SCHOOL OF POSTGRADUATE STUDIES

ANALYSIS OF CONNECTION FEE SUBSIDIES ON RURAL ELECTRIFICATION PROJECTS IN ZAMBIA: CASE OF CHIBOMBO DISTRICT.

BY

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DECLARATION

I, **FLORENCE KAMBIKAMBI** do hereby declare that the contents of this study are my original work and that to the best of my knowledge have not been previously presented for any award in any other University. All the sources of information used in this piece of work have been duly acknowledged.

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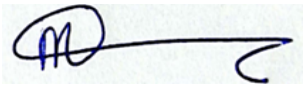
Signature: 

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DEDICATION

This work is dedicated to all who at some point felt like giving up on their research study due to either time or financial constraints or other reasons. On a personal note, my husband, Brian Sikute, and our three (3) daughters: Aviella Sikute, Abigail Sikute and Amarisa Sikute and my grandmother, Florence Kambikambi who have limitlessly supported, believed in me and pushed me to cross this threshold.

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ACRONYMS AND ABBREVIATIONS

ERB Energy Regulation Board

ESAP Electricity Services Access project

Kwh Kilowatt hour

MOE Ministry of Energy

MOF Ministry of Finance and National Planning

POM Project Operations Manual

RDG Rural Growth Centers

REA Rural Electrification Authority

REMP Rural Electrification Master Plan

SDG Sustainable Development Goals

SMEs Small and Medium Enterprises

SPSS Statistical Package for Social Sciences

UN United Nations

ABSTRACT

Zambia like most Sub-Saharan countries grapples with low electrification rates especially in rural areas. Currently, rural electrification rates in Zambia stand at 8% (4.4% and 7.4% on-grid and solar respectively) and the country has a universal access to electricity Sustainable Development Goal (SDG) of attaining 51% rural electrification rate by 2030. The country has been advancing various renewable energy technologies, upscaling hydro power plants as well as subsidy-based electrification programs in selected areas. However, the electrification rate remains low. Further, with the shift in Government policy to remove subsidies in the energy sector, there was need to ascertain what influence the connection fee subsidies had on sustainable rural electrification in line with meeting the set universal access to electricity target. Therefore, the research conducted an analysis of connection fee subsidies on sustainable rural electrification with a focus on Chibombo district where the connection fee subsidy mechanism was implemented under the Electricity Services Access Project (ESAP).

The study used a sequential explanatory mixed-methods approach for data collection. Which entailed that quantitative data were collected first, followed by qualitative data. Quantitative data were attained via the administration of research questionnaires with closed-ended questions while qualitative data were attained via semi-structured interviews with open ended questions. The study found that 938 beneficiaries had been connected under the subsidy mechanism of the ESAP project which was almost three-fold the initial target of 385 beneficiaries. The study further applied descriptive statistics to analyze the quantitative data. Through correlation analysis, the study established a statistically significant positive correlation between connection fee subsidy and increase in electricity connections and sustainable electricity consumption levels. Further, the study found a negative correlation between high connection cost and rural electrification rates. The study also identified critical success factors for sustainable rural electrification which included: economic sustainability, social-cultural sustainability, institutional capacity and environmental sustainability. Thereafter, the study developed a sustainability framework for rural electrification by integrating the critical success factors with sustainable rural electrification.

Keywords: ***Connection fee subsidy, Rural electrification, sustainability, Rural electrification rate, electricity sub-sector***

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 Introduction

This chapter provides a synopsis of rural electrification globally, regionally, and in the Zambian context. Further, this chapter summarizes the connection fee subsidy mechanism executed under the Electricity Services Access Project (ESAP) in Chibombo District in Central Province, Zambia. It also highlights the objectives, research questions, significance of the study, the definition of key terms, the research variables, outline of the research, the scope of work of the research, and the statement of the problem which is the heart of this research.

1.2 Background

Electricity is key for alleviating poverty, economic advancement and improved standard of living, especially in developing countries (Boliko & Ialnazov, 2019). In the same effect, access to electricity advances education, entertainment, health, comfort, protection, and productivity (Arango-Manrique et al., 2021; Feron & Cordero, 2018; López-González et al., 2019).

In appreciation of its relevance, as far as development is concerned, universal access to electricity is marked as being a vital component of the United Nations (UN) Sustainable Development Goals (SDGs) and, thus, worldwide efforts to monitor progress in electrification have been growing over the years (Aklin, Harish, & Urpelainen, 2018). SDG No.7 espouses the need to attain universal access to affordable, reliable, sustainable, and modern energy services, achievable through the provision of electricity services (Sweileh, 2020). Madurai et. al (2021) and Fried & Lagakos (2021) advanced that the advent of the COVID-19 pandemic slowed the progress of the electricity industry just as much as other industries in most parts of the world. Further, Lee (2016) and the International Energy Agency (2021) project that in 2030, nearly 660 million people will still not have electricity and approximately 940 million people will need electricity connections by 2030 to arrive at universal access(International Energy Agency et al., 2021; Lee et al., 2016).

This researcher therefore deduces that the projected figures are still unacceptably high and a clear indication that the pace of electrification could be slow with respect to reaching the global goal of universal access to electricity by 2030. Therefore, taking universal access to electricity in the context of Sub-Saharan Africa entails fast-tracking the access rate threefold between 2021 and 2030 to connect approximately 85 million every year up to 2030 giving rise to the need for strategies and programmes that efficiently take cognizance of the geography, infrastructure, and socioeconomic parameters of a region or country (International Energy Agency et al., 2021). As such, there is need for serious accounting for variable demands and affordability across diverse household groups in both research and policy environments (Pachauri et al., 2013).

Notably, nations embarking on providing electricity to their marginalized populations face substantial challenges which include determining how to create or transform existing institutions and policies to support rural electrification initiatives (Madurai et al., 2021). As promulgated by Kessides, (2005), electricity firms habitually have a practice of serving typically urban populations and thus may be disinclined to support rural electrification programs rendering location as the first determinant for rural electrification projects. Further, Foley (1992) propagates that electricity is a derived demand taking place only when an area has gotten a certain economic level which has vital bearing on the selection of locations for electrification. Location being a pivotal determinant for rural electrification thus entails that scaling up electricity access in rural areas requires creating independent organizations or setting up special programs within electricity firms (Oda & Tsujita, 2011). Complementary solutions, linking both grid extension and off-grid approaches, may be required (Kyriakarakos et al., 2020).

Apart from location, cost is also a critical challenge for rural electrification as advanced by Kyriakos et al. (2020) indicating that the financing of rural electrification is challenging due to its high cost that is mostly met through subsidization in order to decrease the cost of household electrification. In view of the related challenges, rural electrification projects are believed to receive less priority allocation for funding in some of the developing countries, owing to other competing and more crucial needs such as drinking water, agriculture, health and road infrastructure, which require addressing first (Cravioto et al., 2020; Khandker et al., 2014; Lee et al., 2020).

As such, most rural electrification projects have high costs with fewer benefits than the goals outlined at the outset (Arango-Manrique et al., 2021). According to Pachauri et al. (2013), attainment of electricity access rate targets can be realized with an added investment of US$65–86 billion annually until 2030 coupled with a dedicated blend of policies that lower costs for modern cooking fuels and stoves, together with grid and off-grid fast electrification. Grid extension should be implemented as a least-cost option in populous and economically progressive areas, where power demand and load densities are high(Altawell N, 2021; IEA et al., 2010; Luzi et al., 2019; World Bank G, 2010).The financing problem, therefore, is a major challenge in fast-tracking execution of rural electrification projects (Javadi et al., 2013).

In order to tackle the financing challenge for rural electrification, various governments are obliged to offer subsidies for energy, either overtly or covertly, to generation distribution companies and consumers(Lee et al., 2020; Mainali & Silveira, 2011). The estimates for rural electrification subsidies are generally large within a given country's context and tariffs need to be greatly adjusted upwards if the cost line is embedded in the tariff cost build-up (Foley, 1992; International Energy Agency et al., 2021). Reaching a global value for the total energy subsidy is not forthright as different organizations focus on either narrower or broader definitions of what exactly institutes a subsidy and use diverse procedures for their calculation (Abdullah & Markandya, 2012; Feron, 2016; Oviedo-Cepeda et al., 2020). More so, validations for the usage of subsidies vary from social welfare protection, job creation, the inspiration of new sources of energy supply, and economic development to energy security (Carbaugh et al., 2012; Gujba et al., 2012; Hartvigsson et al., 2020).

On the other hand, huge energy subsidies in countries also contend for limited resources that might otherwise be utilized to deliver other vital services, promote uneconomic consumption of energy, and may render new forms of off-grid renewable energy uncompetitive (International Energy Agency et al., 2021). Further, Duran (2021) advances that power generation is principally conducted with fewer costs using hydro sources via the construction of dams on lakes and rivers which feed into the national grid transmission lines on national grids, and the connection of households to the grid is what is costly. The development of power generation from non-hydro renewable sources such as wind and

solar depends heavily on subsidies which are expected to more than double by 2035 (Van Der Hoeven, 2013).

With regard to the implementation of rural electrification subsidies, they are applied via rural electrification projects which are intended to escalate electricity access by spreading centralized distribution lines to rural populations as part of strategies to enable inclusive growth and development (Borhanazad et al., 2013). Vernet (2019) propagates that with electricity access, the welfare benefits of electrification can accumulate through several channels that improve productivity for households involved in revenue-generating activities, such as tailoring, barbershops, welding workshops, hair salons, and other activities. Small and Medium enterprises (SMEs) in communities connected to electricity are 16.2% more profitable than those without power (Olanrele, 2020).

Furthermore, in several parts of the world, rural electrification projects are typically subsidized by public funds as part of the government schemes implemented through organizations such as agencies and power utilities while the private sector also comes in with needed funds in isolated cases (Pode et al., 2016). The World Bank, Development Banks, European Union, and other cooperating partners provide concessional loans, grants, and technical support (Altawell N, 2021). Regionally, the lack of electricity in rural areas exacerbates poverty in sub-Saharan Africa(Lee et al., 2016; Stritzke et al., 2021). With only 14.2% of rural electrification as of 2013, sub-Saharan Africa had the first rank in the world with the lowest access to electricity, entailing that approximately 585 million people had no access to electricity (Javadi et al., 2013). As such, Pachuri et al (2013) conclude that the number of new electricity connections in sub-Saharan Africa is surpassed by population growth.

In the Zambian context, the Demographic Health Survey (DHS) conducted by the Zambia Statistics Agency (ZamStats), in 2018, advanced that Zambia's access to electricity stood at 8.4% in rural areas and 69% in urban areas, inferring that, Zambia only accomplished a 5% and 2% net increase in rural and urban electrification, respectively, over a period of 10 years, from 2008 (Statistics Agency, 2020). Due to the fact that energy is one of the major propagators of economic advancement, it is alarming that most localities in rural Zambia remain without electricity (Haanyika, 2008).

With regard to the policy, regulatory and statutory regulations on which rural electrification is based in Zambia; the National Energy Policy, 2019; the Rural Electrification Act, 2003; Rural Electrification Amendment Act No. 20 of 2021, and the Energy Regulations Act, 2019 are the underpinning regulations (Rural Electrification Master Plan, 2009; MOE, 2019). Further, the Rural Electrification Authority was established in 2009 under the umbrella of the Ministry of Energy and its mandate includes: managing the Rural Electrification Fund (REF); developing strategies and monitoring systems for rural electrification; mobilizing funding for feasibility studies; boosting subsidy-based participation from the private sector; community mobilization; and recommending feasible policy interventions to government (Rural Electrification Master Plan, 2009). Additionally, REA follows the Rural Electrification Master Plan (REMP) which recognized 1,217 Rural Growth Centres (RGCs) as priority for rural electrification (Rural Electrification Authority, 2018).

With a focus on attaining universal access to electricity, the Government of the Republic of Zambia has formulated electrification targets of ninety percent (90%) and fifty one percent (51%) for urban and rural areas respectively to be attained by 2030 (Rural Electrification Authority, 2018). The overall access rate in Zambia is 34% of the total population, urban and rural grid connectivity stands at 69% and 8% respectively and rural access has remained low at 4.4% and 7.4% for the grid and solar connections respectively (Central Statistical Office Z, 2012). This disparity in electrification rates between urban and rural areas is extensive leaving 88.1% of rural localities with marginal electricity access (Luzi et al., 2019).

In view of the low rural electrification rates, Kaoma (2021) states that improving electricity access in rural areas through the electrification of Rural Growth Centres (RGCs) mainly by grid extension remains a challenge in Zambia. Further, Kaoma (2021) advances that during the last 15 years, electrification rates have marginally increased from 3 to 11% for rural areas which not only represents the status quo of access to modern energy in these areas but also shows the unlikelihood of attaining the 2030 rural electrification target of 51%. In furtherance of outlining the challenges hampering faster access to electricity in rural areas in Zambia, Luzi et al (2019) also noted the key factors as; the availability of electricity infrastructure such as transmission poles and lines as well as the willingness

and capability of the households and Small and Medium Enterprises (SMEs) to pay for the service provision.

As a way to address the low electricity access rates, the World Bank MTF report (2019) suggests that for households without any source of electricity, it will be important to provide either an on-grid connection or an off-grid energy solution(Luzi et al., 2019). Addressing high connection costs and providing flexible payment plans are likely to increase the grid-electrification rates (Batidzirai et al., 2021). Grid infrastructure is available in 58.4% of the Enumeration Areas (EAs) in Zambia, however, only 37.7% of Zambian households are connected to the grid (Pode et al., 2016). The low rate of grid connection brings the possibility to increase the grid electrification rate by around 20% via connecting households that are right beneath existing grid infrastructure and the penetration rate for both on and off-grid solutions can be enhanced by addressing affordability concerns through payment plans (Luzi et al., 2019).

Further, Zambia is executing a number of projects including the World Bank-funded Electricity Services Access Project (ESAP) which started in 2018 in order to address low rural electrification rates (Ministry of Energy, 2020). The project was targeted at intensification of the grid transmission lines and connection of households and SMEs as an output-based preliminary subsidy mechanism at a cost of US$26.5 million in Northern, Luapula, Copperbelt, North-Western, Eastern, Southern, Muchinga, Central, and Western Provinces (Rural Electrification Authority, 2018). Output-based subsidy entails that the beneficiaries pay a lower connection fee than the actual and Zesco Limited connects their premises first at its own cost then Zesco Limited is reimbursed by the project for the connection to avoid backlogs of connections(Rural Electrification Authority, 2018). Further, the Project Operations Manual (POM) (2018), for the ESAP project states that output-based subsidy financing is two-fold: Standard connection is applied to permanent structures and includes the cable from an electricity pole to the meter box, a 1-phase prepaid meter and three energy-saving bulbs while enhanced connection is for grass-roofed buildings. This includes the cable from an electricity pole, a 1-phase prepaid meter, a ready-board, and a solitary energy-saving bulb (Rural Electrification Authority, 2018).

Furthermore, the Project Operations Manual (POM) (2018), guided that the project targeted to make available electricity connections to the national grid transmission lines to nearly 22,000 households and about 1,000 businesses in rural areas (about 115,000 recipients, based on an average of five (5) beneficiaries per connection).

