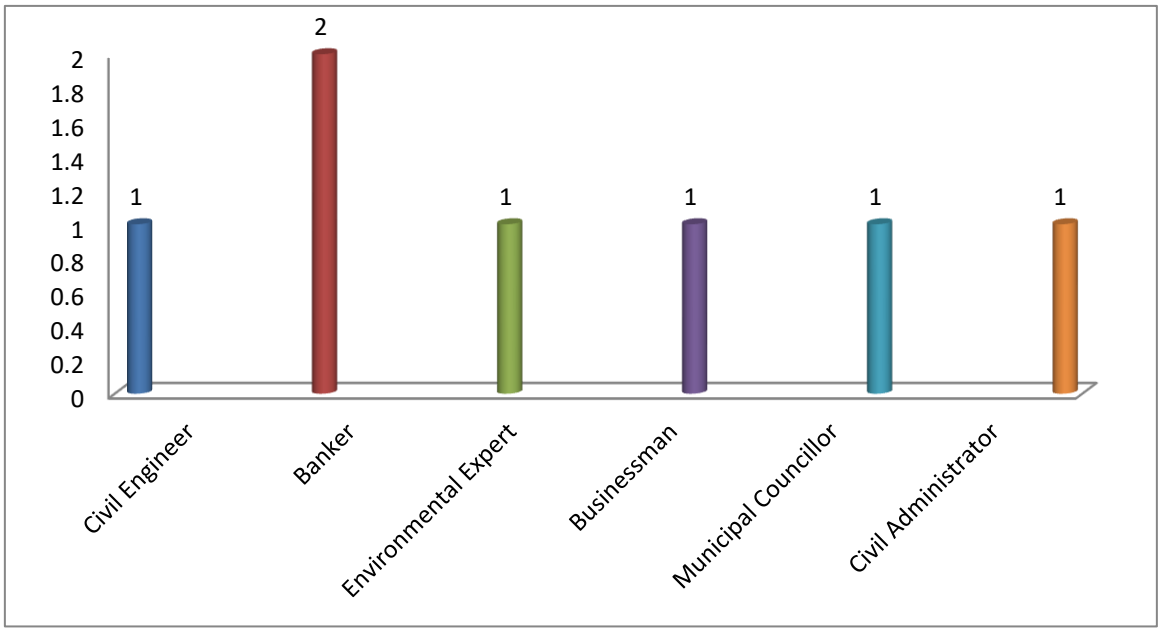

Figure 14: Distribution of Respondents according to Occupation (Source: Field Survey, 2019)

Table 4: Respondents' years of working experience

Year range	No. of respondents	Percentage (%)
0-10	2	28.56
11-21	2	28.56
22-32	1	14.32
33-42	2	28.56
53 and above	0	0
Total	**7**	**100**

Source: Field Survey, (2019)

From Table 4 above, it can clearly be seen that most of the respondents have over 11 years of experience in their respective occupations. This shows the wealth of experience they have acquired and also goes to show credibility in using them as primary data sources.

4.2.2. Implications of No electricity Access on Rural Areas like Mongossi

Following data collected from a series of semi structured interviews, thematic analyses revealed some implications of no rural electricity access.

I. Poor Living Conditions

Electricity access is an essential component in improving human living conditions. In a country like Cameroon with over 79% of rural dweller lacking electricity access, one can agree clearly that economic growth will be slow and take a longer time to be realised. With the case of the village of Mongossi, it was noticed that life is quite tough in rural areas like this one which rely on fishing for subsistence and lack access to the electricity. Following an interview with a respondent, this was extracted from the transcript.

> …..life in this village is not easy. We are unable to keep foodstuffs in the house for a very long time because of lack of electricity. The humid climate makes it so difficult for food to stay long without going bad. When you look around you, you will see that we do not even have shops around to supply us with basic foodstuffs like fresh fish. Here, we can only eat smoked fish and this is partly because we lack electricity to freeze fish (Interview with R1, 29th April 2019).

From the above excerpt one can clearly see that lack of electricity access has some adverse impacts on rural dwellers as serves as a push factor for those in the villages to relocate to urban centres.

> All our children here have moved to different neighbouring towns like Kumba and other far away towns like Buea. Some villages around us high secondary and high schools but the lack of electricity have made teachers transferred to those villages to "buy transfers" and go to cities and other areas with electricity access.

The lack of electricity also has effects on the academic performance of students living in rural areas. Localities like Mongossi and other rural areas constantly suffer a specific type of brain drain due to lack of academic staff to teach students in rural areas. This urban brain drain of the rural areas for sure has adverse effects on the communities as is also evident in Mongossi where it is difficult to see "schooled" persons living there. Based on personal observations, I have experienced first-hand the exodus of teachers from rural to urban areas as a result of lack of electricity access. This has been quite evident in schools in Ekondo Titi Sub Division where I grew up and also in other parts of Ndian Division.

According to an interview with Medical personnel in the area, she paints a picture of how the health situation of people residing in Mongossi and other neighbouring rural areas has not been the best.

> Looking at the healthcare records of patients from Mongossi, you will see clearly that the lack of electricity access is greatly affecting them. The lack of a health facility there means they can only have access to very important vaccines when they come to Ekondo Titi…….even pregnant women who need to be operated upon must be brought to Ekondo Titi or Mbonge and if this is not done in time, then it becomes late to save the mother and child (Interview with R4, 2nd May 2019).

Healthcare records in rural areas are often less better than that of urban areas. There exist a direct link between electricity access and healthcare (Suhlrie, Bartram, Burns, Joca, Tomaro, & Rehfuess, 2018). The long distance to health facilities makes it easy for rural dwellers to neglect certain health issues till when they can afford money to travel to other areas with good health facilities.

II. Limited Economic Growth

Energy is the basis of any economic activity. As true as the preceding statement is for a nation, so too is it for rural economic growth (Rehman & Deyuan, 2018). Lack of electricity in rural Cameroon has had some impact on the economic growth of these rural areas. Local businesses face serious challenges in running as fixed costs often increase due to the need to run generators to cool goods and also to keep several other economic products.

> The lack of electricity in Mongossi is costing us a lot. I am unable to run a cold store business effectively. Even the Bar I operate, I sell a bottle of beer for 850frs because I use but a generator to power my shop and the expensive nature of fuel has made me to also increase the prices of cold goods……I sometimes lose money, much money in this shop. I buy fuel from Mbonge and if the boat delays to bring my fuel on time, then the chicken in my fridges will get bad and there is no way I can recover money lost like that (Interview with R2, 29th April 2019).