Further, the Project Operations Manual (POM) (2018) indicates that the cost of connection for the consumers under the subsidy was US$26 for both the standard and enhanced households and US$81 for SMEs. If the subsidy was not introduced, the consumers would have to pay US$241 for standard households and US$191 for enhanced households and SMEs. The targeted provinces were Luapula, Muchinga, Northern, North-Western, Copperbelt, Eastern, Western, Southern, and Central provinces with a total of 22,063 network extensions and reinforcement-based connections. Central province, where the location of the research (Chibombo district) is housed, the standard household connections for the province were the focus standing at 2,179 while enhanced households were only 77 and Commercial (SMEs) at 113.

Narrowing down to the location of the research, based on the 2010 national census report, over 60% of Zambia's population is located in rural areas and Chibombo district is one of them situated approximately 90km North of Lusaka province with an estimated population of 293,765 people as of 2010 when the last national census was conducted. The district has notable and mostly untapped energy resource potential, i.e., solar, wind, mini-hydro, and biomass resources whose exploitation has either been to the barest minimum or not at all (Central Statistical Office Z, 2012; Kaoma & Gheewala, 2021). Nonetheless, advances to address issues relating to the generation and supply of electricity continue to be made by the government (Central Statistical Office Z, 2012). A combined total of 385 households and Small Meduim Enterprises (SMEs) were targeted under the ESAP project in Chibombo district.

In terms of economies of scale, Chibombo is generally an agronomic region prospectively to become one of the main national food-hubs hence increased access to electricity in the district will provide the much-needed value addition to the agricultural potential of the district (Statistics Agency, 2020).

In view of the foregoing, despite the existence of rural electrification subsidies, there has been a lop-sided emphasis on electrification leaning on urban areas, which can neither resolve the energy access problem for rural areas nor address the sustainable development matter (Foley, 1992; Kessides, 2005; Lee et al., 2020). Guaranteeing access to electricity for rural areas and providing economically feasible and affordable options remains the greatest challenge (Bhattacharyya, 2012). On the other hand, Zambia's economic tenets have drifted away from providing subsidies on fuel and electricity as part of the structural economic adjustment program under the International Monetary Fund (IMF) to ensure debt relief and long-term economic stability (Feldstein, 2003). Therefore, a sustainability framework for rural electrification can help validate the appropriateness of subsidy programs on the rate of rural electrification and bring about the rebalancing of policy interventions for sustainable electricity access provision in rural areas (Bhattacharyya, 2012; Downs et al., 2020; Pode et al., 2016).

Based on this background, this research analyzed the relationship between subsidies and rural electrification and developed a sustainability framework for rural electrification that provides a phased approach to sustainability of electricity subsidies on rural electrification and the critical success factors for sustainable rural electrification. The framework was expected to inform and influence policy interventions in the electricity sub-sector with regard to rural electrification in Zambia.

1.3 Statement of the Problem

Globally, there is a financial gap between the cost of electricity and the ability of rural populations to afford the cost which has led to low rural electrification rates, and to ensure the seamless growth of rural electricity, it is vital to bridge this gap (Akbas et al., 2022; Fried & Lagakos, 2021; Mainali & Silveira, 2011). Zambia, like many developing countries is susceptible to low electrification rates (Batidzirai et al., 2021; Haanyika, 2008; Kaoma & Gheewala, 2021). In adherence to setting 2030 electrification targets as per Sustainable Development Goal (SDG) No.7, Zambia has electrification targets of 90% and 51% for urban and rural areas respectively (Central Statistical Office Z, 2012; Rural Electrification Master Plan, 2009).

Despite Zambia having set the 2030 electrification targets, only 34% of the country's population has access to electricity with Urban and rural grid connectivity standing at 69% and 8%, respectively (Kaoma and Gheewala, 2021; Luzi et al., 2019; Rural Electrification Authority, 2018). Further, the majority of the people in rural communities lack financial capacity to meet the cost of electricity connection, thus, subsidy projects are implemented to cushion the cost of connection (Ministry of Energy, 2020). However, there is a policy shift to remove subsidies in the electricity subsector in Zambia (Kaoma & Gheewala, 2021).

Despite the implementation of connection fee subsidy projects in selected areas, rural electrification rates still remain low in Zambia (Ngoma, 2019).Therefore, what remains in question is what influence the connection fee subsidy has had on the rate of rural electrification and the sustainability of rural electrification projects going forward, to meet the set rural electrification targets by 2030 in the wake of the policy shift to remove subsidies on electricity in Zambia.

Therefore, this research strives to answer this question by conducting an analysis of the relationship between the connection fee subsidies and rural electrification projects with respect to Chibombo district where the Electricity Services Access Project (ESAP) was implemented.

1.4 General Objective

The overall objective of the study was to analyse the connection fee subsidy on sustainable electrification of rural areas with respect to Chibombo district.

1.5 Specific Objectives

1. To review the cost elements for electricity connection in Chibombo district;
2. To assess the capacity of households in Chibombo district to pay for electricity connection;
3. To investigate the number of households connected to the national grid via the ESAP project in Chibombo district;
4. To develop a sustainability framework for the critical success factors for implementation and sustainability of rural electrification in Chibombo district.

1.6 Research Questions

1. What elements drive the cost of electricity connection in Chibombo district?
2. What is the capacity of households in Chibombo district to pay for electricity connection?
3. How many households and SMEs are connected to the national grid via the ESAP project in Chibombo district?
4. What are the critical success factors for the implementation and sustainability of rural electrification in Chibombo district?

1.7 Significance of the Study

The findings of this study are expected to benefit the Government policy makers, electricity utility companies, rural electrification implementing agencies, rural electrification project sponsors and developers, project managers, contractors, consultants and all stakeholders. They are to provide an understanding of the association that exists between subsidies and the rate of rural electrification. The findings are to further reveal the sustainability framework for electricity subsidies on rural electrification hence leading to maximisation of end-user outcomes and improved electricity service provision in rural areas.

The study is also anticipated to arm policymakers with the weaknesses as well as strengths of applying subsidies on rural electrification in light of the shift in policy to move away from subsidies in the electricity sub-sector and to expedite the formulation of feasible and holistic policies to address the gaps and improve the rural electrification access rates with respect to the 2030 set targets. The study will purposively highlight vital aspects for possible policy interventions regarding electricity subsidies for sustainable rural electrification in Zambia.

Finally, the study acts as a point of reference for future researchers in similar studies and is anticipated to add to the existing body of knowledge. The study will aid researchers identify probable areas of research hence allowing researchers to fill in the gap.

1.8 Scope of Work for the Study

This study endeavored to analyze the relationship between subsidies and electrification of rural areas, specifically targeting Chibombo district where the ESAP subsidy project is under implementation.

The study sought to find out how developing a sustainable framework that provides an analysis of the appropriateness and sustainability of electricity subsidies on rural electrification with respect to the last mile connection fee subsidy under the ESAP project in Chibombo district can aid in improving electricity access rates in rural areas. The study purposively analyzed the cost components for electricity connection, and the ability of households to afford electricity connection. The study also investigated the number of beneficiaries of the ESAP subsidy project and strived to envisage the influence that the connection subsidy has on the pace of electricity connections in Chibombo district.

The study was conducted in Chibombo district, being one of rural areas which has benefited from the subsidy mechanism under the ESAP project. The study targeted beneficiaries from households and Small to Medium Enterprises (SMEs), particularly those connected to electricity for over 6 months in the area as key respondents. Further, the study involved officials from the Ministry of Energy, Rural Electrification Authority (REA), Energy Regulation Board and Zesco Limited as key informants based on their expertise and experience in the electricity sub-sector.

1.9 Research Variables

The present research study intends to analyze the relationship that exists between electricity connection fee subsidies and sustainable rural electrification. The electricity connection fee subsidies will serve as the independent variable that may have a relationship with sustainable rural electrification which is the dependent variable.

1.10 Definition of Key Terms and Concepts

For the purpose of this study, the fundamental terms and concepts will mean as follows:

Access to electricity

Also dubbed as “electrification rate”, is the percentage of people in a given location that have relatively stable electricity.

Connection fee Subsidy

is an incentive, waiver, financial aid or support extended to an electricity sub-sector with the aim of making the connection fee affordable for rural areas to connect to electricity.

Impact

is the strong effect or influence that subsidies have on the process of electrification in rural areas.

Last mile Connection

is the drop-wire from a grid line (up to 30 meters) to the meter box with a single- or three-phase pre-payment meter.

Off-grid connection

is an electricity connection in which the power system works independently and the consumer is not connected to the utility's power grid lines.

On-*Grid connection*

is an electricity connection where the power system is connected to the utility's power grid lines.

Rural area

is a geographical location with low population density, few households and infrastructures, and few economic activities.

Rural electrification

is the technique of taking electricity to rural areas.

Rural electrification rate

Is the pace at which households and businesses in rural get connected to electricity in rural areas.

1.11 Organization of the Dissertation

The outline of the study research was organized as follows:

Chapter One: Introduction and Background- chapter one sets the tone and gives an introduction to the research topic. This chapter gives a background to the study, outlines and defines the research problem, identifies the main and specific objective (s) of the study, identifies the research questions, the definition of key terms, the significance and scope of the study and gives a description of the research variables and the organization of the dissertation.

Chapter Two: Literature Review- gives a review of the various literature on project management knowledge areas and contract performance. It highlights the various theories that relate to the research topic.

Chapter three: Theoretical and Conceptual Framework- postulates the theoretical and conceptual framework relevant to the study.

Chapter Four: Research Methodology- identifies the research methodology to be used in the study and defines the method to be applied in the research process. It highlights the research approach, research design, philosophy of the study, Epistemology, Ontology, study population, sample size, data collection tools, data analysis, reliability, validity and ethical considerations.

Chapter Five: Data Finding and Presentation- gives a presentation of the findings to the study based on the questionnaires to be collected from eligible respondents. Response analysis would be based on the relationships of the identified variables; and facilitated through the application of statistical package of social sciences (SPSS).

Chapter Six: Discussion and Analysis- discusses the significance of the research finding in light of what is already known about the research problem under investigation and gives an in-depth analysis and interpretation of the study findings; it will explain any new understanding about the research problem after taking the research findings into consideration. This chapter will connect the introduction using the research questions to the reviewed literature. In other words, the discussion was directed towards answering the research questions

Chapter Seven: Conclusion and Recommendation- is the final chapter and it presents the conclusion and recommendation based on the research findings.

1.12 Chapter Summary

This chapter affords an overview of rural electrification globally, regionally and in the Zambian context. Further, this chapter summarizes the connection fee subsidy mechanism executed under the Electricity Services Access Project (ESAP) in Chibombo District in Central Province, Zambia. It also highlights the objectives, research questions, significance of the study, the definition of key terms, the research variables, outline of the research, the scope of work of the research, and the statement of the problem which is the heart of this research. Additionally, this chapter gives the definition of key terms and outlines the order of the dissertation.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter gives an overview of rural electrification and its associated subsidies using past studies from various researchers. It gives a comprehensive review of literature on rural electrification and focuses on the concepts and theories regarding the relationship between subsidies and rural electrification; highlights the essential requirements needed to lay the groundwork for the development of a sustainability framework for rural electrification as well as gives a theoretical analysis of the research gaps identified in the documented literature regarding this research topic.

2.2. Overview of the Performance of Rural Electrification

2.2.1 Global Electrification and Energy Poverty Scenario

Generally, this researcher infers that access to electricity is a topical issue in developing countries globally owing to its role in fostering economic advancement. The World Bank (2015), advances that roughly 1.2 billion people do not have electricity globally and nearly 95% are found in Africa and Asia. Further, the Alliance for Rural Electrification (2019), opined that the majority of people without access to electricity reside in rural areas, accounting for approximately 84% of the rural population.

Rural areas are attributed with many characteristics that makes it more challenging to provide electricity to them compared to urban areas (Khandker et al., 2014; Lee et al., 2020). Agricultural activities are central in rural areas, the ratio of labor to capital is high, and income is on average quite low and power consumption is also quite low because of the low number of connections per kilometer of power line and the low load per connection (R. H. Acharya & Sadath, 2019; Sebi, 2015; Sy & Mokaddem, 2022). At the same time, the costs per electricity connection and per supplied Kilo watt hour (kWh) are notably high and due to poor communication and bad terrain, operation and maintenance is more

difficult and costly, and the quality of the power supply is often quite low (Cook, 2013; Mulder & Tembe, 2008; M. M. Rahman et al., 2013; Shrestha et al., 2020).

Rural electrification is critical for the attainment of social and economic development and its promoters advance that infrastructure investments in rural electrification enhance the quality of rural life, and lead to long-term increases in rural productivity and employment (Barnes, 2011). This results into innumerable spillover effects, such as reduction in the extent of rural-urban migration and greater willingness of qualified professionals, including doctors and agricultural extension workers, to serve in rural areas (Herzog et al., 2001; Mainali & Silveira, 2011; Winkler et al., 2011). The International Energy Agency (2021), estimates that 2.8 billion people in the world use wood or other biomass for cooking and heating. Though more than 1.7 billion people have access to electricity currently, energy poverty persists, thus the growth rate will need to double by 2030 to reach 100% access (Sweileh, 2020).

The Energy Poverty Observatory (2021), defines energy poverty as the nonexistence of vital energy services to individuals and households. Further, Hills (2012) defines energy poverty as when the cost of basic living needs in energy is more than the social average, and the residual income is lower than the official economic poverty line. Similarly, on the basis of affordability, the EU Energy Observatory described energy poverty as a situation in which sufficient energy to meet domestic needs is unaffordable (Sebi, 2015). In short, affordability of energy is a complex phenomenon to define, conceptualize, and empirically operationalize(Barnes, 2019; Sovacool et al., 2012).

As such, it can be deduced by this researcher that energy poverty is a major hindrance to socio-economic advancement. Energy poverty is an issue for both developed and developing countries, but within dissimilar contexts (Adusah-Poku & Takeuchi, 2019; Gafa & Egbendewe, 2021; Vera & Langlois, 2007). Energy poverty in developed countries relates to the issues of affordability and energy efficiency (Khundi-Mkomba et al., 2021). In developed countries, there is greater infrastructure coverage and equitable access to modern energy sources while energy poverty in developing countries refers to a lack of access to modern energy sources required to provide modern energy services (Ntaintasis et al., 2019; OECD, 2020; Thomson et al., 2017). It can be explained by the

lack of infrastructure, well-functioning energy services markets, and adequate income to afford modern energy sources (Awan et al., 2022a).

Additionally, the United Nations Sustainable Development Goals (SDGs) have amalgamated clean and affordable access to energy as the 7th goal because energy is pivotal for economic development and well-being (International Energy Agency et al., 2021; Pachauri et al., 2013). However, as advanced by Awan (2022), the increase in volatility of energy prices, limited access to modern fuel and the resultant financial burden on the households have led to an increase in energy poverty which is widely prevalent in developing countries.

2.2.2 On-Grid Regional Rural Electrification and its Financing

The rate of electrification is disturbingly slow in most developing countries especially those situated in Africa (M. M. Rahman et al., 2013). Further, Rahman et al. (2013) allude that the major issues accounting for the slow electrification include; the lack of organizational autonomy, lack of funding and non-cost reflective tariffs which can only be overturned by prioritizing system investment, community involvement, advancing anti-corruption features, standardized practices and performance-based incentives while excluding political influence. As propagated by Litzow et al. (2019), electrification rates need to more than quadruple to meet international goals of universal access by 2030 and believes that lack of progress is partly driven by a misalignment between academic research and the information needs of policy makers predominantly with regard to the development of rural areas.

From a developing country perspective, the majority (64%) of the people who do not have access to electricity live in South Asia and Sub-Saharan Africa (Shrestha et al., 2020). Among the major countries in South Asia where 493million people are without electricity, Bangladesh which is the second largest country after India in terms of the number of people who do not have access to electricity faces inordinate challenges in that despite the implementation of Mini-grid projects and the rate of rural electrification remains low due to the population growth rates being higher than the electrification rates (Arango-Manrique et al., 2021; Feron & Cordero, 2018; López-González et al., 2019).

The foregoing is a scenario which this researcher deduces is the case in many developing countries. In its new policy scenarios of 2010, the International Energy Agency (IEA) predicted that 1.2 billion people will still lack access to electricity in the year 2030 and most (87%) of them will be living in rural areas (IEA et al., 2010). Though the growth of rural electrification is on course, there is still a long way to go and more deliberate efforts are required to provide electricity coverage to all people within a reasonable amount of time (Javadi et al., 2013; Van Der Hoeven, 2013).

The inability of most rural dwellers to meet the cost of rural electrification tops the list of the reasons for the low rates of electrification and as much as grid extensions are deemed cheaper than off-grid systems such as mini-grids, solar systems or wind turbines, the per capita income of developing countries plays a major role in determining the rate of electrification in the rural communities (Gujba et al., 2012; Muhoza & Johnson, 2018). As advanced by Barnes et al (2014), countries with comparatively high per capita income tend to have higher rates of rural electrification and the percentage of rural populations that adopt electricity when it becomes available is also higher in wealthier countries.

The cost of providing universal access to energy by 2030 is estimated to be $35 billion annually (IEA, 2021; López-González et al., 2019). As such, in order to tackle the financing challenge for rural electrification, various governments are obliged to offer subsidies for electricity to generation distribution companies and consumers(Lee et al., 2020; Mainali & Silveira, 2011). Governments provide subsidies to develop the rural electrification systems but communities are expected to operate and manage the system on their own as it has been discovered to be impracticable to operate and manage the system with local resources which calls for scaling up of the systems to meet the expected outcomes (Foley, 1992; Haley & Haley, 2008; M. M. Rahman et al., 2013). The financing problem, therefore, is a major challenge in fast-tracking execution of rural electrification projects (Javadi et al., 2013).

2.2.3 Categorization of Electricity Subsidies

The support mechanism of subsidies is the most common globally especially in developing countries resulting in non-cost reflective connection fees and tariffs as advanced by Cuts (2020). Despite the benefits of subsidizing electricity being undisputed,

having an applicable subsidy and delivery mechanism is challenging and largely depends on political will (Sedai et al., 2021). There are three (3) broad categories of electricity subsidies, namely; supply-side or production subsidies, consumption, and connection subsidies (Badcock & Lenzen, 2010).

Supply-side subsidies are administered by central Governments to utility companies for generation, transmission, and capital costs and may involve operational costs (Carbaugh et al., 2012). For Zambia, an example of such a subsidy is the Kariba North Bank project partly financed by the Euro bond (Luzi et al., 2019). The downside of supply-side subsidies is that they are highly regressive in that they are allocated proportionately to consumption resulting in well-off households mostly in urban areas benefiting the most from them (Pode et al., 2016). Despite their regressive nature, Carbon (2016) advances that supply-side subsidies are quite common in sub-Saharan Africa with Zambia, Botswana, and Malawi subsidizing power production.

Consumption subsidies are the most common subsidization in developing countries and are applied via the Increasing Block Tariff(IBT) or Volume Differentiated Tariff(VDT) systems (Sergi et al., 2018). IBT is an electricity pricing structure that charges lower tariffs to the first block of consumption and higher tariffs to higher blocks of consumption and is the subsidy regime applied in Zambia where Zesco Limited subsidizes units under 200kilowatt/hour making subsistence electricity affordable for low income households (Luzi et al., 2019). However, Cuts (2020) propagates that these subsidies are largely not targeted or well designed and often lead to financial loss for the power utilities. VDT on the other hand involves charging a single rate for total units consumed and the highest tariff matching a household's total consumption (Mugisha et al., 2021). That is, if the lifeline tariff is exceeded, the entire consumption is charged at a higher tariff rate, hence the consumption bands need to be determined without imposing huge financial burdens on the low income households and such a subsidy system is not commonly applied in sub-Saharan Africa (Kojima et al., 2016).

Lastly, connection subsidies relate to the reduction of the cost power utilities attach to connecting a household or institution to the grid power lines which involves provision of the poles, wiring and a transformer (Energy Regulation Board, 2022). These subsidies

are increasingly common in developing countries as a way of increasing access to electricity services in order to work at attaining universal access by 2030 and also because from time in memorial connection fees have always been very high and in some instances so high that they tend to be equivalent to some households' monthly income therefore, poor and rural communities are greatly assisted in this regard (Thomas et al., 2020).

Therefore, this researcher emphasizes that the focus of this research is the connection fee subsidies and not the tariff subsidies (IBT and VDT) as there is a tendency for the two parameters of tariff subsidies to be misunderstood as synonymous to connection subsidies.

2.2.4 Regional Off-Grid Rural Electrification Case Studies and Financing

As already alluded to, the general consensus is that on-grid systems are more financially manageable than off-grid systems for rural areas but the view by Winkler et al. (2011) is that off-grid micro-grids (solar home systems, mini-hydros etc.) tend to have substantial benefits despite the cost. However, Aweke (2022) propagates that in spite of the noteworthy gains that micro grids offer, their widespread deployment in rural electrification programs has been quite slow attributed to their complex financial structure and technical configuration, high upfront costs, pronounced financial risks, and convoluted business models (Aweke & Navrud, 2022).

In support of Aweke (2022)'s conclusions, it is a norm to find technical and monetary support mechanisms in developing countries provided by central and local governments through subsidies, Cooperating partners or Public-Private Partnerships (PPPs) (Adusah-Poku & Takeuchi, 2019; Aklin, Harish, & Urpelainen, 2018; Dogan et al., 2021; IEA et al., 2010; Shrestha et al., 2020) . The present mechanisms differ expressly contingent on the project's financial structure, the area, and the technological priorities of the micro grid system; however, it is evident that in the past few years, support mechanisms such as these have had a vital impact on the adoption rates and social acceptance of micro grid

systems and rural electrification projects in general (Batidzirai et al., 2021; Simões & Leder, 2022; Winkler et al., 2011)

In addition, national governments have also employed many policy interventions for their rural electrification projects which also include tax incentives and concessions from global funding agencies (Benalcazar et al., 2020). An example of the large-scale application of these policy interventions and financial support mechanisms is the Nigeria Electrification Project (World Bank, 2018). The project was funded by the World Bank and its aim was to deploy hybrid mini- and micro grids to roughly one million Nigerian households and micro, small, and medium enterprises and to achieve this objective, the project consisted of four components and the combination of two dissimilar support mechanisms which were subsidies and performance-based grants. As indicated by the World Bank (2018), one of the subcomponents of the project was done through a tendering procedure of grant subsidies for micro grids in preselected rural areas which were awarded based on several eligibility criteria and contingent on the number of connections. This researcher therefore deduces that the red-tape associated with this process adds to the slow rate of the rural electrification and bias associated with the selection of areas for electrification in light of the hierarchical and mostly politically influenced approvals that are required.

A second example is in the United Republic of Tanzania where the local Rural Electrification Agency provides financial support to the use of micro grids by using matching grants, where the agency matches the community or private financial contribution to the project at 1:1 match (Riva et al., 2017; Sergi et al., 2018; World Bank Group et al., 2017). In addition to the governmental support, performance grants and long-term loans are provided, where the former is based on the quality of service, and the latter includes low long-term interest rates(Tsuchiya et al., 2020). As can be construed by this researcher from the Tanzanian scenario, with the inflation rates that keep steadily soaring, the interest rates follow suit and Governments in developing countries are weighed down with the debt burden of settling the loans for rural electrification among other loan facilities and with low economic returns from the electrified areas, political will to continue with the rural electrification dwindles resulting in discontinued or fewer rural electrification projects.

The third reference point is the Ministry of New and Renewable Energy (MNRE) of India which launched the Off-grid and Decentralized Solar Applications Programme in 2016 whose objective was to offer financial support in the form of capital subsidies of up to 90% depending on the planned use of the project, participants involved, and installed capacity (Heynen et al., 2019). Also in 2016, the Government of Indonesia established a set of regulations with the aim of electrifying the residual remote locations of the country (nearly 15% of its population) using off-grid solutions however, the program experienced several delays due to the lack of funds and lack of local agreements (Isa et al., 2021; Permana et al., 2021).

Lastly, the Cambodian electrification fund incentivized micro grid investments via grants, subsidized fees, and zero-rated loans with the provision of funding depending on several eligibility conditions, such as the technology employed, locality, and fiscal indicators (Lao & Chungpaibulpatana, 2017; Saing, 2018).

2.2.5 Performance of Rural Electrification in the Zambian Context

In the Zambian context, electricity access has remained low and is a serious concern to policy makers, cooperating partners and the deprived localities (Kaoma & Gheewala, 2021). Merely 34% of the nation's total populace has electricity with urban and rural electrification rates at 69% and 8% respectively (Central Statistical Office Z, 2012; Rural Electrification Master Plan, 2009; Rural Electrification Authority, 2018). There are two broad consumer categories in the electricity sector: the non-mining retail category, whose tariffs are set by the Energy Regulation Board (ERB), and the mining sector, where tariffs are governed through long-term Power Purchase Agreements (PPAs) and for both these categories, tariffs and revenues are below cost recovery (Ministry of Energy, 2020).

Zambia faces the crucial undertaking of developing additional sources of electricity and adapting the transmission and distribution networks to cater for the growing demand of electricity (Ministry of Energy, 2020; MOE, 2019). Therefore, according to the Ministry of Energy Renewable Energy Strategy (2021), Zambia has taken a number of off-grid renewable energy projects aimed at increasing electricity access to its rural population

which include the 60 kilowatt solar system by the Rural Electrification Authority in Mpantha district, 1megawatt mini hydro plant in shiwangandu, biogas projects along the line of rail under the Netherlands Development agency (SNV), biomass Improved cook stove projects in Central, Eastern, North-Western provinces as well as refugee camps under the World Bank and Green Climate Fund ,energy efficiency projects under the European union to mention but a few.

However, despite the numerous initiatives, rural electrification stands at 8% with 4.4% and 7.4% for the grid and solar connections respectively in comparison to urban electrification that stands at 69% (Kaoma & Gheewala, 2021; Luzi et al., 2019; MOE, 2019; Muhoza & Johnson, 2018). As a way to accelerate rural electrification, Tambatamba and Kumwenda (2018) suggest that apart from methods of electrification such as grid extension and standalone systems, hybrid systems which are a combination of two or more electrification methods comprising of Solar PV panels, wind turbines, battery bank, inverters and biogas generator should be propagated.

Furthermore, the Government, through REA, executed the Electricity Services Access Project (ESAP) funded via a $26.5 million loan facility from the World Bank and a $7 million grant from the Swedish International Development Agency (SIDA). Further, the project had $2.7 million as contribution in-kind from REA and Zesco Limited (Rural Electrification Authority, 2018).

The ESAP was implemented in North-Western, Luapula, Northern, Copperbelt, Southern, Eastern, Central, Muchinga and Western provinces where REA has the obligation to serve as defined by the REA Act (Rural Electrification Authority, 2018). The project was extended as of April, 2022 for another year and there is therefore need to ascertain the extent to which the connection fee subsidy advanced rural electrification. The area of focus is Central Province narrowing down on Chibombo district.

2.3 Literature Based on Research Objectives

The relevant literature related to the research objectives is outlined below.

2.3.1 Cost Elements of Electricity Connection

Globally, the cost of electricity connection is a topical issue for developing countries, and in the context of African countries, electricity connection charges are very high, both relative to local incomes and relative to connection charges in other parts of the world (Kojima et al., 2016). World-over, the cost parameters for the connection fee are generally linked to the cost of infrastructure required for the utility company to provide the connection and the logistics associated with it but most consumers are mostly not aware of these cost parameters and just focus on how high the cost of connection is (Mugisha et al., 2021; Oviedo-Cepeda et al., 2020; Sergi et al., 2018; Simões & Leder, 2022). With regard to Africa, the wholesale costs for generation and distribution of electricity in many parts of Africa are high, however, in many countries, regulated tariffs are set below a level that would allow utility firms to recover these costs (Kojima et al., 2016; Reber et al., 2018). The possible losses from connecting more customers make it imperative for distribution utility companies to set high connection charges which both reduce the demand for connections and recover future losses from those customers who do connect (Kojima et al., 2016).

For instance, in Ethiopia, the national utility decided to permit customers to pay for the connection charge over time, thus lowering the financial barrier to adoption of electricity and the outcome of an impact assessment analysis conducted by Golumbeanu and Barnes (2013) reported that numbers of households who adopted electricity increased because they could spread out the connection cost over a period of time.

Golumbeanu and Barnes (2013) further conclude that high electricity connection charges are likely the most noteworthy obstacle to improving electricity access in the Sub-Saharan Africa region. Notably, this researcher infers that connection-charge intervention programs are an important component of strategies for rural electrification. However, according to Reber et al (2018), they are not a cure for all challenges facing electricity companies in Sub-Saharan Africa and corresponding programs to foster more use of electricity should consist of credit provision for new businesses and incentives for households to embrace efficient electric appliances. Further, Blimpo et al. (2018) advance that the low electrification rates and high connection charges that are common in the Sub-

Saharan Africa region culminate from setting regulated electricity tariffs too low. The resultant effect is that utility companies lose revenue from each connected customer and low electricity consumption by households creates the difficulty of recovering the cost of providing a connection (Blimpo et al., 2018). As such, Bos et al (2018) propagates that for each possible choice of the regulated tariff, the optimal upfront connection charge is computed that will maximize profits for the utility in its service territory.

Additionally, in the context of micro-grid systems, setting viable tariffs is in developing countries is a mammoth task because while micro-grids are mostly construed as less costly solutions for rural electricity provision, they distribute electricity that is more costly than what prevailing on-grid consumers in metropolitan areas pay for (Isa et al., 2021; Lao & Chungpaibulpatana, 2017; Reber et al., 2018; Saing, 2018). As Heynen et. al (2019) opine, averaging the cost for each consumer in a wider customer spectrum permits parastatal utilities to implement same tariffs and connection fees that successfully cross-subsidize expensive to aid are cheaper ones. As further advanced by Akbas (2022), these tariffs may further be directly subsidized through government or donor-aided projects, resulting in parastatal utilities charging tariffs which are lower than their normal cost of amenity provision hence waiving the cost of connection fees for new customers. Thus, as concluded by Bazilian et. al (2012), the connection fee that a single consumer pays is not reflective of the full cost of service provision to that consumer but rather the average cost across the spectrum of the grid system.