The above respondent R3 notes some of the challenges faced by local businesspersons as a result of lack of electricity access. Cameroon has a population of 24,678,234 (World Bank, 2018) inhabitants and 10,907,779.428 (44.2%) live in rural areas. With about 80% (8,726,223.5424) of rural dwellers yet to have electricity access, it can clearly be seen that the rural population without access is 35.36% of the entire population of Cameroon.

With over about 80 of the rural population still expecting to be electrified, Cameroon has a long way to go to achieve its 2035 Vision. Every economy needs energy to power its growth and Cameroon will be no exception.

Electricity in Cameroon appears to be a politicised phenomenon. For several years, the electricity market had been a preserve of the government and rural electrification policies till date come from the central government. All electrification plans by individuals (where they exist), must still be submitted to the REA, Electricity Sector Regulatory Agency or any other concerned government institution. It is easier to manipulate poor people and having understood that energy access is a strong determinant of economic growth, deciding who gets electricity and a point in time and through what method is a very important decision politicians get to make in Cameroon.

III. Rural-Urban and Rural-Rural Migration

Electricity access is both a push and pull factor for migration in Mongossi and many other rural areas in Cameroon. Migration can take many dimensions and from the data collected, the study discovered a trend of rural-rural and rural-urban migratory trends in Cameroon. Rural Migration as the name goes implies movement of people from one rural area to another rural area in search of opportunities (Lucas, 2007). While a large part of rural Cameroon is without electricity access, the areas that have access experience a form of economic growth that pulls other rural settlers to these areas for greener pasture. For the case of Mongossi, one respondent paints this picture glaringly.

> Here in Mongossi, we only plant foodstuffs for sale and to eat. Because of electricity, villages like Ekondo Titi, Illoani, and Ndian all have palm oil mills which offer jobs to people around there. Now, most of the youths from Mongossi have moved to those towns to work with Pamol and CDC. Look at how empty the village has become, the government should bring us light so that we too can have more employment here for our youths (Interview with R1, 29th April 2019).

Rural-urban migration is also a glaring phenomenon in this village and another respondent talks more on it as it clearly affects him.

> If you look at the village here, you will see there are few opportunities for educated and skilled people. Take an example of myself who is a trained electrician. I have BAC in electrical engineering and am unable to get a job here as an electrician because there is no electricity. Many of my friends and graduates have decided to move to towns like Douala, Buea, Kumba and Yaounde since they have more opportunities to work there. Even the show I am running here is not giving me much profit nd I am even considering to also move to Douala where I will also have better opportunities (Interview with R2, 29th April 2019).

Looking at the above responses from the respondents, it can clearly be seen that the absence of electricity in that village has gone a long way to help sustain a series of migratory trends to other rural and urban areas within Ndian Division and Cameroon as a whole.

IV. Deforestation and Climate Change

In Sub Saharan Africa, fuel wood is the main energy source for a larger part of the population (IEA, 2014). The absence of electricity access has also reduced the access of households to

clean and affordable energy for cooking. While the use of electric cooking gas is not a common in Cameroon, it however is still an option that can go a long way to reduce deforestation. Most rural dwellers rely on fuel wood to cook. This reliance on fuel wood has drastic effects on forests as logging releases back already captured CO2 into the environment.

According to the Sub Delegate for the environment and nature protection (MINEPDED)

> For my over 7 years in Ekondo Titi Sub Division, i have experienced a continuous decrease in mangrove forests along the Mongossi Creek and many other creeks in the area. The absence of electricity and even cooking gas has increased their use of fuel wood which they can easily get from the mangrove trees inside the creeks." One major problem however is that, the cutting down of these trees has been leading to increase in water levels in the creeks due to no natural barriers and causes regular floods for the denizens of Mongossi and its environs (Interview with R3, 29th April 2019).

Cameroon's reliance on biomass is so enormous due to the lack of modern energy sources and the inability to also afford them and biomass reliance in Cameroon was at about 73% in 2011 (Djoedjom & Zhao, 2018).

4.2.3 Factors that hinder the improvement of rural electricity access in Cameroon

I. Limited co-ordination of the rural electrification sector in Cameroon

The rural electricity sector in Cameroon has so many actors involved. These multiple actors within the electrification sector would presuppose that rural electrification could have been rolled out faster. This has however not been the case as one respondent puts it;

> There is lack of coordination. If coordination was good, we would do better. But since we have laws that we do not respect, coordination has become difficult. That is why we have poor jobs being done, that is why we have double budgeting for certain localities. The law mandates the Rural Electrification Agency to oversee the rural electrification activities of other partner ministries. Some ministerial departments however, do not respect this law for they see out service as an inferior establishment (Interview with R5, 7th May 2019).

The Rural Electrification Agency faces this challenge of coordination the sector and this has served as a major drawback to the rural electrification process of the country. The lack of

enforcing mechanisms to compel all relevant sectors to adhere to regulations is making the task of the REA difficult.

II. Lack of powers by the REA to make Rural Electrification Policies

The creation of the REA in 1998 was believed would be a faster solution to darkness in rural Cameroon. However, the said organisation only has a responsibility to implement rural electrification policies. It is not charged with making these policies. The challenge now comes in implementing policies implemented by another institution and the strategies used to design these policies. When one looks at the parameters considered in the drafting of the Rural Electrification Master Plan, a respondent had this to say;

> The first priority for a place to be electrified in Cameroon is if it is an administrative Unit. So all divisional headquarters must be electrified after Regional headquarters and then sub divisional headquarters. There are some sub divisional headquarters that are too far from the grid and those ones are not electrified. When you compare the cost of electrifying those sub divisional headquarters, it becomes too expensive……The next policy is the potential for development in an area (Interview with R5, 7th May 2019).

Looking at the above excerpts, one can see that the first motivation for electrification is purely political with no economic inclinations. This explains why it is commonplace to see administrative units with less economic potentials being electrified in Cameroon at the expense of other localities with better economic prospects. This aspect of political motivations is further buttressed by another respondent who when asked how these rural electrification policies are made had this to say;

> The Rural Electrification Agency doesn't make rural electrification policies. The sector is having stakeholders and policy is developed or elaborated by the Ministry of Water and Energy…….The Presidency is involved, the Prime Ministry is involved and other sectorial ministries are involved. The REA is now charged with the implementation while ARSEL is the regulatory agency (Interview with R5, 10th May 2019).