In view of the above, this researcher construes that higher tariffs are associated with lower optimal connection charges and higher electrification rates. Nonetheless, Long (2018) advances that due to households' low willingness to pay for electricity services, the equilibrium electrification rates are much lower and future advances in electrification will require higher incomes, increased coverage of the distribution network, and lower connection costs.

In the Zambian context, the scenario is the same as the region in that the power utility (Zesco Limited) equally has tariffs that are not cost reflective and in order to keep afloat, some form of compensation is realized through the cost of connection (IMF, 2017). The estimated investment cost of rural electrification in Zambia is USD 50 million annually

(Baurzhan & Jenkins, 2016; Pachauri et al., 2013). The government is mainly focused on grid-extension projects and has executed 160 grid-extension projects, 421 solar-home systems, and one solar micro grid through the rural electrification agency (Rural Electrification Authority, 2018). Costs per connection contrast by factors such as distance from the grid, voltage, and terrain (Luzi et al., 2019) .

In 2016, the Zambian electricity sub-sector lost about US$300-400 million as a result of underpricing electricity, and as such, there were inadequate funds for operations, maintenance, and the capital expenditures needed for plant refurbishment and expansion (World Bank, 2017). This financial situation for the power utilities was exacerbated, when in 2015 and 2016, due to the substantial drop in hydro reservoir water levels, Zesco Limited had to start importing costly emergency power (Energy Regulation Board, 2021). The cost components for the connection fees include the cost for the poles, conductors, service cables (drop-down cable), transformers and transportation and these connection costs are assessed relative to prevailing market rates and location at a given period and in consultation with REA and Zesco Limited (Energy Regulation Board, 2021).

Further, in line with the issue of cost reflectivity, worthy of note is that the Energy Regulation Board in its 2022 call for public opinion on Zesco Limited's application to increase connection fees by about 500% for domestic consumers and to increase connection fees for commercial customers by about 970% as shown in table 3, indicated that Zesco Limited's application was premised on the need for cost reflective standard connection fees to enable faster customer access to the electricity grid while not affecting its financial sustainability and operational efficiency. The application is still under review after subjection to public opinion. Table 3 shows the current connection fees and the proposed revision that is still under review.

Table 0.1 Current Zesco Limited Connection fees and Proposed Adjustments

CUSTOMERS IN HIGH DENSITY DEMARCATED AND RETICULATED AREAS			
Service Category	**Description**	**Current Fees (K)**	**Proposed fees (K)**
NEW CONNECTION	1 Phase Overhead	769.00	4,600.00
	3 Phase overhead	1,430.00	15,300.00
	1 Phase Underground	890.00	6,800.00
	3 Phase underground	-	20,900.00
UPGRADING	1 Phase Overhead to 3 phase overhead	1,137.00	13,000.00
	1 Phase overhead to 3 phase underground	1,844.00	20,900.00
	1 phase Underground to 3 phase underground	1,220.00	10,800.00
CUSTOMERS IN LOW DENSITY DEMARCATED AND RETICULATED AREAS			
Service Category	**Description**	**Current Fees (K)**	**Proposed fees (K)**
NEW CONNECTION	1 Phase Overhead standard	2,873.00	13,300.00
	1 Phase Overhead (Servants Quarter)	769.00	4,700.00
	3 Phase Overhead	4,887.00	28,800.00
	1 Phase Underground	3,358.00	15,800.00
	3 Phase underground	5,342.00	34,300.00
UPGRADING	1 Phase Overhead to 3 phase Overhead	1,979.00	13,300.00

	1 Phase overhead to 3 Phase Underground	2,873.00	13,000.00
	1 Phase Underground to 3 Phase Underground	2,686.00	20,900.00
	3 Phase Overhead to 3 Phase Underground	1,220.00	10,800.00
CUSTOMERS IN UN-DEMARCATED HIGH DENSITY AREAS			
Service Category	**Description**	**Current Fees (K)**	**Proposed fees (K)**
NEW CONNECTION	1Phase Overhead Standard	1,709.00	7,000.00
	3 Phase overhead	3,159.00	20,300.00
	1 Phase Underground	2,124.00	9,000.00
	3 Phase underground	3,642.00	24,600.00
UPGRADING	1 Phase Overhead to 3 Phase Overhead	3,642.00	24,600.00
	1 Phase overhead to 3 Phase Underground	1,558.00	15,300.00
	1 Phase Underground to 3 Phase Underground		22,900.00
	3 phase Overhead to 3 Phase Underground	2,265.00	15,100.00

Source: Energy Regulation Board, 2021

In view of the above, this researcher deduces that a consensus between the financial viability of the power utility (Zesco Limited) and the passing on of cost reflectivity to the consumer connection fees has to be reached for the sake of economic posterity and security of supply of electricity to rural communities.

2.3.2 Capacity of Households to Pay for Electricity Connection

As this researcher construes, it has long been claimed that rural electrification greatly improves the quality of life and focusing on lighting alone, it brings benefits such as increased study time for school children, entertainment and information via television, extended hours for Small and Medium Enterprises (SMEs) as well as a greater sense of security. Globally, as advanced by the World Bank in the Independent Evaluation Group (IEG) report of 2008, the people who live in rural areas greatly appreciate these benefits and are willing to pay for them at levels more than sufficient to cover the costs concluding that the Willingness to Pay (WTP) for electricity is high, exceeding the long-run marginal cost of supply (World Bank, 2008).

However, as can be deduced by this researcher awareness of the benefits of electricity does not equate to experiencing those benefits without the ability to pay for them. As advanced by Khandker et al (2014), only 7 percent of dedicated energy sector projects have an explicit poverty-reduction objective entailing that poverty reduction is yet to become the central concern for energy projects, and there is seldom deliberate attention to incorporation of the underprivileged or to pro-poor definitive actions. Hence, the driving force is energy access to meet the set Sustainable Development Goals (SDGs) with poverty reduction as a secondary element observed as a result of electrification after project close out hence this factor is rarely incorporated at project design of electrification projects (Aklin, Harish, & Urpelainen, 2018; Boliko & Ialnazov, 2019; Müller et al., 2021).

Two aspects reinforce this anti-poor pattern in electrification as advanced by Bos et. al (2018) which are firstly which localities to connect and secondly which ones can pay for electricity connection once the grid is extension is implemented. Mostly, settlements to be connected to the grid are recognized on a “least cost” premise that is advantageous for settlements near the existing grid, roads, and towns and this approach is encouraged

in order to safe guard the financial viability of the electrification projects in a number of countries (Boait, 2014; ESMAP, 2007; Pathak, 2020; World Bank, 2017). For instance, the Peru Rural Electrification Project altered community prioritization from the government's "social criteria" to a least cost approach an even if it enhances the financial sustenance of the power utility, there is a clear trade-off with reaching the underprivileged communities (Feron & Cordero, 2018). As such, this researcher deduces that there is need for countries to advance the cause for inclusion of social variables in both project design documentations for Government-funded rural electrification programs as well as in the eligibility criteria for electrification project proposals submitted for funding from either local or international donors in order to foster pro-poor community driven electrification projects.

In most countries, including sub-Saharan Africa, Rana B.T et. al (2019) propagates that growth in rural electrification comes from extensive growth (spreading the grid to new areas) rather than intensive growth (providing connection in already electrified areas). Further, Baurzhan & Jenkins (2016) advance that once electricity extends to a rural area, the connection charge is a hurdle that prevents the poor from connecting to the grid, even though the benefits they would derive and foreseen WTP would exceed the cost of supply. Additionally, as indicated by the World Bank (2017), even in areas that have had an on-grid power line for 15–20 years, it is not uncommon for 20 to 25 percent of households to remain unconnected and the off-grid scenario is even worse since off-grid systems are already costlier than On-grid ones. This is exacerbated by the absence of credit markets in most cases which entails that households cannot borrow to pay the connection charge and only a very small number of donor-supported projects have either extended credit to customers (for example, the Second Accelerated Rural Electrification Project in Thailand) or allowed the connection charge to be paid over a number of years (Benalcazar et al., 2020; Muhoza & Johnson, 2018).

And because the majority of the poor are unable to connect, progressive tariff structures have proved to be regressive subsidy schemes under donor aided projects in order for better-targeted connection charges to be consistent with the priority of ensuring that the poor benefit directly. (Awan et al., 2022b; Blimpo et al., 2018; Lee et al., 2020). The case of Solar Home Systems in Indonesia shows that consumer subsidy remains important

and its removal restricts the dealers' ability to provide credit for customers and for potential users to access Photo Voltaic Energy Service (PVES) and that despite its market potential, sales decreased significantly from nearly 60 to 5 units per month (Immaculata Taufi, 2007).

Additionally, as advanced by Setyowati A. (2021), the rural consumers who succeed in connecting to power benefit from a lifeline tariff which is a low tariff rate (usually a fixed charge) for consumers who utilize electricity beneath a particular consumption threshold, usually 25 kilowatt hours (kWh) per month, but as a result of lack of information, numerous customers needlessly limit consumption thinking they save on money but the opposite is the case. As such, full benefits of electricity provision to the rural areas are not being gotten: firstly, poorer households are mostly incapable of connecting to the grid, and secondly, those that in due course manage to connect to electricity via subsidy schemes have insufficient information to allow them to obtain their maximum benefit due to omission of components at project design and inception stage of electrification projects (Aklin, Harish, & Urpelainen, 2018; Baurzhan & Jenkins, 2016; Cook, 2013; Harish et al., 2014; Pachauri et al., 2013; Rana Bahadur Thapa et al., 2019; Sadath & Acharya, 2017). Blimpo et. Al. (2018) further advances that for a number of electricity distributors in Sub-Saharan Africa, addition of a new residential customer is loss-making due to high wholesale cost of electricity, controlled low retail tariffs, and the characteristic low consumption of residential users. As such, high connection charges are the best way for distribution utilities to make up the losses from connecting new customers (Bos et al., 2018; Oviedo-Cepeda et al., 2020).

Since it takes time to put in place effective social safety nets for cost reflective tariffs to keep utilities afloat, the International Energy Agency (2010) advised that governments need to have deliberate options for supporting the transition of the poor to afford cost reflectivity of tariffs including; momentarily upholding universal subsidies on fuels and electricity that are better targeted at the poor and are more significant in their household budgets as well as presenting short-term measures to ease the impact of tariff increases on the poor using where possible, volume differentiated tariffs or connection charge subsidies.

In view of the foregoing, this researcher suffices to construe that community- led project designs such as installment/credit mechanisms for connection fees and consumer sensitization on productive uses of electricity that have need to be extensively advanced if the capacity of rural communities to pay for both connection and consumption is to be significantly improved.

Narrowing down to Zambia, according to the International Monetary Fund (IMF) (2018), Zambia recorded sturdy growth in the decade dating from 2017 but earnings remained highly skewed with poverty still prevalent. Further, according to the Living Conditions Monitoring survey conducted by Central Statistical Office (2016), annual Gross Domestic product (GDP) growth averaged 6.7 percent in the period 2001-2015 with an estimated 40.8 percent of Zambians living in abject poverty (below US$1.90 per day, purchasing power parity terms) hence rural poverty, at 76.6 percent, is more than three times the rate of urban poverty, at 23.4 percent. Further, the richest 10 percent of households accounted for 56 percent of total income while the poorer half households accounted for 7.3 percent with the Gini coefficient (statistical measure used to calculate income inequality within a nation) reported to be 0.69 (severe income gap) and overall poverty rate of 54.4 percent with a huge divide between rural and urban areas (Central Statistical Office, 2016).

Additionally, with almost 77 percent of the rural population in Zambia living below the poverty line, the present grid connection fee and the requirement that it is to be paid upfront is a huge barrier to electricity access even in places where the grid exists (World Bank, 2017). Therefore, as a matter of emphasis, more effort is needed not only to encourage quicker economic growth but also to warrant planned pro-poor policies are executed so that growth vis a vis rural electrification is more inclusive (Blimpo et al., 2018; World Bank, 2017).

With regard to electricity pricing, Zambia has some of the lowest electricity tariffs in Africa, including a lifeline tariff for households of K0.47 per kilowatt hour (kWh) for residential consumers that use less than 200 kWh per month(Energy Regulation Board, 2021). The lifeline tariff is literally on a 1:1 ratio basis (K1:1kWh) and the K150 per K50 bag of charcoal lasts a week compared to an equivalent amount of 150 units that can last a month when energy efficient appliances and lighting is utilized (Ministry of Energy, 2020).

However, as opined by (Ngoma, 2019), people's perception of high connection fees is also the same for tariffs due to lack of sensitization. Further, with regard to subsidies, the richest 20% of households receive about 70% of the electricity subsidies while the poorest 20% of households receive less than 1% of the electricity subsidies (PMRC, 2017). Further, some schools of thought have challenged ERB and the Ministry of Energy to find avenues in which Zambians can profit from its local copper resources to getting preferential pricing as a substitute for the cost plus pricing model currently in use and that Zambia being Africa's second-largest copper producer, it needs to leverage its large copper reserves to immensely electrify the country, and subsidize rural and peri-urban areas electricity connections and supply costs (Downs et al., 2020; Luzi et al., 2019; Stritzke et al., 2021).

In this regard, the Zambian Government has developed an Integrated Resource Plan that takes into account the envisaged production of 3 million tonnes of copper in the next 10 years, amplified regional demand and improved energy mix (CIG Zambia, 2022). The results from the Integrated Resource Plan (IRP) covering a 30-year period (2022 – 2052) developed by CIG Zambia on behalf of Government under UKAid funding for the electricity sector shows that to meet the projected demand of about 8,000MW by 2030, the country needs approximately US$10.78 billion of investments in generation, transmission and distribution. In addition, Government will need to encourage investments in electrification initiatives, including off-grid systems at an estimated cost of US$ 2.93 billion to realize universal access to electricity.

Further, what is of note is that the IRP covers tariff setting principles which include; making sure that cost-reflective tariff rates are attained while ensuring that affordability and social equity rules are adhered to; ensuring safety of the exposed by providing a constant lifeline tariff band at an affordable level; creating a course of action towards applying cost-reflective tariff rates to all consumers capable to pay them that is as gradual as possible within the stipulated period (CIG Zambia, 2022). Therefore, this researcher suffices to deduce that the issue of creating a common ground between keeping the power utility financially afloat and enhancing the buying power of consumers to afford connection and consumption of electricity is envisaged to be addressed in the implementation of the IRP but this still remains a theoretical goal on paper that seems far-fetched.

All in all, the electrification of rural communities world-wide, regionally and in the Zambian context requires subsidization due to the related cost of connection which these areas cannot afford but still is used by utility companies as a fallback for the non-cost reflective tariffs (Awan et al., 2022b; Batidzirai et al., 2021; Carbaugh et al., 2012; Haanyika, 2008; Kaoma & Gheewala, 2021; Sedai et al., 2021; Tambatamba & Kumwenda, 2018).

Thus, specifically looking at the Electricity Access Project (ESAP) in Zambia, the subsidy subcomponent is aimed at supporting last mile connections to about 22,000 low-income households and 1,000 Small and Medium Enterprises (SMEs) (about 115,000 beneficiaries) in rural areas and is based on an Output Based Approach(OBA) with results-based financing partially subsidizing the cost of new connections for low-income households and SMEs at ZMW 250 and ZMW 769 per connection respectively (Rural Electrification Authority, 2018). To assist Zesco Limited to connect rural households and SMEs to the grid network, the project compensates Zesco Limited for the cost of connections less the subsidized connection fee to be paid by consumers and according to the Project Appraisal Document (PAD), when the consumer connection fee subsidies were introduced, they included inflation, feedback from residents in the targeted areas, and the assumption that consumers willing to pay ZMW 250 are expected to use more electricity, which would raise the overall project viability (World Bank, 2017). Furthermore, in order to advance affordability of the subsidies, the Project Operational Manual (POM) indicates that payment plan options are made available for consumers to pay the connection fee utilizing a combination of mobile money and/or a deferred payment mechanism that is set up by Zesco Limited and the K250 for household connections is spread in a three (3) month period (Rural Electrification Authority, 2018).

Despite the conventional need for subsidies to cushion the cost of connection for rural communities, Zambia's economic tenets have drifted away from providing subsidies on fuel and electricity as part of the structural economic adjustment program under the International Monetary Fund (IMF) for the extension of the pay-back of the USD1.3billion debt (IMF, 2017). Thus, as deduced by this researcher, the shift in tenets casts a shadow on the sustainability of subsidy-based rural electrification projects, the capacity of rural communities to pay for the connection fees and consequently the rate of electrification in

rural areas. As such, as advanced by the World bank IEG evaluation report (2018), there still is need to further analyze subsidies, because the poverty dimension of rural electrification can be addressed through cross-subsidization as well where the urban consumers pay more for power to cushion the rural communities.

2.3.3 Global, Regional and Local Urban/Rural Electrification Rate Trends

The United Nations Sustainable Development Goal (SDG) No.7 endeavors to safeguard access to inexpensive, dependable, viable and modern energy for all and numerous bodies of literature advance that access to a consistent and cheap supply of electricity and clean cooking fuels contributes to improved, and more productive lives (Aklin, Harish, Urpelainen, et al., 2018; Dinkelman et al., 2011; International Energy Agency et al., 2021; Schroeder et al., 2019). To sustain progress toward SDG7, the World Bank has established a Global Tracking Framework (GTF) that measures growth in energy access periodically and is a combined set of parameters toward attaining clean energy access as well, with growth in electrification taking the center stage (International Energy Agency et al., 2021).

The 2017 Global Tracking Framework (GTF) report on electrification indicated that in 2016, the world gradually advanced toward universal access to electricity, with the worldwide electrification rate reaching 87.4% from 85.7% in 2014. For the first time since 1990, global access penetrated the usual threshold of 1 billion in 2016, a bit lower from 1.04 billion in 2014 and an additional 135.7 million people were electrified each year during 2014-2016 (World Bank, 2016). However, taking into account population growth, the annual net increase in population with access is only 49.3 million during the period (Simões & Leder, 2022). Though this development was encouraging, the rate of electrification in the following years leading up to 2030 need to further hasten to meet the 2030 targets (Altawell N, 2021).

Aklin et.al. (2017) advance that the total electrification rate globally increased by 1.27 percentage points per year from 1980 to 2010 based on their global data base for rural electrification report and it is evident that this estimate contrasts with that of only 0.37 percentage points from the World Bank's Global Tracking Framework. Aklin et. Al. (2017) further argue that their information is more thoroughly attained since it has no interpolation

of observations over time or within locations and construes that the World Bank has under calculated progress in electrification over time even for years beyond 2010. Therefore, this researcher deduces that if the concern by Aklin is founded, there will be need for a reconciliation of electrification percentage points per year and methodologies used to derive them with the world bank going forward in order to clear the grey area that has been highlighted with regard to the methodology used by the World bank to determine the percentage of electrification increase annually.

Globally, the rural electrification rates in developing countries give rise to concern with 1.2. billion people lacking access to electricity, 2.8 billion relying on wood or other biomass for cooking and heating (IEA, 2021). About 80% of those without access to modern energy reside in rural areas amounting to approximately 960million rural people having no access to electricity. Although more than1.7 billion people have gained access to electricity to date, the pace of expansion will have to double to meet the 100% access target by 2030 (Altawell N, 2021).

Globally, the gains in rural electrification have been the most pronounced in East/Southeast Asia with a growth rate of almost 2 percentage points, followed by South Asia with about 1.8 percentage points growth per year and Sub-Saharan Africa lagging behind with a yearly growth rate below one percentage point (Lee et al., 2016; Stritzke et al., 2021; World Bank Group et al., 2017). The most successful countries are those located in the Middle East, North Africa, and South Asia and in these regions, rural electrification stimulated more than urban electrification and this progressive story in the Middle East probably reflects the result of the wealth of the region, while the South Asian countries have the benefit of high population densities but Sub-Saharan Africa, with largely very poor and scant populations still remains behind (Guerreiro & Botetzagias, 2018; Pachauri et al., 2013; Ssennono et al., 2021). Incase as the reader you are wondering where the G8 countries and former soviet-oriented states fall, they are deemed to have already achieved universal electricity access and so are not a point of reference (Aklin, Harish, Urpelainen, et al., 2018)

Latin American and East Asian electrification rates increase speedily with income, and the same applies to South Asian countries(Abbas et al., 2021; Feron & Cordero, 2018).

However, in contrast, Sub-Saharan African countries tend to increase their electrification rates at a lesser pace with income growth and in some countries, electrification rates have continued to be below 30% even as income grows above USD3,000 per capita and such countries include Angola, Botswana, Iran, Namibia, and Swaziland (Aevarsdottir et al., 2017; Kornbluth et al., 2012; Kyriakarakos et al., 2020). Regionally, the lack of electricity in rural areas exacerbates poverty in sub-Saharan Africa (Lee et al., 2016; Stritzke et al., 2021). With only 14.2% of rural electrification as of 2013, sub-Saharan Africa was ranked first in the world with the lowest access to electricity, entailing that approximately 585 million people had no access to electricity (Javadi et al., 2013). As such, Pachuri et al (2013) conclude that the number of new electricity connections in sub-Saharan Africa is surpassed by population growth. As of 2021, the sub Saharan region still an average rural electrification rate below 40% (Stritzke et al., 2021)

Taking a turn to West Africa, with Nigeria as reference, the aim is to ensure access to electricity by 75 per cent of the rural population by 2030, a position that puts forward the need for expansion of the existing grid network (Zaman et al., 2021). Realizing the set objectives remains a mammoth task going by the share of rural population with no access to electricity standing at 66 percent of the 95million rural population continuing without access to electricity and with overall rural electrification being at 34%, a situation that unnerves the federal government's rural electrification strategy (Olanrele, 2020; World Bank, 2018).

With regard to Zambia, the electrification rate has been steadily increasing with 34% of the total population with access, urban and rural grid connectivity stands at 69% and 8% respectively and rural access has remained low at 4.4% and 7.4% for the grid and solar connections respectively (Central Statistical Office Z, 2012). This disparity in access to electricity between urban and rural areas is extensive leaving the majority of rural households (88.1%) with no access to any form of electricity source (Luzi et al., 2019).

Narrowing down to the study area, Chibombo is located in Central province and has a population of 293,765 as of last census conducted in 2010 and the district has good commercial farmland, as such, most of the people occupying this area are low-scale commercial farmers with selected large commercial farmers (Central Statistical Office,

2016). With regard to proposed and implemented electrification projects in the district, in 2015, Zesco Limited implemented the Fig tree Chibombo 132kilovolts (Kv) transmission line project at a cost of USD 14.2 million at 90% World Bank and 10% Government funding and also included upgrading of the existing Fig tree sub-station and 61 kilometer transmission line and new substation in neighboring Chisamba district(Kaoma & Gheewala, 2021). The project was implemented under the Increased Access to Electricity Services (IAES) project (Agrebod J. et. al (2017). Chibombo is also a beneficiary of the African Development Bank 120Mw Itezhi tezhi hydro power project which commenced in 2014, and brings power from the Itezhi tezhi Power Company (IPC) power plant to Mumbwa substation via a 142 km long, 220Kv single circuit line, and to West Lusaka substation via a 330Kv, 134km dual circuit line (Africa Development Bank, 2017). As stated by the African Development Bank (2017), the construction of the plant was to last 41 months at a cost of USD 239.05 million and the installation of the transmission line would take 18 months at a cost of USD111.36million and the project was completed successfully in 2017.

Further, according to REA, (2022), a 200Mw grid-connected solar power project called Chibombo Solar Park was proposed in 2021 advocated by Power China Company at a cost of USD 182.6 with commissioning scheduled for 2023 but the project is yet to take off due to lack of financial closure. Despite the implemented electricity projects, the electrification rate for Chibombo still remains in the 3.3% electrification bracket (Rural Electrification Master Plan, 2009). Lastly, Chibombo is also a beneficiary of the World Bank Electricity Access Project (ESAP) which has a connection fee subsidy as one of its components and is the focus of this study as such, this researcher suffices to construe that Chibombo district residents and Small and Medium enterprises are enjoying the benefits of the subsidy scheme. However, the extent of this enjoyment and whether it has materialized into an increased rate of electrification for the district is what this study endeavors to find out.

2.3.4 Critical Success Factors for a Sustainability Framework for Implementation and Sustainability of Rural Electrification

According to Debajit (2019), the choice of sustainability criteria for rural electrification differs from country to country depending on its resource availability and technological maturity. Environmental criteria are preferred in developed countries, whereas technical and economic criteria are desired in the developing countries (López-González et al., 2019).

Electricity is largely regarded as a public good, therefore, from a government standpoint, impartiality and objectivity for both the power utilities and consumers are vital success factors to increase access to electricity (Schroeder et al., 2019). As such, a mixture of community-level participation as well as the role of Rural Electrification Authorities and Energy Ministries in building rural communities' ownership, improving technical, entrepreneurial and managerial capabilities, knowledge and technology transfer, creating inventive financing models and influencing policy are critical for the development of cohesive sustainability frameworks for rural electrification(Guerreiro & Botetzagias, 2018).

Affordability of connection fees for rural communities is at the heart of the implementation of connection fee subsidies making it the most critical success factor as can be deduced by this researcher. Further, as championed by Golumbeanu (2013), the electricity connection charge is a key factor for either inspiring or discouraging the take up of electricity in developing countries, and more specifically in Sub-Saharan Africa. Golumbeanu (2013) further advances that although strategies to make the payment of connection charges affordable seem to be one of the fundamental factors in encouraging higher electrification rates in developing countries, it must be noted that they form only a fragment of a bigger set of interventions required for increasing the rate of electricity connections. Other key factors to promote electricity use in rural areas include; a consistent power supply; a financially viable utility company; effective methods for collecting electricity revenues; participation of local people in the extension program; monitoring progress of electrification rates, customer gratification; and political will for a

robust electricity sector (Blimpo et al., 2018; Rana Bahadur Thapa et al., 2019; Turkson & Wohlgemuth, 2001; Zomers, 2003)

Further, Benz, (2022) advances that the costs of service connection cables are often conveyed to customers via connection charges and recommends that if utility firms use lower-gauge cables, this could cut the connection charge by a significant amount. Further, in most of Sub-Saharan Africa, the minimum size of service cable used for a new connection is 16 cubic millimeters (mm^2) or 25 cubic millimeters (mm^2) and they transmit a current in excess of 50 amperes (amps), whereas the maximum demand load from most rural and urban poor consumers is 1 or 2 amps making the service connections profoundly overvalued inflating the utility's and consumers' costs (Blimpo et al., 2018). As such, the use of service cables of 6 or 10 mm^2 might significantly lessen connection charges for the large majority of low-consumption customers(Benz, 2022; Blimpo et al., 2018; Panchal et al., 2021).

Further, Simões (2022) infers that because many governments wrestle with subsidy shortfalls, subsidies may be a disincentive for utilities to expand energy services since they lose money with each new connection and that some governments subsidize transmission infrastructure in order to expand connections, but this, too, artificially lowers the cost of providing electricity to rural populations. Minimizing subsidies and spreading them equally is an important objective, but one that, in many developing countries, is only secondary to the objective of speedily and cheaply increasing capacity and access to meet rapidly growing energy demand and encourage economic growth (Awan et al., 2022a; Carbaugh et al., 2012; Sedai et al., 2021). Therefore, as a matter of emphasis, this researcher deduces that the lack of coherence between a utility's need to be kept financially afloat and the affordability of electricity to the consumer is a serious hindrance to the sustainability of subsidies for rural electrification. Further, an assessment of rural electrification sustainability factors concluded by Feron et al. (2016) embraces four dimensions of rural electrification sustainability which are institutional, economic, environmental, and socio-cultural success factors.

Institutional sustainability stresses stability/durability and technical and service standards, including coherence between laws and regulations (Reddy, 2015; Sharma & Balachandra, 2015). Draw-backs in rural electrification are mostly credited to consistencies in the regulatory frameworks and strategies, or the absence of appropriate standards (Arango-Manrique et al., 2021; White et al., 2013; Wimmler et al., 2015). White et al. (2013) also advance that unforeseen shifts in policy have undesirable impacts on investments and cause economic insecurity. Further, a number of studies have highlighted that viable organizations for rural electrification need to possess the aptitude to adjust to future requirements and not only need to preserve themselves over time but should also be open to the public and its interests and be accountable and transparent in their decision-makings (Dunmade, 2002; Immaculata Taufi, 2007; Pfahl, 2005).Therefore, decentralization and community involvement have largely been cited as indicators of sustainable institutions (Koomson & Danquah, 2021; Pfahl, 2005; Rad, 2011; Salite et al., 2019). As propagated by Wüstenhagen et al. (2007), they argue that a top-down approach at the central government level may hinder the acceptance of a technology at the local level. Despite the benefits of decentralization, Bhattacharya S.C. (2012) pointed out that it may be challenging if local institutions in a decentralized management lack the management capability, expertise and know-how to administrate.

Economic sustainability of rural electrification calls for ensuring the financing of the capital investments and Operations and Maintenance (O&M) over a system's lifetime (Ilskog & Kjellström, 2008; Wimmler et al., 2015; Winkler et al., 2011). Other important indicators for economic sustainability of rural electrification are the cost-effectiveness and the dependability of supply (Ang & Liu, 2007; Prandecki, 2014; Vera & Langlois, 2007). Further, since electricity consumption is linked to income, rural electrification is expected to contribute to the income of its users (Cook, 2011; Pereira et al., 2010). Furthermore, as advanced by Cook P. (2011), if rural electricity projects purpose for higher productive outcomes for rural communities, they need to be tied with corresponding infrastructure and training which also require financing.

Regarding environmental sustainability for rural electrification, it needs civil society's awareness on environmental issues, as their backing is needed to implement environmental policies and regulations (Auty & De Soysa, 2005; Yoshihara, 2001).

Environmental sustainability also necessitates minimizing adverse effects of energy development on the environment. These effects concern the quantity of greenhouse gases (GHG) such as Sulphur dioxide and Nitrogen oxide; loss of biodiversity as a result of deforestation; household air pollution or noise pollution (Demirtas, 2013; Mainali et al., 2014; Rad, 2011; Salite et al., 2019; Wüstenhagen et al., 2007).