In a situation like this, policy making is by another institution and implementation is done by another institution. Situations like this make the entire policy process rigorous and complicated. The entire policy process can fare better if policy makers are also expected to implement the policies. With the REA only charged with implementation of already enacted

policies, there is limited feeling of policy ownership and as such limited attachments to ensuring policy success. Beside this, the fact that policymaking is engendered from the presidency and other ministerial departments further validates the claim that the policymaking process is inherently political. With a politicised civil service in Cameroon, it is less likely for policies to be apolitical. A system like this suggests policymaking bereft of evidence and as a result even expectant results of policies are not backed by research findings and facts.

III. Lack of funds

Running electrification projects is an endeavor that is very expensive and most at times Sub Saharan African countries like Cameroon often rely on aid and loans to effectively implement electrification projects. For Cameroon which relies more on construction of dams to tap hydropower, it becomes really costly to establish such projects. Meeting with a staff of the Rural Energy Fund, he explained the issue of funding in detail.

> The first challenge is actually funding. When you look at all the projects the rural electrification Agency is supposed to implement, most of them rely on foreign donors to succeed. The Agency itself relies on state funds to pay its staff and cover other recurrent expenditure. No matter how fast we want to go, we can only implement projects for which the government, donors and lenders provide funding…..Cameroonian investors and businessmen do not love investing long term, what they prefer is projects with quick turnover (Interview with R6, 7th May 2019).

Other ministries ought to submit their projects the REA so as to ensure there is no double funding of localities and this can also go a long way to curb financial wastes. This is a regulation that is however not being respected.

While acknowledging the importance of finance in executing rural electrification projects, it should however not be forgotten that the easiest way to meet the requirements of projects in by engaging relevant stakeholders right from the initiation process of policies and this leads us to one other pressing challenge for rural electrification in Cameroon.

IV. Lack of grassroots and other stakeholder participation in the policy making process

Policies are designed to achieve set goals and these policies rely on host communities to succeed. Policy making in rural electrification in Cameroon often take the top up approach. While policy for rural electrification in Cameroon is designed at ministerial department levels, it takes the acceptance of local communities for projects to succeed. People do not need electricity, but they rather need the services electricity can offer them, as such it does not suffice to carry electricity to a community. Also, through stakeholder engagement, basic requirements for project success can be met. A good example is at the level of financing. Local banks are worthy allies in funding small scale electrification schemes for rural areas but they do not take part in the rural electrification efforts of the government. One Credit manager had this to say in an interview;

> Many commercial banks in Cameroon do not invest in the rural electrification sector because it is a sector owned and run by the government. Our bank does not know if the sector has been liberalised and only government invests in that sector. Cameroonian banks have a problem of resources. Financing this kind of projects require long term investment and most of the resources of local banks make money but from short term investments…. The level of support government gives to international banks is more than what we the local banks receive (Interview with R7, 7th May 2019).

With this, one sees that with the effective involvement of relevant stakeholders, funding and other project resources can be acquired.

V. Insecurity

Rural electrification in Cameroon is also been hindered by the challenge of insecurity. The multiple insurgencies in the rural parts of the country are stalling projects. In the Northern part of the country is the Boko Haram insurgency and in the two English speaking regions of the North West and South West is also an insurgent conflict.

> According to the Presidency and the Ministry of Water Resources and Energy, the priority regions for rural electrification are the East, Far North, North, North East and South West. There is an ongoing crisis in three of these regions and this has affected our projects. When you look at the project we are carrying out for a mini hydro plant in Boa, South West region, construction works were

> forced to stop due to the insecurity of our collaborators doing the construction (Interview with R5, 10th May 2019).

This insecurity challenges are also a big problem as project continuity will not be easy after the conflict. Many contractors have abandoned their projects which are deteriorating. Resuming these projects will incur more costs, leading to more financial allocations (where necessary and possible).

VI. Reliance on grid extension for rural electrification

Electrification policy in Cameroon tends to be geared towards grid extension. The recent creation of the National Electricity Transmission Company (SONATREL) is a stronger pointer to this fact and the government intends to continue its efforts of connecting more communities to the grip. In the words of a staff from an independent power producing company;

> Here, we produce electricity and are compelled to supply the electricity into the grid where Eneo alone has the right to sell to customers. With this kind of governmental policy, we cannot locate our production facilities in areas that are far from the grid. (Interview with R7, 7th May 2019).

Sale of electricity seems like a monopolistic market in Cameroon and the practice scares independent power producers from investing in the economy.

Cameroon as a country suffers from poor transportation infrastructure and with bad roads, it becomes more difficult for transmission lines to constructed through areas with bad roads and forest terrain. With the third hydropower potential in Africa, Cameroon possesses 8 drainage basins. The plethora of rivers offer potentials for several mini and pico hydro projects all over the country.