Socio-cultural sustainability on the other hand involves bearing in mind equity/ disproportionality criteria among diverse communities (Sweileh, 2020). In rural electrification, decisions have to be made with regard to who will have first access to energy and how much energy is to be given to each household (Axelsson et al., 2013; Bhattacharyya, 2012; Ribeiro et al., 2011). Further, consideration must be given to the appropriateness of a technology to the cultural conditions where it will be employed, as well as to the likely social acceptance, which implies a participatory and inclusive approach in which the local community is engaged to increase acceptability and accountability (Hirmer & Cruickshank, 2014; Müggenburg et al., 2012; Prandecki, 2014; Wimmler et al., 2015). It is therefore imperative to ensure socio-cultural sustainability, that the concept of cultural justice is embraced, which in this context denotes justice through participation and recognition (Fenner et al., 2006).Cultural justice in rural electrification hinges on the capacity to assimilate the technology into the existing social structures (Demirtas, 2013; Downs et al., 2020). Indeed, as argued by Dunmade I (2002) and Axelssen et. al. (2013), the socio-cultural context defines to what degree a technology is accepted and consequently adopted.

In view of the above, this researcher deduces that all the five critical success factors recommended above apply to the Zambian scenario as well in the same context they have been presented if the national rural electrification rates are to be improved nationally and in Chibombo district which is the study area to meet the 2030 electrification targets. As such, this researcher further deduces that adoption of cost reflective yet affordable connection fees and tariffs; institutional sustainability with regard to the Ministry of Energy, Rural electrification Authority, Zesco Limited and the Energy Regulation Board; economic sustainability with regard to subsidy-based projects such as the World Bank funded ESAP project and sensitization of rural communities on the productive use of electricity for income generation; environmental sustainability with regard to more adoption of

renewable energy projects and accessing climate finance; and socio-cultural sustainability via extensive sensitization on rural electrification technologies and financing options all result into a sustainable framework for rural electrification.

Lastly, Zen et al. (2016) points out that measuring sustainability is a huge challenge and a key issue for discussion on creating reliable and measurable sustainability criteria hence developing a reliable tool to measure sustainability should be a pre-requisite for policy-makers and decision-makers to distinguish whether they are fostering sustainable development or should be re-adjusted.

2.3.4.1 Selected Frameworks on Rural Electrification

2.3.4.1.1 Value Framework for Rural Electrification

Fathoming the perceived user value of rural electrification is critical when implementing rural electrification projects or programs because they are not void of challenges with regard to circulation of information and sustainability (Boztepe S, 2007). In this regard, five (5) pillars for the successful implementation of rural electrification based on the perceived value of the beneficiaries were established by (Smith & Colgate, 2007) and include: social significance value; functional; epistemic; emotional and cultural values. The sustainability of rural electrification is influenced by any of the pillars and their constituent characteristics are indicated in figure 2. As a result, taking into account the value that end-users are likely to place on electrification gives a significant and whole-encompassing insight on measurement of success of rural electrification projects (Drinkwaard et al., 2010). Mostly, assessment of sustainability of rural electrification projects is based on technological and economic factors which directly speak to the financial returns to power utilities and increase in electrification rates for a given location (Rolland et al., 2011). Seldom are socio-cultural factors taken into account despite their ability to more accurately capture the needs and desires of a community and resultantly generate user value (Hirmer & Cruickshank, 2014). As such, these have been incorporated as evidenced in figure 2 to give a holistic success framework for rural electrification based on perceived value.

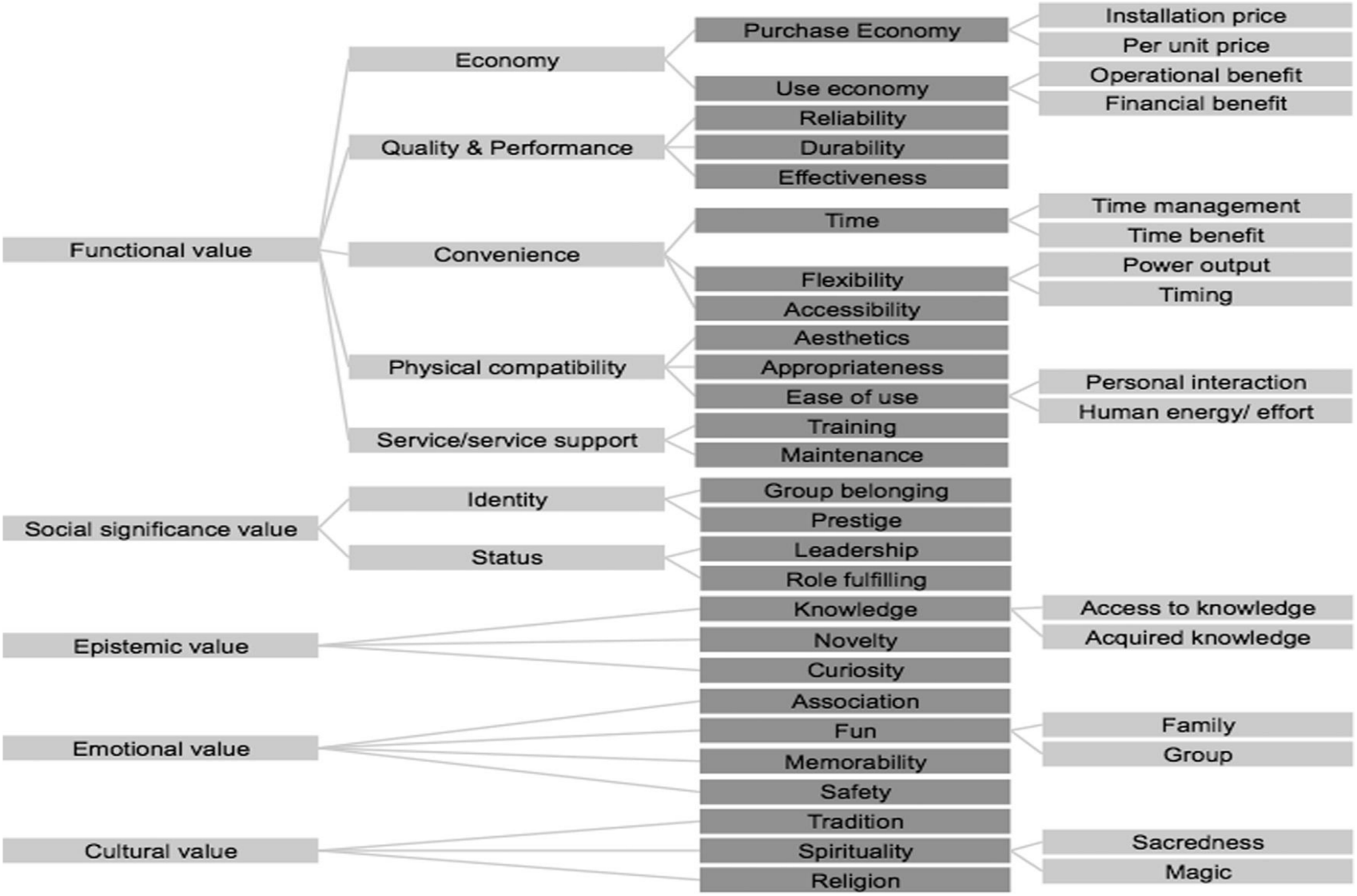

Figure 0.1 Value Framework for Rural Electrification

Source: Hirmer and Cruickshank (2010**)**

2.3.4.1.1. Institutional Analysis and Development (IDA) Framework for Rural Electrification

For rural communities which are too far from the national grid, have low population density and poverty, it is too costly to pursue grid extension in these areas(Batidzirai et al., 2021). Even where the grid extension exists, electricity supply is often erratic and of poor quality due to inefficient and insufficient infrastructure that may be in place (Lestari et al., 2018). Take the situation that is currently at play in South Africa since January 2022, this researcher experienced this situation whilst on a work visit where there are six (6) to twelve (12) hour load shedding schedules due to Eskom's (power utility company) challenges of liquidity arising from constant vandalism of infrastructure whose extent is now likely to border on economic sabotage coupled with internal politics. This researcher therefore construes that the rural areas are even more disadvantaged with the load-shedding schedules than the urban areas which have a lot more economic activity and have been prioritized with load hours.

In this regard, the advancement of renewable, off-grid, stand-alone technologies for rural areas on a small scale entails the provision of electricity to remote areas whose affordability still depends on Government policy and financial/technical donor support makes these technologies challenging to implement as they require a lot of trade-offs among other parameters (Kornbluth et al., 2012). As proposed by Ilskog, (2008), a multi-dimensional sustainability framework for off-grid systems should comprise technical, economic, social, environmental, and institutional parameters for sustainability to be attained as shown in figure 2. The technical parameter encompasses the operation and maintenance of the technology employed, while the economic parameter encapsulates the financial gains and economic advancement in rural areas (Ilskog & Kjellström, 2008).

In agreement with Ilskog, Isa, (2021) advances that the social parameter entails equal distribution of benefits derived from electrification and the environmental parameter refers to the localized and global atmosphere while the institutional parameter lastly, looks at the organization and its ability to maintain satisfactory performance with respect to other sustainability criteria. Figure 2.2 illustrates the IAD framework.

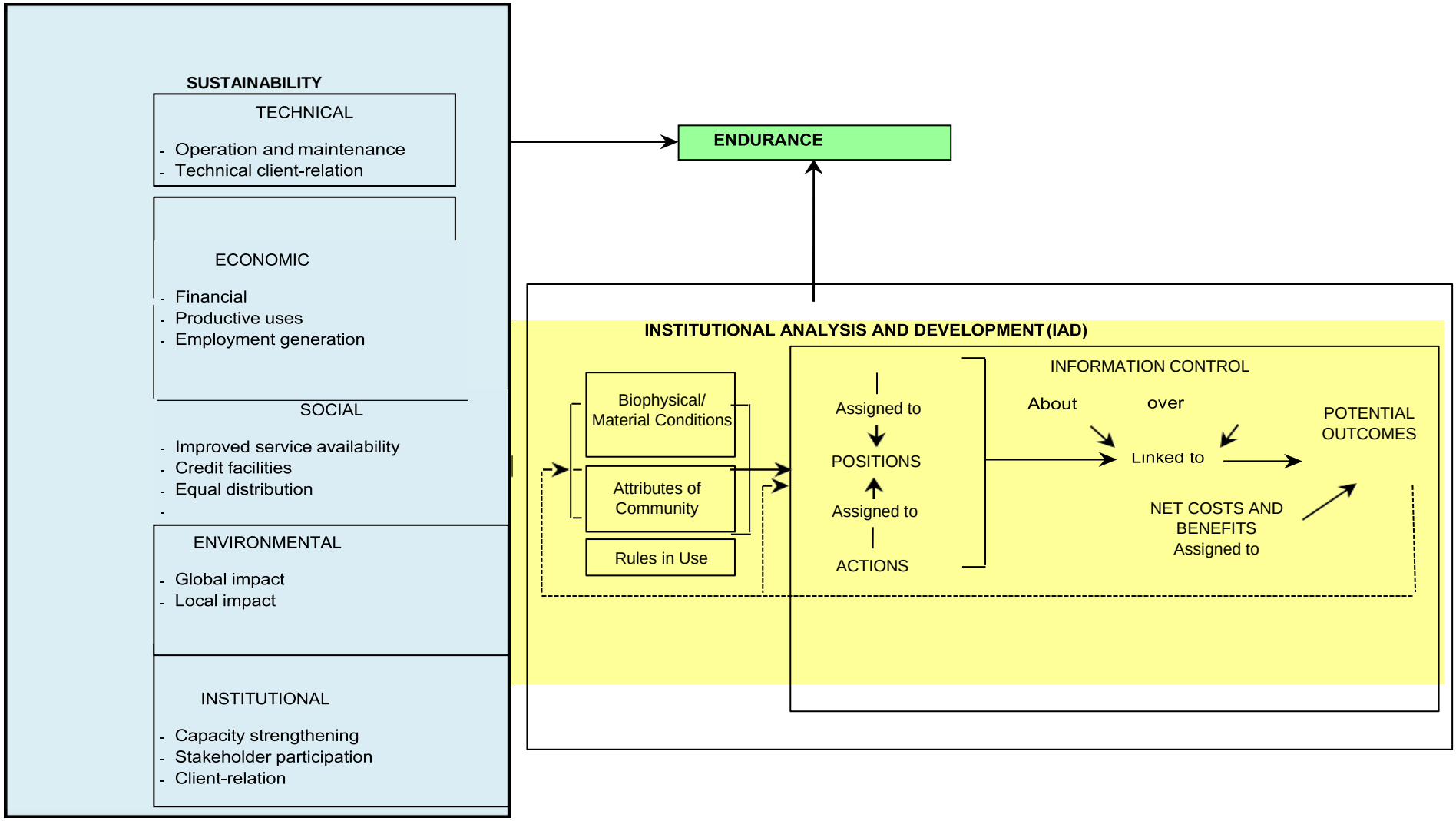

Figure 0.2 Institutional Analysis and Development (IAD) framework

Source: Ilskog, 2008

2.4 Summary of Literature

Globally, the rural electrification rates in developing countries are quite concerning with 1.2. billion people lacking access to electricity, 2.8 billion relying on wood or other biomass for cooking and heating (IEA, 2021). About 80% of those without access to electricity live in rural areas amounting to approximately 960million rural dwellers without access to electricity (Altawell N, 2021). Though more than1.7 billion people have attained access to electricity to date, the rate of growth will have to double to meet the 100% access rate by 2030 (Sweileh, 2020). Regionally, the lack of electricity in rural areas exacerbates poverty in sub-Saharan Africa(Lee et al., 2016; Stritzke et al., 2021). With only 14.2% of rural electrification as of 2013, sub-Saharan Africa had the lowest access to electricity, entailing that approximately 585 million people had no access to electricity(Javadi et al., 2013). As such, Pachuri et al (2013) conclude that the number of new electricity connections in sub-Saharan Africa is surpassed by population growth.

In the Zambian context, the current statistics are that only a net increase of 5% and 2% net in rural and urban electrification respectively was achieved over a period of 10 years, from 2008 to 2018 (Statistics Agency, 2020). Taking into account that energy is one of the main propagators of economic advancement, it is distressing that most rural areas in Zambia remain without electricity (Haanyika, 2008).

The cost of providing universal access to energy by 2030 is estimated to be $35 billion per annum (IEA, 2021; López-González et al., 2019). As such, in order to tackle the financing challenge for rural electrification, various governments are obliged to offer subsidies for electricity to generation and distribution companies as well as consumers(Lee et al., 2020; Mainali & Silveira, 2011). Governments provide subsidies to develop the rural electrification systems but communities are expected to operate and manage the system on their own as it has been discovered to be impracticable to operate and manage the system with local resources which calls for scaling up of the systems to meet the expected outcomes (Foley, 1992; Haley & Haley, 2008; M. M. Rahman et al., 2013). The financing problem, therefore, is a major challenge in fast-tracking execution of rural electrification projects (Javadi et al., 2013).

In the Zambian context, the scenario is the same as the regional and global situation in that the power utility companies have tariffs that are not cost reflective and in order to

keep afloat, some form of compensation is realized through the cost of connection (IMF, 2017) . The cost components for the connection fees in Zambia include the cost for the poles, conductors, service cables (drop down cable), transformers and transportation and these connection costs are assessed relative to prevailing market rates and location at a given period and in consultation with REA and Zesco Limited (Energy Regulation Board, 2021). As such, affordability of connection fees for rural communities is a challenge and this researcher deduces that a consensus between the financial viability of the power utility (Zesco Limited) and the passing on of cost reflectivity to the consumer vis a vis connection fees has to be reached for the sake of economic posterity and security of supply of electricity to rural communities.

With regard to the ability for rural communities to pay connection fees, in most countries, including sub-Saharan Africa, Rana B.T et. al (2019) propagates that increases in rural electrification rates emanate from extensive growth (extending the grid to new communities) rather than intensive growth (connecting the unconnected in already electrified villages). Further, Baurzhan & Jenkins (2016) advance that once electricity extends to a rural setting, the connection charge is a hurdle that excludes the poor from connecting to the grid, despite the benefits to be derived and anticipated Willingness To Pay (WTP) would surpass the cost of supply. Additionally, as indicated by the World Bank (2017), even in areas that have had grid power lines for 15–20 years, 20 to 25 percent of households keep on being unconnected and the off-grid option is even worse since off-grid systems are already deemed costlier than on-grid ones.

However, with shift in Zambia's economic tenets to do away with subsidies on fuel and electricity as part of the structural economic adjustment program under the International Monetary Fund (IMF) for the extension of the pay-back of the USD1.3billion debt (IMF, 2017), the sustainability of subsidy-based rural electrification, the capacity of rural communities to pay for the connection fees and consequently the rate of electrification in rural areas hangs in the balance.

With regard to critical success factors for sustainability of rural electrification, a combination of community-level as well as external factors such as the role of Rural Electrification Authorities and Energy Ministries in building communities' ownership, improving technical, entrepreneurial and managerial capabilities, knowledge transfer and technology, creating inventive financing models and influencing policy are critical for the

development of integrated sustainability frameworks for rural electrification (Guerreiro & Botetzagias, 2018). Further, an assessment of rural electrification sustainability factors undertaken by Feron et al. (2016) takes into account four dimensions of rural electrification sustainability which are institutional, economic, environmental, and socio-cultural success factors. Further, two frameworks on rural electrification were highlighted which included the Value framework advanced by Ilskog, (2007), emphasizing the importance of the inclusion of social/cultural factors which show the value that end users place on electrification while the Institutional Analysis and Development Framework emphasized the need for utility companies, rural electrification authorities and all institutions involved in the implementation of rural electrification to be robust, accountable and innovative for sustainability to be realized. However, there is need to contextualize the sustainability of rural electrification to the Zambian context under the current economic direction and it was from this perspective that this researcher was motivated to undertake this study so as to investigate the relationship between subsidies and rural electrification, the study aimed at analyzing the connection fee subsidy on electrification of rural areas with respect to Chibombo district. A sustainability framework was developed so as to influence and inform policy interventions in the electricity sub-sector with regard to sustainability of rural electrification in Zambia.

2.5 Research Gap Analysis

The table 2.2 gives a presentation of the evidence of the research gaps that form a basis for further investigations in this study.

Table 0.2 Gaps Identified in Literature

No	Author and year of publication	Research Topic	Methodology	Findings	Research Gap
1	International Energy Agency (IEA) and the World Bank. (2014)	Sustainable Energy for All 2013-2014: Global Tracking Framework Report.	**Approach**:Binary global tracking of energy access (that is, a household either has or does not have access, with no middle ground) Household Surveys and energy balance reviews **Study Population**:All countries world wide **Sample size**:212 countries **Sampling technique**: Purposive sampling method	1.7 billion people gained the benefits of electrification, financing required to reach Universal access to elcetricity in 2030 is approximately US$600-800million.Projected 12% of global population will not have access to electrcity if funding is not secured. The global annual electrification rate projected at 1% with urban areas having 1.7% annual electrifiation rate and rural areas with 0.8% annual electrification rates	Evidence gap is identified in that the findings allow for conclusions in their own right but are contradictory when examined from a more abstract point of view. Creation of historical datasets based on imputation, simulations, or data sources based on interpolations resulting in potential underestimation of historical progress in the case of changing electrification rates over time as the findings of this study were challenged by Aklin et. al (2017)
2	Rana Bahadur Thapa,Bishnu Raj Upreti, Durga Devkota and Govind Raj Pokharel,(2019)	Prioritizing the Weightage of Sustainability Criteria and Sub-Criteria of Decentralized Micro-Hydropower Projects for Rural Electrification in Nepal	**Approach: R**eview of literature based on the priority weightage and expert panel online questionnaires. **Study Population:** Five (5) clusters of expert groups **Sample Size :** 150 experts **Sampling technique:** purposive random selection method	Technical criteria is the most crucial sustainability criteria for rural electrification followed by economic and social criteria. Environmental criteria is found to be the least preferred criteria.	Methodological/research design gap identified. Exclusion of participation of actual rural communities in the study and only limiting the study methodology to expert opinion and analysis of literature. Being the beneficiaries and the ones to pay for the service, the communities needed to be the sixth(6th) cluster.

3	Olanrele I.A, (2020)	Assessing the Effects of Rural Electrification on Household Welfare in Nigeria	**Approach:** Surveys and questionnaires **Study population:**1,200 households **Sample size:**480 households **Sampling technique:** Simple random sampling method	Access to grid electricity increases household income by about 1.3 per cent and increases household per capita monthly expenditure by about 6.4 per cent. Expenditure on electricity equally increases monthly per capita expenditure by about 4 percent	Methodological/research design gap identified. A limited set of explanatory factors for human welfare were used which only accounted for 9-30% of the variability in the dependent variable which was the rate of electrification. However, Human welfare is a function of a much wider set of variables which would have shown a more representative result
4	Aklin Micheal Harish S.P,Urpelainen Johanes, (2017)	A global data base on rural electrification	**Approach:** Surveys and questionnaires **Study population:** worldwide **Sample size:** 124 countries **Sampling technique:** Purposive sampling (Organisation for Economic Cooperation & Development (OECD) and post soviet countries were excluded since they have reached universal access. Conflict prone countries or those with completely closed political system such as Afghanistan, Iraq, and North Korea	On average,annual total electrification rate globally was 1.27 percentage points while rural electrification rates increase annually by 1.51 percentage points. The most successful countries are located in the Middle East, North Africa, and South Asia with annual growth rate of total electrification at 2 percentage points and above 70% rural electrification. The South Asian countries have benefited from high population densities and have annual growth rate of 1.8 percentage points with above 50% rural electrification. Many Latin American Countries and Sub-saharan Countries have below 30% rural electrification rates and 1.3 percentage point annual growth rates for total electrification.	Knowledge gap identified. The focus was on access to grid electricity in 124 countries which excluded the electrification that may have arisen from off-grid systems rendering the rates found to be biased towards grid connection.

5	Blimpo Moussa McRae Shaun Steinbuks Jevgenijs , (2018)	Why are Connection Charges So High? An Analysis of the Electricity Sector in Sub-Saharan Africa	**Approach:** Review of Ugandan National Panel Surveys, resource maps and monthly energy pricing reports **Study population:** Uganda **Sample size:** Was purely desk review of tariff and conncetion charge literature and models **Sampling technique:** Was not utilzed due to research approach adopted	Low electricity access rates and high connection charges that are common in the Sub-Saharan Africa region arise from regulated electricity tariffs being set too low.Future advances in electrification will require higher incomes, increased coverage of the distribution network, and lower connection costs.	The study was only conducted in Uganda. Which makes the title of the study misleading to construe that the study was conducted in a representative number of countries in the Sub-saharan region. As much as the findings may be reflective of the situation in the region, the study area should have included other countries where the surveys could have also been done. The research approach of only desk review spells methodological /research design gap
6	Immaculata Maria Taufi,Retnanestri,(2007)	The I3A Framework: enhancing the sustainability of off-grid photovoltaic energy service delivery in Indonesia	**Approach**: Interviews,field survey,literature research, qualitative field research. **Study population**: Solar PV projects in indonesia **Sample size:** 3 major solar PV projects as case studies **Sampling technique:** Purposive sampling method	Sustainable off-grid Photovoltaic Energy Service (PVES) Delivery Model has four interlinked facets which are Implementation, Accessibility, Availability and Acceptability. Consumer subsidy remains important and its removal restricts the dealers' ability to provide credit for customers and for potential users to access Photo Voltaic Energy Service (PVES)	A population gap was identified. Although the study prioritised the importance of subsidies and developed a sustainable delivery model for off-grid Photovoltaic Energy Service (PVES), the conclusions were based on a sample in Indonesia.

7	Tim Reber, Sam Booth, Dylan Cutler, Xiangkun Li and James Salasovich (2018)	Tariff considerations for Micro-grids in sub-Saharan Africa	**Approach**: Surveys and microgrid system reviews **Study population:** Eastern, Western and Southern Africa **Sample size:** Ghana, Tanzania, and Zambia **Sampling technique:** Purposive sampling method	A hybrid system including solar photovoltaics (PV), batteries and diesel proved to be the lowest-cost option (around USD 0.74–0.86/kWh and lowering the cost of electricity by roughly USD 0.06–0.12 per kWh) when compared to diesel or solar PV alone. However, the estimated Levelized Cost of Electricity of these systems are still well above the typical subsidized tariffs charged by many utilities.Any mass deployment of micro-grids to achieve significant advances in energy access will require either implementation of cost reflective tariffs or application of large scale subsidies to motivate operators and investors .	The practical-Knowledge gap identified: The study only looked at Solar PV, batteries, and diesel systems. There is a need to incorporate other technologies such as wind and bio gasification technology as well to ascertain their impact on the tariffs
8	Magda Moner-Girona, Katalin B odis, James Morrissey, Ioannis Kougias,Mark Hankins, Thomas Huld , S andor Szab, (2019)	Decentralized rural electrification in Kenya: Speeding up universal energy access	**Approach:** Geo-spatial data collection methodology and surveys **Study population**: Kenya **Sample size:** Electrified (on and off grid) urban and rural areas **Sampling technique:** Purposive sampling method	All population under the grid within a 10km radius is eventually going to be connected to the main grid, the analysis shows that the optimal strategy would cover 90% of rural population by PV mini-grids. A Geo-referenced data base on Kenyan power sector was developed	The practical knowledge gap and an empirical gap are identified. The assumption related to the 10 km buffer assumes that settlements within this distance will eventually connect to the central grid, introducing some bias into the model. Moreover, this simplistic approach does not consider terrain barriers or physical obstacles that hinder extensions even near existing infrastructure.

9	George Kyriakarakos, Athanasios T. Balafoutis and Dionysis Bochtis, (2020)	Proposing a Paradigm Shift in Rural Electrification Investments in Sub-Saharan Africa through Agriculture	**Approach:** Surveys and Meteorological data review **Study population:** Rwandan Village **Sample size**: 100 households **Sampling technique:** Simple random sampling	The high cost of rural electrification can be met through the increased value of locally produced products, and cross-subsidization can take place in order to decrease the cost of household electrification.	Population gap is identified. Although the study prioritized the importance of agricultural cooperatives leading rural electrification initiatives, the conclusions were only based on a sample collected in Rwandan village with only 100 households which seems not representative of the title of the research which looks at sub-Saharan Africa
10	Policy Monitoring Research Centre: Kabechani Akabondo, Deka Benadette and Mwila Sambo Brian, (2017)	Energy Policy Reform The Impact of removal of electricity subsidies on Smal Medium Entreprises and poor Households	**Approach:** Exploratory approach that deployed a mixed method approach. **Study Population:**3 districts (Lusaka, Kitwe, and Kafue) **Sample size:** 20 Small and Medium scale Enterprises (SMEs)	The richest 20% of households receive about 70% of electricity subsidies while the poorest 20% of households receive less than 1% subsidies.75% electricity tariff hike has the largest impact on the poorest and erodes disposable income by 13%, compared to a 6% reduction in incomes for the richest. Direct effect on real incomes for the poorest households is 9%, compared to 3% for the richest.	Population gap identified. In as much as the study showed the effect of electricity subsidy removal on household income, the study only had 20 Small and Medium Enterprises as sample size covering three (3) districts.

Source: (Author, 2022)

2.6 Chapter Summary

This chapter shows a review of literature on the subject of the relationship between connection fee subsidies and rural electrification. The chapter explores the efficacy of connection fee subsidies on the rate of rural electrification and capability of households to pay for connection fees. It also provides an overview of the electrification rate trends globally, regionally and in the Zambian context. Lastly, the chapter proposes critical success factors to consider for a framework for rural electrification.

The next chapter postulates the theoretical and conceptual frameworks; these gives an elaboration of the relationship between the dependent, moderating/mediating and independent variables.

CHAPTER THREE
THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1. Introduction

This chapter presents the theoretical and conceptual frameworks to necessitate more comprehensive investigations on how the subsidies on electricity connection fees relate to rural electrification. The chapter isolates three development theories: modernization, dependency, and theory of equality as principal theoretical explanations to interpret electrification efforts, especially in developing countries. Further, the chapter refers to two conceptual frameworks from previous studies and proposes a conceptual framework suitable for addressing the problem in this study. It also discusses the study's independent, moderating, and dependent variables and closes with a conclusion.

3.2. Theories of the Study

A theoretical framework can be thought of as a "model of how one makes logical sense of the links that exist among the many aspects that have been identified as being of value to the present situation" for the sake of this study (Oluwatoyin and Oluseun, 2008). According to Kivunja (2018), it can also be interpreted as a particular theory or theories about particular human endeavors that can be helpful to the study of occurrences; as the framework that sustains or supports a theory of a study. According to Giovanni (2001), theoretical frameworks make it possible for researchers to employ these theoretical viewpoints to explain concepts, place them in an economic and social context, and provide recommendations for supportive policies.

The concept of sustainable and balanced development serves as the foundation for rural electrification, and as Giovanni (2001) also points out, different theories take the requirement for equal consideration of economic, social, and environmental aspects into consideration in the rural development programs without prejudice to the interests of future generations. A theory, in the words of Kerlinger and Lee (2000), is "a set of related constructions, definitions, and propositions that give a systematic view of phenomena by

defining relations among variables, to explain and forecast the events. It can also refer to an orderly set of ideas and rules arranged to explain logical connections between ideas that can be used as a framework for analyzing a phenomenon and a foundation for classifying known variables (Kawulich, 2016).

3.2.1 Modernization Theory

The term "modernization theory" refers to a body of theory that gained popularity in the 1950s and 1960s in connection with concerns of economic and social development and in relation to developing policies that would support economic and social transitions in less developed nations(Gwynne, 2009). It portrays evolution as the same path that all societies take, from agricultural, rural, and traditional societies to post-industrial, urban, and contemporary forms (Regmi & Walter, 2017; Ziai, 2007). The internal causes and sources of socioeconomic progress, such as formal education, a market-based economy, and democratic and secular political frameworks, are highlighted by modernization theory, according to Wesley (2015). Modernization theory pays less attention to outside influences, but it does not exclude outside forces and sources of social change and economic growth (Jenkins and Scanlan, 2001).