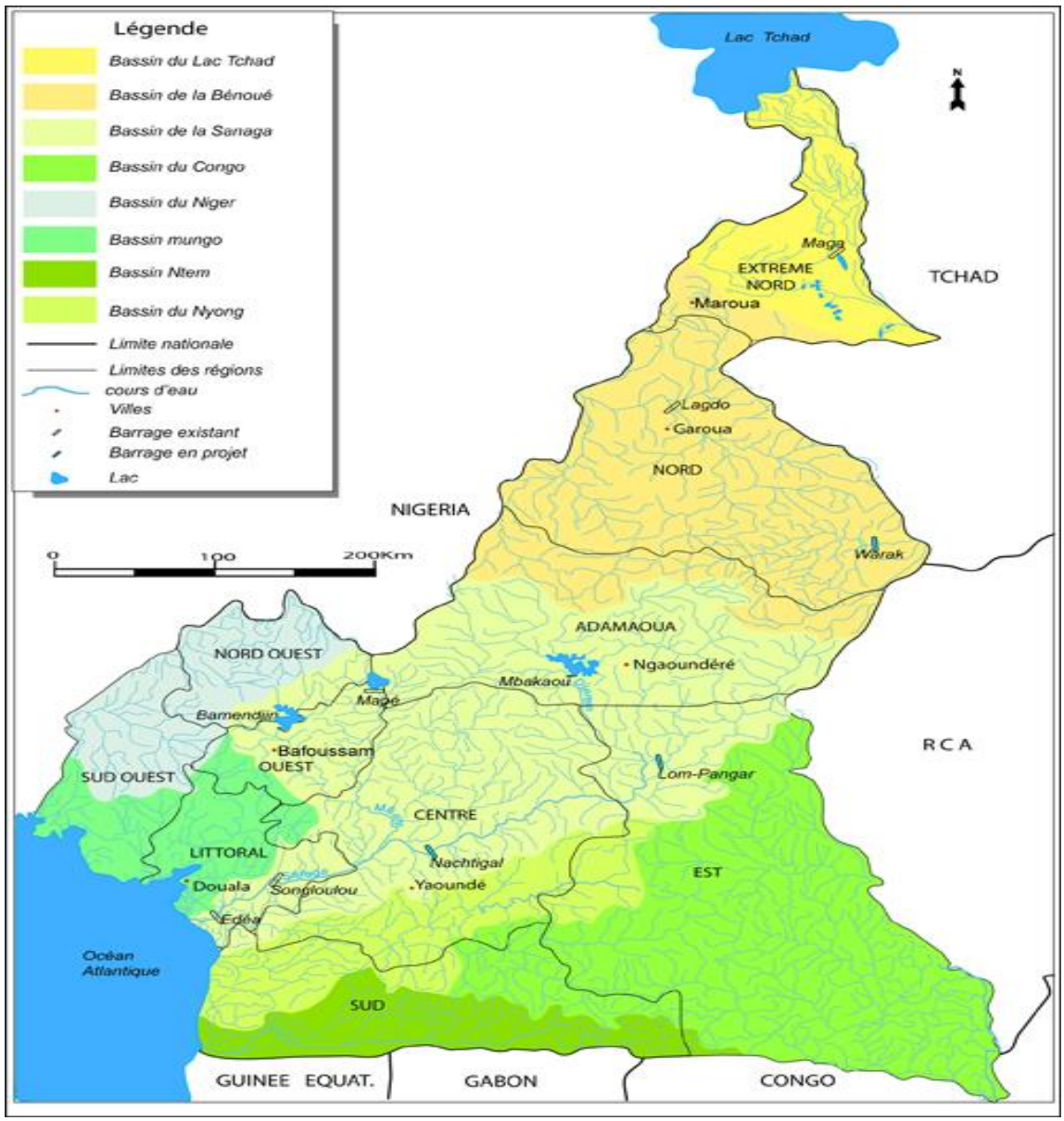

Figure 15: Drainage and Drainage Basins (Source: Cameroon Tour, 2009)

Off grid systems are a viable option with huge prospects for rural areas in Cameroon. Having harnessed only about 1% of its renewable energy potentials (excluding hydropower), Cameroon stands to benefit more from harnessing other renewable energy sources it possesses. Existing grids are also old and contribution to Transmission and Distribution losses.

4.3 Stakeholder Model for Advancement of rural electrification in Cameroon

Based on literature reviewed and primary data collected on rural electrification in Cameroon, it can be seen clearly that the country is in blessed with enormous energy resources but suffers from limited rural electrification.

While the government of Cameroon, through the REA seems committed to the rural electrification agenda, a number of challenges still remain:

- Limited co-ordination of the rural electrification sector
- Inability of the REA to make policies
- Lack of funds
- Limited stakeholder participation
- Insecurity
- Reliance on grid extensions

Based on the challenges culled from the study, the stakeholders below have been identified with their respective roles;

Table 5: Table showing challenges, stakeholders and proposed solutions

Challenges	**Stakeholders**	**Solutions**
1- Limited co-ordination and lack of regulation and appropriate rural electrification policies	- Electricity Sector Regulatory Agency (ESRA)	- Provide regulatory framework - Establish subsidy and tariff schemes
	- Ministry of Water Resources and Energy (MWRE)	- Enforce regulations, framework and policy guidelines
	- REA	- Coordinating with relevant stakeholders
2- Inadequate funds	- Banks -	- Provide loans to private investors for electrification

		projects.
	- Rural Energy Fund	- Provide finance for investments in the sector and also make money available to banks
	- Cooperative Unions	- Provide funding
	- Private Investors -	- Provide funding
	- National and International donors	- Provide funding - Provide funding
	- Local Governments	- Provide funding
3- Inability of REA to make rural electrification policies	- Office of the President	- Enacting decree to empower the REA to make rural electrification policies
4- Insecurity	- Central Government -	- Suing for ceasefires, dialogue and addressing existing grievances.
	- Local Governments	- Organising community intiatives for dialogue
	- NGOs	- Engage in Peace Education and outreach programmes.
5- Limited Stakeholder participation	- MWRE	- Approving REA policies - Ensuring REA policies adhere to bottom-up policy making guidelines
	- REA -	- Ensuring grassroots participation in consultations for rural electrification policy making.

	- NGOs	- Providing education on importance of community participation in policy making - Making information available
	- Local Governments	- Providing information on project tenders to the public - Facilitating environmental impact assessments for projects by collecting community surveys and consultative talks.
6- Reliance on grid extension	- MWRE	- Design plans for decentralised electrification systems
	- REA	- Provide financial and technical support to Local governments, IPPs and NGOs.
	- Research Centres	- Provide short courses to technicians on how to install and maintain off grid RETs. - Research on RETs - Provides skills and technical knowledge on RETs. - Enhance research and available data on renewable energy sites in Cameroon.
	- Independent Power Producers (IPPs)	- Enhance meteorological data provided by government departments.
	- Local Governments	- Provide funding for Renewable Energy Projects

	- NGOs	- Creating awareness in the local communities about the use of RETs - Creating awareness through community centers.

Source, Field Survey, 2019

Based on the diagram above, below is a proposed model to boost the development of RETs in Southern Africa.

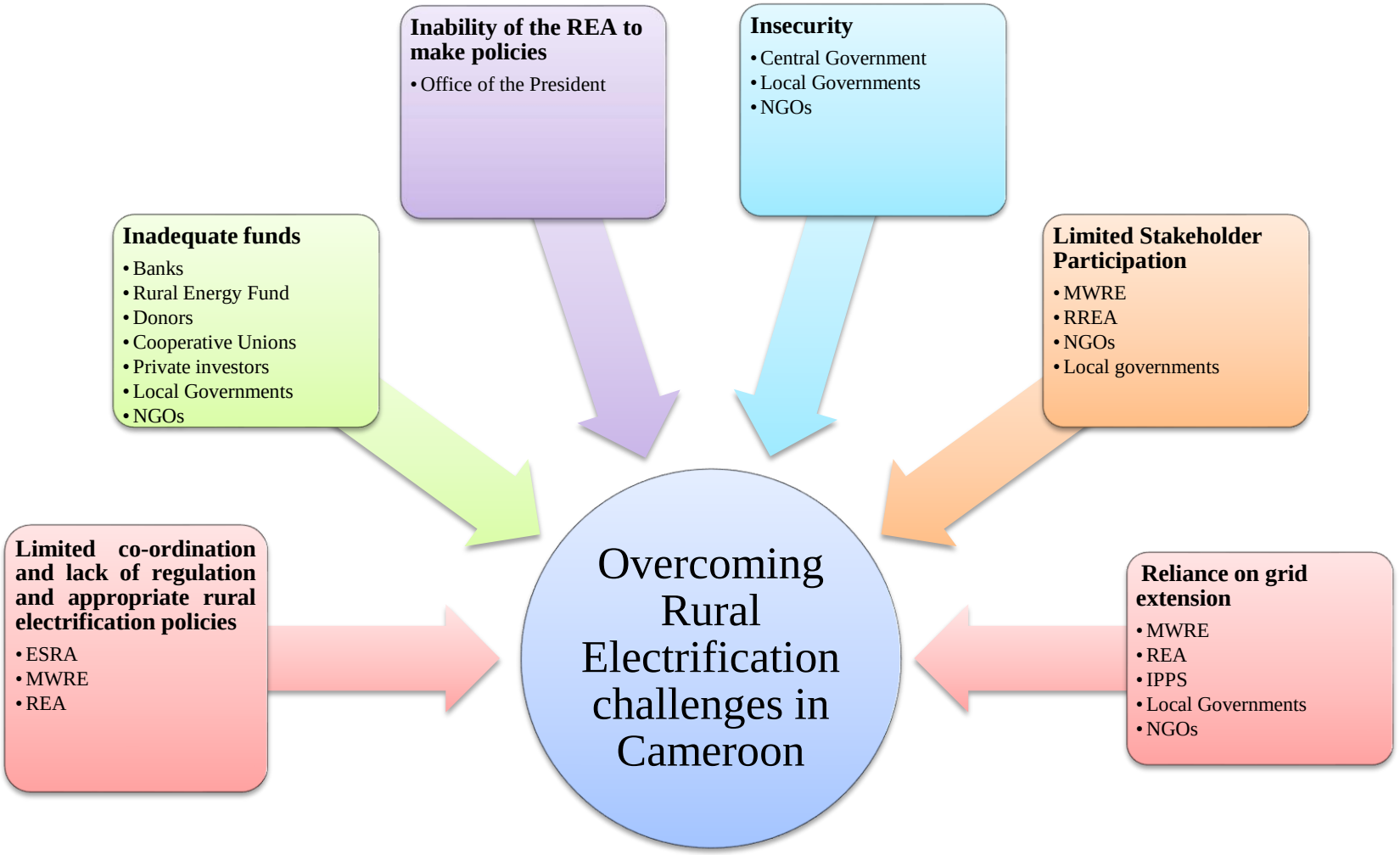

Figure 16: Conceptual Model for overcoming Rural Electrification challenges in Cameroon

The conceptual model developed above if applied to the rural electrification sector of Cameroon will go a long way to eliminate existing barriers hindering the progress of rural electrification all over the national territory. Here, each challenge shall be reviewed with the proposed solution and an assessment of the applicability of the said solution.

4.4 Conclusion

This chapter discussed in detail, the results of data collected, analysed the data and discussed the results. The study discovered that total electrification had several implications and that several barriers accounted for the slow process of rural electrification. The chapter ended with the proposal of a stakeholder model for rural electrification.

5. CONCLUSIONS, RECOMMENDATIONS, AND SUMMARY

5.1 Introduction

This is the concluding chapter of the work and it summarises the various chapters that have been discussed throughout this work. It also analyses the findings of the study in a bid to see if they meet the intention of the research and also carries suggested recommendations to addressing the issue of rural electrification in Cameroon.

5.2 Conclusion

Basing the study on a qualitative methodology, the researcher sought to ascertain the challenges of rural electrification in Cameroon. Imploring the purposive sampling technique, the study targeted key respondents who are actors in the electricity sector in Cameroon. Based on the findings made in the study, one can establish a relationship between electricity access and living standards. Electricity comes with more opportunities and developmental prospects. This is quite evident globally and most rural areas in Cameroon without electricity have less development opportunities.

Every industrialised society relies on electricity and other energy sources to power industries and other sectors of the economy. While Cameroon envisions becoming an emerging economy by 2035, energy is needed for the accomplishment of this task. However, the rural electrification master plan is hoped will guarantee 100% electrification all over the country by 2035, this begs the question as to how emergence can take place without energy to power industries and other sectors of the economy. The lack of electricity access needs to be addressed in order to stimulate economic growth (SDG 8) in rural economies and promote access to clean and modern energy forms for all Cameroonians by 2030 (SDG 7). Falling living standards also relates to the high birth rates in rural areas, which is partly a function of no electricity access. At the end of a working day, when rural dwellers return home, the lack of electricity implies little of no economic activities can be carried out at night. As such, these rural dwellers as a result of the fact that they are idle mostly resort to other social activities including sex.

The rural-urban and rural-rural migration experiences in Cameroon come with both advantages and disadvantages. While rural areas with electricity and urban areas benefit from youths with skills and potentials. This creates brain drain from rural to urban areas, thereby creating unbalanced regional development and industrialisation across Cameroon. Citizens ought to be provided with equal opportunities irrespective of the part of the country in which they find themselves. The lack of government policies to prevent rural urban migration is a big challenge for food security as the rural population in Cameroon is responsible for the large part of the food produced in the country. Women also make up a sizeable portion of the rural dwellers engaged in food production.

The relationship between lack of electricity access in rural areas and deforestation is evident. Fuel wood is highly sought after by rural dwellers in Cameroon. Their low income levels and lack of electricity limits the available energy options they can afford in their households. Searching for fuel wood is a job done largely by women in rural areas and it is quite a time consuming activity. Time spent on looking for fuel wood could had been invested in other economic ventures if electricity and other energy sources are made available and affordable for rural women. With most rural economies in Cameroon being back by cash crops like cocoa and coffee, these are energy intensive crops at the level of drying them before they can be sold. This process requires used of locally made ovens with fuel wood as the main energy source. This wood is definitely gotten from forests and therefore contributes in releasing already captured carbon into the atmosphere. Combating climate change (SDG 13) will also be an indirect benefit from rural electrification.

Barriers to rural electrification in Cameroon were identified. It is important to underscore the fact that the Cameroonian electricity sector has for long been the preserve of the government and appears to have been politicised. With electrification policy being made from the level of government offices, with a politicised bureaucracy in Cameroon, the ease with which a community becomes electrified depends on party affiliation and also whether the community has members in government.

Reducing reliance on grid extension to increase access is a very important component. Energy democracy is a very important aspect of economic growth and political power. People can only participate in politics equally when they are well to do economically. Decentralizing

electricity generation and empowering rural citizens to be “prosumers” would mean that they also generate revenue in the course of providing themselves with electricity generated locally where it is consumed. Decentralisation generation can go a long way to reduce reliance on the grid and also reduce Transmission and Distribution losses.

Attaining the AU Agenda 2063 and the SDGs can be possible with the provision of electricity and other energy sources to all. Energy for all is the backbone of all other existing SDGs and as such one should not underestimate the relevance of electricity in the global agenda to eliminate hunger and poverty by the year 2030.

5.3 Recommendations

Following the finding of the study, the ensuing recommendations where made;

Recommendations to Government

Existing institutions in the rural electrification sector should be strengthened through law and mechanisms designed for existing regulations to be enforced.

The rural electrification policy making process should be a bottom-up approach. Communities to be electrified should be contacted from the onset before policies are made. Rural communities differ based on economic activities and electricity provided should not just be for lighting but should also add value to the existing economic activity in the area. Without this, the presence of electricity for lighting and household use will only go to increase living costs without necessarily improving on the finances of rural dwellers.

Decentralised generation should be promoted through provision of feed-in tariffs for IPPs, subsidies and tax exemptions should be provided for RET equipment being imported into the country.

Information should be made available to potential local funding sources like banks and cooperatives as to existing financing schemes for renewable energy projects. Make finance available to banks and cooperative so they use to fund local projects from IPPs.

Recommendations to Financial Institutions

Local banks should see investments in the rural electrification sector as a lucrative venture. Not all electrification projects are expensive. Mini hydro projects are also financially lucrative and banks can work together in synergy to fund projects by polling resources together.

Banks should benefit from the technical expertise of the REA, ESRA, MWRE and NGOs to carrying out evaluations of proposed projects.

Recommendations for further study

The challenge of rural electrification is common across Africa. It is recommended that similar studies be conducted across other countries so as to be able to design working models with existing realities on ground.

5.4 Summary

This study was initiated to find out the reason why rural electrification rates are still low in Cameroon and was sub divided in five chapters. The first chapter was the general introduction and contained several key issues. In this chapter, the research objectives were stated which included ascertaining the impacts of no electricity access on rural areas like Mongossi, identifying factors hindering the improvement of rural electricity access in Cameroon and designing a conceptual model for increasing rural electrification rate in Cameroon.

The second chapter of the work discussed the review of related literature relevant to the study including the policy process, the electricity sector in Cameroon and ended by looking at the stakeholder theory on which the study was based.

Chapter three was the methodological aspect of the work which looked into the “how” of the study. The chapter included the research design, sampling technique, sources of data collected, instrument for data collection, validity of the instrument, population of the study, sample size, administration of the instrument, method of data analysis and the ethical considerations of the study.

In the fourth chapter, the results are presented and discussed. Beginning with the demographic variables of the respondents, the chapter also shows the impact of no electricity access in rural areas. It was discovered that lack of electricity access causes poor living conditions, limited economic growth, rural-urban and rural-rural migration and promotes deforestation and climate change. The chapter equally discusses the barriers to rural electrification in Cameroon which include; limited co-ordination of the rural electrification sector, Lack of powers by the REA to make rural electrification policies, lack of funds, lack of grassroots and other stakeholder participation in the policy making process, insecurity and reliance on grid extension for rural electrification.

Chapter five of this study is the conclusion, which examines and gives a summary of all the chapters, concludes the study as well as makes recommendations.

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7. APPENDICES

Appendix A: Introduction Letter for Data Collection

Pan African University
Institute of Water and Energy Sciences

PAU Institute of Water and Energy Sciences, (including Climate Change) PAUWES
c/o Université Abou Bekr Belkaid Tlemcen,
B.P. 119, Campus Chetouane,
13000 Tlemcen, Algeria
Phone: +213 40 91 91 68
director@pauwes.univ-tlemcen.dz
http://pauwes.univ-tlemcen.dz

Ref. 299/PAUWES/2019

Date: March 12th, 2019

From:
Prof. Chewki Ziani-Cherif
Deputy Director - PAUWES

To whom it may concern

Subject **Introduction Letter**

Dear Sir/Madame,

The Pan African University Institute of Water and Energy Sciences (including Climate Change) (PAUWES) is located on the campus of the University of Tlemcen, Algeria.

PAUWES is one of the five hubs of the Pan African University established under the African Union aimed at revitalizing African higher education and at boosting research and postgraduate training. PAUWES is the fourth institute after the Institute of Governance, Humanities and Social Sciences (PAUGHSS) at the University of Yaounde II in Cameroon; the Institute of Basic Sciences, Technology and Innovation (PAUSTI) at Jomo Kenyatta University of Agriculture and Technology in Kenya; and the Institute of Life and Earth Sciences (PAULESI) at the University of Ibadan in Nigeria.

The PAUWES Institute offers graduate students access to leading academic teaching, research and hands-on training in areas vital to the future of African development water, energy and the challenge of climate change.

In this context, the student at PAUWES, **Mr. Rex Enongene Nkumbe** from Cameroon, preparing a Master in Energy Science, Policy Track wishes to collect data for his Master thesis in your institution.

In this regard, we are addressing to you **Mr. Rex Enongene Nkumbe** for your kind consideration to collect data in your institution.

Thank you in advance as we hope for your valuable cooperation.

Sincerely,

University of Tlemcen
Vice-Direction for Academic Affairs
PAUWES
Pan African University

Prof. Chewki Ziani-Cherif
Deputy Director - PAUWES

Appendix B: Internship Introduction Letter

Pan African University
Institute of Water and Energy Sciences

PAU Institute of Water and Energy Sciences, (including Climate Change) PAUWES
c/o Université Abou Bekr Belkaid Tlemcen,
B.P. 119, Campus Chetouane,
13000 Tlemcen, Algeria
Phone: +213 40 91 31 88
director@pauwes.univ-tlemcen.dz
http://pauwes.univ-tlemcen.dz

Ref. 654/PAUWES/2018

Date: January 23th, 2018

Subject **Introduction Letter**

From:
Dr. Chewki Ziani-Cherif
Deputy-Director - PAUWES

To:
Whom it may concern

Dear Sir/Madame,

The Pan African University Institute of Water and Energy Sciences (including Climate Change) (PAUWES) is located on the campus of the University of Tlemcen, Algeria.

PAUWES is one of the five hubs of the Pan African University established under the African Union aimed at revitalizing African higher education and at boosting research and postgraduate training. PAUWES is the fourth institute after the Institute of Governance, Humanities and Social Sciences (PAUGHSS) at the University of Yaounde II in Cameroon; the Institute of Basic Sciences, Technology and Innovation (PAUSTI) at Jomo Kenyatta University of Agriculture and Technology in Kenya; and the Institute of Life and Earth Sciences (PAULESI) at the University of Ibadan in Nigeria.

The PAUWES Institute offers graduate students access to leading academic teaching, research and hands-on training in areas vital to the future of African development – water, energy and the challenge of climate change.

In this context, the student at PAUWES, **Mr. Nkumbe Enongene REX** from Cameroun, preparing a Master in Energy Science, Policy Track wishes to carry out an internship in your institution.

In this regard, we are addressing to you **Mr. Nkumbe Enongene REX** for consideration as an intern in your institution.

Sincerely.

University of Tlemcen
Vice-Direction
for Academic Affairs
PAUWES
Pan African University

Dr. Chewki Ziani-Cherif
Deputy-Director - PAUWES

Appendix C: Interview Guides

INTERVIEW GUIDE FOR RURAL ELECTRIFICATION AGENCY

Dear Respondent,

I am **NKUMBE ENONGENE REX**, a student of the **INSTITUTE OF WATER AND ENERGY SCIENCES** of the **PAN AFRICAN UNIVERSITY**, **TLEMCEN, ALGERIA** carrying out research on: **"*OVERCOMING THE CHALLENGES OF RURAL ELECTRIFICATION THROUGH STAKEHOLDERS' PARTICIPATION IN POLICY MAKING: CASE OF CAMEROON*"** in partial fulfillment of the requirement for the award of a Master of Science (M.Sc) Degree in ENERGY POLICY. The information you provide will be treated with confidentiality and will be solely for academic purposes.

INSTRUCTIONS: ***Place a tick (√) in the boxes provided and fill the blank spaces where necessary***

SECTION A: IDENTIFICATION OF THE RESPONDENT

Sex: Female ☐ Male ☐

Age range: 18-27 ☐ 28– 37 ☐ 38 – 47 ☐ 48 – 57 ☐ 58 and above ☐

Educational Level: Primary ☐ Secondary ☐ Higher Education ☐ Post graduate ☐

Marital status: Married ☐ Single ☐ Divorced ☐ Widow ☐

Major Occupation: _____

Years in the industry: below 5 years ☐ 6-15 years ☐ 16-25 years ☐ Above 25 years ☐

SECTION B: ISSUES RELATING TO RURAL ELECTRIFICATION IN CAMEROON

RQ 1. To what extent has the Rural Electrification Agency been effective in implementing its policies in Cameroon?

How does REA make its policies?

Which mechanism was implored to draft the Rural Electrification Master Plan?

How does this Master Plan tie with the UN SDG 7 of providing clean energy for all by 2030?

How financially autonomous is the REA in using the Rural Electrification Fund?

How does the Agency ensure the execution of its projects?

RQ 2. How does stakeholder participation impact the policy making and implementation processes for rural electrification?

The liberalisation of the electricity sector has brought in several participants, how have these stakeholders helped facilitate or retard policy making for rural electrification?

Which mechanisms does the REA use to include relevant stakeholders in the policy making process?

How does the Agency oversee the rural electrification plans of other electricity stakeholders?

What follow up measures exist at the disposal of the agency during project implementation by stakeholders?

RQ 3. What factors hinder the improvement of rural electricity access in Cameroon?

What to you are the major barriers to rural electrification in Cameroon?

How do you think these challenges can be addressed?

THANK YOU FOR YOUR TIME

INTERVIEW GUIDE FOR FINANCIAL INSTITUTIONS

Dear Respondent,

I am **NKUMBE ENONGENE REX**, a student of the **INSTITUTE OF WATER AND ENERGY SCIENCES** of the **PAN AFRICAN UNIVERSITY**, **TLEMCEN, ALGERIA** carrying out research on: **"*OVERCOMING THE CHALLENGES OF RURAL ELECTRIFICATION THROUGH STAKEHOLDERS' PARTICIPATION IN POLICY MAKING: CASE OF CAMEROON*"** in partial fulfillment of the requirement for the award of a Master of Science (M.Sc) Degree in ENERGY POLICY. The information you provide will be treated with confidentiality and will be solely for academic purposes.

INSTRUCTIONS: ***Place a tick (√) in the boxes provided and fill the blank spaces where necessary***

SECTION A: IDENTIFICATION OF THE RESPONDENT

Sex: Female ☐ Male ☐

Age range: 18-27 ☐ 28– 37 ☐ 38 – 47 ☐ 48 – 57 ☐ 58 and above ☐

Educational Level: Primary ☐ Secondary ☐ Higher Education ☐ Post graduate ☐

Marital status: Married ☐ Single ☐ Divorced ☐ Widow ☐

Major Occupation: _____

Years in the industry: below 5 years ☐ 6-15 years ☐ 16-25 years ☐ Above 25 years ☐

SECTION B: ISSUES RELATING TO RURAL ELECTRIFICATION IN CAMEROON

RQ 3. What factors hinder the improvement of rural electricity access in Cameroon?

1. Do you see the rural electrification sector in Cameroon as one worth investing in?
2. If yes, how many projects have you financed so far?
3. If no, would you love to invest in the sector?
4. What do you think are the challenges financial establishments face in investing in rural electrification projects in Cameroon?
5. How do you think these problems can be addressed to spur investment from local financial establishments.

THANK YOU FOR YOUR TIME

INTERVIEW GUIDE FOR LOCAL DENIZENS (FOCUSED GROUP)

Dear Respondent,

I am **NKUMBE ENONGENE REX**, a student of the **INSTITUTE OF WATER AND ENERGY SCIENCES** of the **PAN AFRICAN UNIVERSITY**, **TLEMCEN, ALGERIA** carrying out research on: **"*OVERCOMING THE CHALLENGES OF RURAL ELECTRIFICATION THROUGH STAKEHOLDERS' PARTICIPATION IN POLICY MAKING: CASE OF CAMEROON*"** in partial fulfillment of the requirement for the award of a Master of Science (M.Sc) Degree in ENERGY POLICY. The information you provide will be treated with confidentiality and will be solely for academic purposes.

ISSUES RELATING TO RURAL ELECTRIFICATION IN CAMEROON

How is life in Mongossi without electricity access?

So far, what have been the attempts of government to provide electricity to Mongossi

What efforts have local communities been making to ensure they have access to clean energy?

How do you think this challenge can quickly be addressed?

THANK YOU FOR YOUR TIME

Appendix D: Authorisation for Data Collection from the Rural Electrification Agency

Nkumbe Enongene Rex
Pan African University
Institute of Water and Energy Sciences, (PAUWES) Tlemcen, Algeria,
(+237) 652976789
rexnkumbe@gmail.com; nkumbe.rex@student.pauwes.dz

5th April 2019

The Director,
Rural Electrification Agency
Yaounde, Cameroon.

SERVICE DU COURRIER ET DES LIAISONS
Arrivé le : 25 AVR 2019
Reçu par :
Enregistré sous : 642
Sortie le :
Destination
Priorité:Ire-Normal-Urgent-Très Urgent

Request for Permission to collect Data

Sir/Madam,

I am writing to apply to collect data in your institution. Currently, I am studying for a Master of Science in Energy Policy with the Pan African University institute for Water and Energy Sciences in Tlemcen Algeria. I am currently carrying out my Master's thesis research entitled: **Overcoming the Challenges of Rural Electrification through Stakeholders' Participation in Policy Making in Cameroon**. This this happens to be a graduation requirement which will enable future energy policy makers and analysts in Africa, like me, to gain practical knowledge on rural electrification issues in Cameroon.

Being an institution that is involved with the electricity sector in Cameroon, I believe I can get credible and reliable information from your archives and personnel I will be able to interview on the challenges facing the electricity development sector of Cameroon.

While counting on your good judgement in granting me this opportunity to add more knowledge and literature on the Cameroonian energy sector, so as to enable me better prepare myself for future service to Cameroon, Africa and humanity, I remain,

Sincerely yours,
Enongené Rex

Appendix E: Authorisation for Data Collection from National Financial Credit

N F C BANK

O/Ref. No 002/NFCB/HHR/ 789 /2019

06 MAT 2019

Nkumbe Enongene Rex
Pan African University
Institute of Water and Energy Sciences,
Tlemcen, Algeria
Tel: 652 976 789
Email: rexnkumbe@gmail.com

Dear Mr. Nkumbe,

Re: Letter of Acceptance

We acknowledge receipt of your request dated **April 05, 2019** in which you requested authorization to collect data from our institution. We write to inform you that the request has been granted.

You have been authorized to carry out this exercise from **May 06, 2019** to **May 10, 2019** at our Institution here in Yaounde. Your anchor person will be the **Credit Manager** at the Credit Directorate, Head Office.

Any information provided to you by the bank should be treated with full confidentiality.

Yours sincerely,

General Manager

Cc:
CM
HHR
File

R.C. BDA.2007B.084 – N° de Contribuable M079100006355X, NCC N° BC 23
Avenue Charles de Gaulle – B.P. 6578 Yaoundé – Cameroun
Tél. : (+237) 222 20 28 23 / 222 20 33 11 Fax : (+237) 222 20 28 22 / 222 20 29 81

Appendix F: List of Respondents

R1

R2

R3

R4

R5

R6

R7

Appendix G: Research Budget

S/N	Item	Unit	Qty	Rate (Unit price)	Amount*	Amount in Dollar	Link to Research Activity**	
	(A) Material and Supplies							
1	Internet recharge	Monthly bundles	5	40,000 XAF	200,000	444.44	- The researcher shall be conducting the study in a location far from that of the supervisor and will need to keep contact with the advisor so as to ensure proper communication in the course of the study when new developments occur. - The study will also contain literature from the works of others. This literature can only be gotten from online sources.	
2	Buying of stationery	Reams of paper	3	5000	15,000 XAF	33.33	- During interviews, researcher will be taking down notes and making reports from the interviews and field visit.	
3	Printing of interviews and data sets	N/A	20	100	8,000 XAF	17.77	- This material will be used for primary data collection and to also conduct data analysis for the study.	
4	Draft and final Thesis printing with binding	-	6	10,000 XAF	60,000 XAF	133	- After the writing of the thesis, printing will be necessary to present the results in a readable and portable manner for the panellists during defence	

5	Draft and final Report printing	-	6	3,000 XAF	18,000 XAF	40	- After the writing of the internship report, printing will be necessary to present the results to the panellists during defence	
	Sub Total				####	**668.54**		
	(B) Equipment							
1	Internet router	-	1	70,000 XAF	70,000 XAF	155.55	- The internet modem will be needed to have internet access.	
2	Voice Recorder	Pack	1	65,000 XAF	65,000 XAF	144.44	The voice recorder will be used for recording the interview sessions with respondents during field data collection.	
	Sub Total				####	**299.99**		
	(C) Travel + Visa Costs							
1	Flight from Tlemcen to Yaoundé	Trip	1	135,000 DZD	-	1,134	- The flight shall convey the researcher to the country of his research	
2	Field transportation for data collection from Buea	N/A	10	100,000 XAF	100,000 XAF	222.22	- Data collection for this study shall involve respondents located in different cities in Cameroon, away from the residence of the researcher. This necessitates the need for travels from Buea to Yaounde, Douala, Dibamba and Kribi. - Most of the respondents being senior public officials are often busy and will cause the researcher to work with their changing schedules.	
3	Travel Insurance	Monthly coverage	5 months	7400 DZD	7400 DZD	62.71	- Since the researcher is conducting a study in a different location, the researcher needs insurance covering this period.	

	Sub Total				####	**1418.93**	
	(D) Special Activities						
1	Paper Publication	1	1	-	-	200	- A paper extracted from the study shall be published in a peer reviewed journal
	Sub Total				####	**200**	
	(E) Contingencies (%) - optional				####		
1	Exchange rate fluctuations and price volatilities	-	-	-	-	**248.54 (8.24%)**	- This is to allow for any differences that arise as a result of exchange rate volatilities, administrative charges for money transfers, changes in the prices of equipment and other unforeseen costs to be covered.
Grand Total						**2836 USD**	