The modernization theory suggests that modern societies are more productive, children are better educated, and the needy receive more welfare. Adding to the same school of thought, Wesley (2015)’s analysis submits that modern society has the particular feature of social structural differentiation, a clear definition of functions, and political roles from national institutions. The major assumptions of the modernization theory as ascribed by Escobar (1995) are basically that it is a phased and homogenizing process, in this sense, it produces tendencies toward convergence among societies, for example, Levy (1967) maintains that as time goes on, “they and we” will resemble one another because the patterns of modernization are such that the more highly modernized societies become, the more they resemble one another. As construed by this researcher, this is in reference to the rural-urban or poor-rich divide that exists in most if not all societies.

Additionally, Robert (2009) believes that modernization is an unstoppable process that cannot be reversed once it has begun. In other words, once rural areas interact with urban areas, they won't be able to resist the need to modernize. Modernization, according to

Smelter (1964), is an ongoing process that, in the long term, is not only unavoidable but also desirable. Similar to this, Giovanni (2001) believes that modernized systems are better equipped than political systems to handle the functions of national identity, legitimacy, penetration, participation, and distribution. As Dunford (2009) also advances, modernization theory emphasizes the practical necessity of effective bureaucracy for welfare state development since, without it, effective taxation and administration of the intricate distributional programs are simply impossible (Dunford, 2009).

This theory relates with this research in that emerging nations worldwide are promoting modernization through rural electrification, by enabling all sectors in the economy to accelerate penetration to boost the wellbeing of their citizens and accelerate development (Feldstein, 2003). Examples that this researcher can point to include: clean and sufficient lighting for students at night resulting in better education; pumped water for households resulting in less time spent fetching water at water fronts, irrigation for farming; Small and medium enterprises such as saloons, barbershops, tailoring shops and welding workshops; faster milling and mining processes and technology advancement to mention but a few. Further, building on a strong and sustainable energy supply, agricultural foundation, plenty of natural resources, industrialization, and the service sector, as Maxwell (2000) argues, contributes to universal employment creation and increases in the welfare of the populace in developing nations. As also amplified by the International Energy Agency (2017), sustainable electricity is required for local economic growth, including the establishment of small businesses, local industrialization, and agricultural upscaling. In addition to these beneficial economic consequences, electrification promotes human development by enhancing access to water, health care, and education and bridges the gap between the rural and urban divide (Mapako & Prasad, 2007).

3.2.2 Theory of Equality

By taking into account Ronald Dworkin's "Theory of Equality," issues related to access to energy can be further explained. In accordance with his theory, Dworkin (2002) defines resource equality as the distributional strategy that regards individuals as equals when it distributes or transfers resources among them until no additional transfer would leave

their shares of the total resources more equal. Furthermore, Dworkin explains that two widely-held notions of justice which he sees as being fundamental to understanding equal shares should be used to interpret them: Firstly, when physical resources and other aspects of basic need are distributed inequitably, the distribution of income and wealth is unfair. Secondly, Dworkin (2002) advances that a fair distribution is dynamic in that it enables the distribution to be responsive to various objectives and decisions regarding employment, investment, and consumption, at any given time. Therefore, treating everyone equally entails making an effort to ensure that the distribution of wealth and income at any particular time is influenced by ambition rather than endowment (Mahama, 2012).

The theory of equality as also advanced by Brown et al (2005) propagates the need for Governments to better the lives of its citizens and do so with equal concern for each life regardless of location. This is mostly unachievable in the case of countries labelled as developing /poor countries as the Government resource envelopes are meagre (Auty & De Soysa, 2005).

Further to the above, the idea of rural electrification is primarily founded on the concept of sustainable and balanced development and using the 'basic needs approach' based on the theory of equality calls for equal consideration in rural development programmes (Corning, 2000). This involves taking the economic, social and environmental aspects into consideration, without violating the interests of future generations (Boliko & Ialnazov, 2019). Hence, Zambia like other African countries is accelerating its integration of rural communities into the national economy by fostering rural electrification (Ngoma, 2019).

Also in line with the basic needs approach based on the theory of equality, the Alliance for Rural Electrification (2019) noted that some of the potential sources of support funds for rural area development programmes and strategies are dispersed in various Government and cooperating partners' funds and budget items. However, these funds are subject to the impact of various international and national policies and incentives which usually are skewed to advantage more of urban areas that rural ones(Haanyika, 2008). Hence this approach is being used in this research in respect of the Electricity

Access project (ESAP) project which has a funding structure of $26.5 million (loan) from World Bank, $7 million (grant) from the Swedish International Development Agency (SIDA) and $2.7 million from REA and Zesco Limited.

The foregoing necessitates a carefully considered planning strategy for rural electricity which is advanced by the blue print planning propagated by Dale (2005) in support of the equality theory. Dale (2005) described blueprint planning as “the project, its identification, formulation, design, appraisal, selection, organization, implementation, supervision, termination and evaluation that is treated as the basic unit of development action”. Therefore, the question of how to increase energy supply and access for the world's poor in ways that meet the needs of both the present generation and all future generations is at the center of the discussion over the future of global energy, according to World Bank (2010).

This theory further applies to this research regarding sustainable rural electrification rates in rural areas, as propagated by Olanrele (2020), the practical challenges of rural electrification distribution are becoming more and more visible given that rural areas are sparsely populated, making investments in rural electrification expensive. Further, as advanced by Bos et al (2018), Return on Investment (RoI) for utility companies is close to impossible with the low income levels and low consumption patterns in rural areas. In the case of Zambia, according to CSO (2015), the majority of residents in rural areas of Zambia cannot afford to electrify their homes. Therefore, it would be reasonable to assume that equality would allow all communities to have access to energy and, at the very least, be in a position to influence how much is spent on the service because resources would equal across all communities (Debajit Palit, 2019; Dworkin & Scheffler, 2003; Khandker et al., 2014; Oda & Tsujita, 2011).

3.2.3 Theory of Dependency

In the 1950s, studies conducted by the Economic Commission for Latin America and the Caribbean laid the groundwork for the dependency hypothesis. According to Dos Santos (2019), the theory combines elements from a neo-Marxist perspective with Keynes' economic theory of liberal economic ideas, culminating in models that aimed to create suitable conditions of development within a country. This was aimed at having control of

the monetary exchange rate, placing more governmental emphasis on fiscal rather than monetary policy, encouraging the government to play a more effective role in fostering national development and to build an investment platform that gives national capitals priority(Tony, 1979). Further, this allowed the inflow of outside cash based on the development goals for the country's priorities, encourage stronger domestic market demand to support the industrialization process by serving as a foundation, and increase worker earnings and salaries to increase internal demand resulting in a beneficial impact on internal market aggregate demand (Cardoso, 1977).

Additionally, the theory resulted in establishing an environment for sectors to become more competitive by expanding the government's social service coverage to underprivileged sectors, develop national strategies according to the model of import substitution and protecting national production by establishing quotas and tariffs on external markets (Brewer, 1990; Bruton, 1998).

According to Bodenheimer (2019), in order to strengthen national development circumstances and raise national standards of living, the theory of dependency typically advocates for a more effective government role. Further, Carporaso and Hare (1981) advance that a successful funding strategy and a sound financial management system are crucial for rural electrification project success. Grant financing has been extremely important in several developing Asian nations like China and India in recouping the risks associated with making investments in rural areas where the return on capital expenditure may not be assured owing to concerns with affordability (Cook, 2013; Ilskog, 2004).

Thus, the dependency theory relates to this research in that the provision of subsidies to the energy sector, particularly to the electricity sub-sector has, according to the World Bank (2018), been justified mainly based on social welfare protection, job creation, the encouragement of new sources of energy supply, economic development, and energy security. The International Energy Agency (2015) adds that energy subsidies, in particular, are often used to alleviate energy poverty and promote economic development by enabling access to affordable modern energy services. However, in contrast, based on the economic theory of “Principal of Scarcity”, the International Monetary Fund (2018)

argues, to the contrary, that enormous energy subsidies in countries compete for limited resources that could otherwise be used to provide other vital services, discourage both supply-side and demand-side efficiency improvement, and can make new forms of renewable energy uncompetitive. The Policy Monitoring and Research Centre (2017) adds to the discussion by stating that the reform of energy subsidies should be examined in the context of the three pillars of sustainable development which include; economic growth, poverty reduction, and environmental aspects. This is because there is a huge dependency on energy to foster and drive both economic and social development(IEA, 2021; Prandecki, 2014; Ribeiro et al., 2011). Further, the advice by the World Bank (2018) is that subsidies are basically country-specific and should be based on national circumstances, taking into account the sovereign rights of countries to set economic and social policies.

In view of the foregoing, this researcher deduces that based on this theory and the other two (2) preceding it, modernization, equality and dependency are core theories on which the investigation of the relationship between subsidies and the sustainable rate of rural electrification is based and which this research seeks to analyse.

3.3. Conceptual Framework

This section provides the conceptual framework for the study presenting key concepts relating to how the absence or removal of subsidies would affect the rate of electrification in rural areas in Zambia. Prior to discussing the proposed conceptual framework for the study, two (2) examples of conceptual frameworks on rural electrification from literature are presented.

3.3.1 Examples of Conceptual Frameworks on Rural Electrification from Literature

In Zambia, access to electricity has remained low, especially in rural areas where the disparity, in comparison with the urban areas, is generally significant (Batidzirai et al., 2021).The investment cost of setting up and building the transmission and distribution infrastructure for electricity is considerably huge, given the long distances required for grid extension and densification (Tambatamba & Kumwenda, 2018). Rural communities are characterized by high poverty levels that limit communities' ability to afford certain

socio-economic services, including the cost of electricity connection(Javadi et al., 2013; Lee et al., 2020).

Rural communities sit on unlocked economic potential that can bring about job creation and betterment of people's livelihood but due to lack of access to electricity, this possible reality eludes such communities (Kaoma & Gheewala, 2021). Therefore, the provision of subsidies help to bridge the gap between the communities' status quo and this reality by accelerating access to electricity (Oviedo-Cepeda et al., 2020). On the other hand, the contention that countries have many competing needs against limited resources and, thus, subsidizing access to electricity may deprive the country's development still stands as can be evidenced in Zambia currently with the policy position to remove subsidies in the energy sector (IMF, 2017).

In view of these factors, Ngoma (2019) advises that issues surrounding rural electrification should be dealt with through policy intervention as action taken by the government to improve the rural standard of living, through the provision of affordable and reliable power. For purposes of this research, affordable and reliable power refers to the electricity supply service that low-income households would be able to pay for, use to start a business, own and use electrical appliances, and improve access to healthcare, education, clean and safe drinking water, and physical security(Akbas et al., 2022; Riva et al., 2017; World Bank, 2018). Figure 2, below highlights rural electrification is a public policy intervention in improving the standard of living of people, based on an Electricity Access Governance Index (AGI).

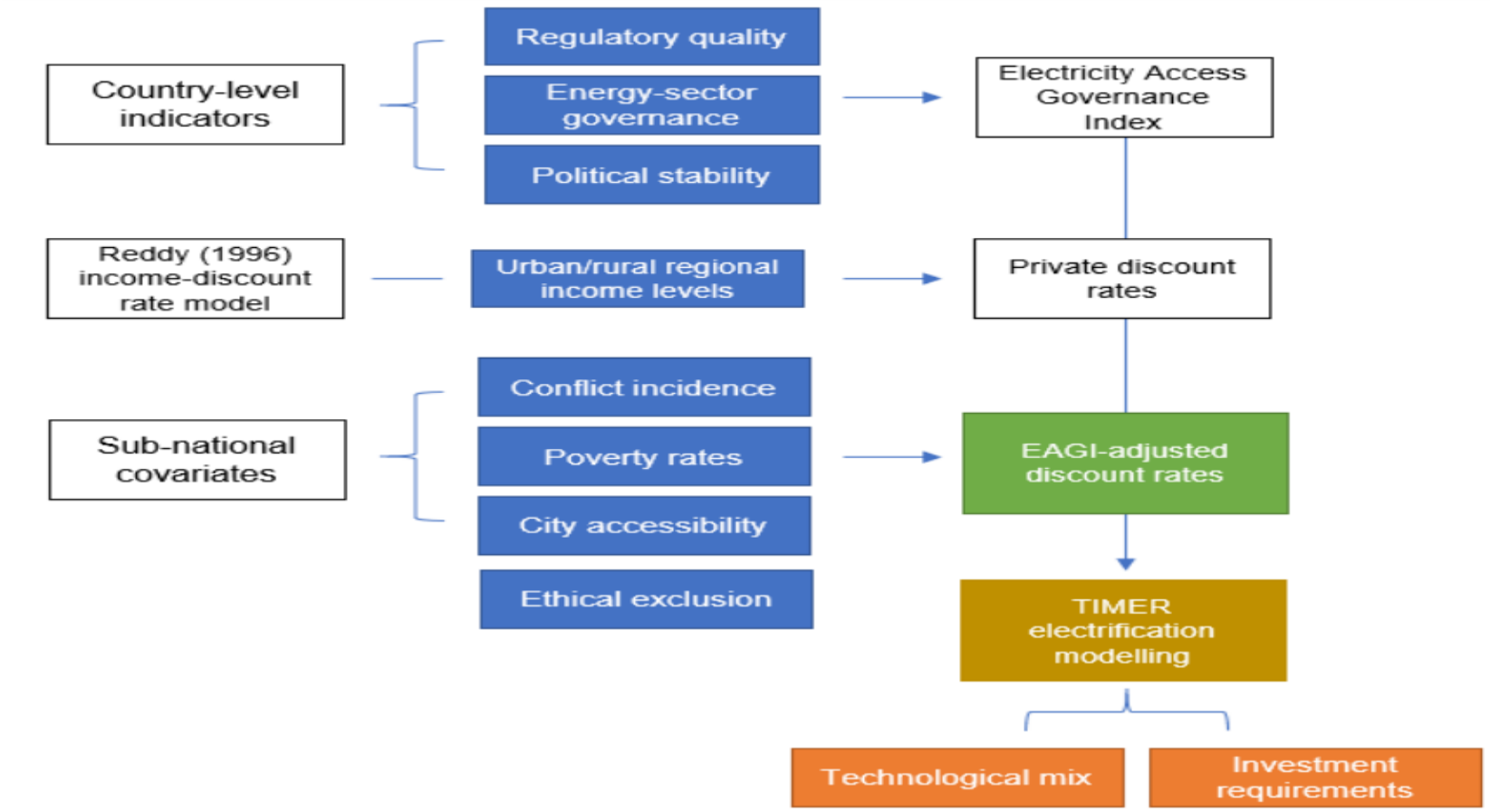

Figure 0.1 Conceptual Framework on Rural Electrification as a Public Policy

Source: (Falchetta et al., 2021)

In the same vein, Zambia's National Electrification Strategy (2022) provides a conceptual framework for financing electrification projects, as shown in figure 3, which can also be used to predict the relationship between rural electrification and subsidies. The framework indicates the flow of capital invested, by the public sector, i.e., REA and Zesco Limited, and the private sector, into electrification infrastructure in rural areas.

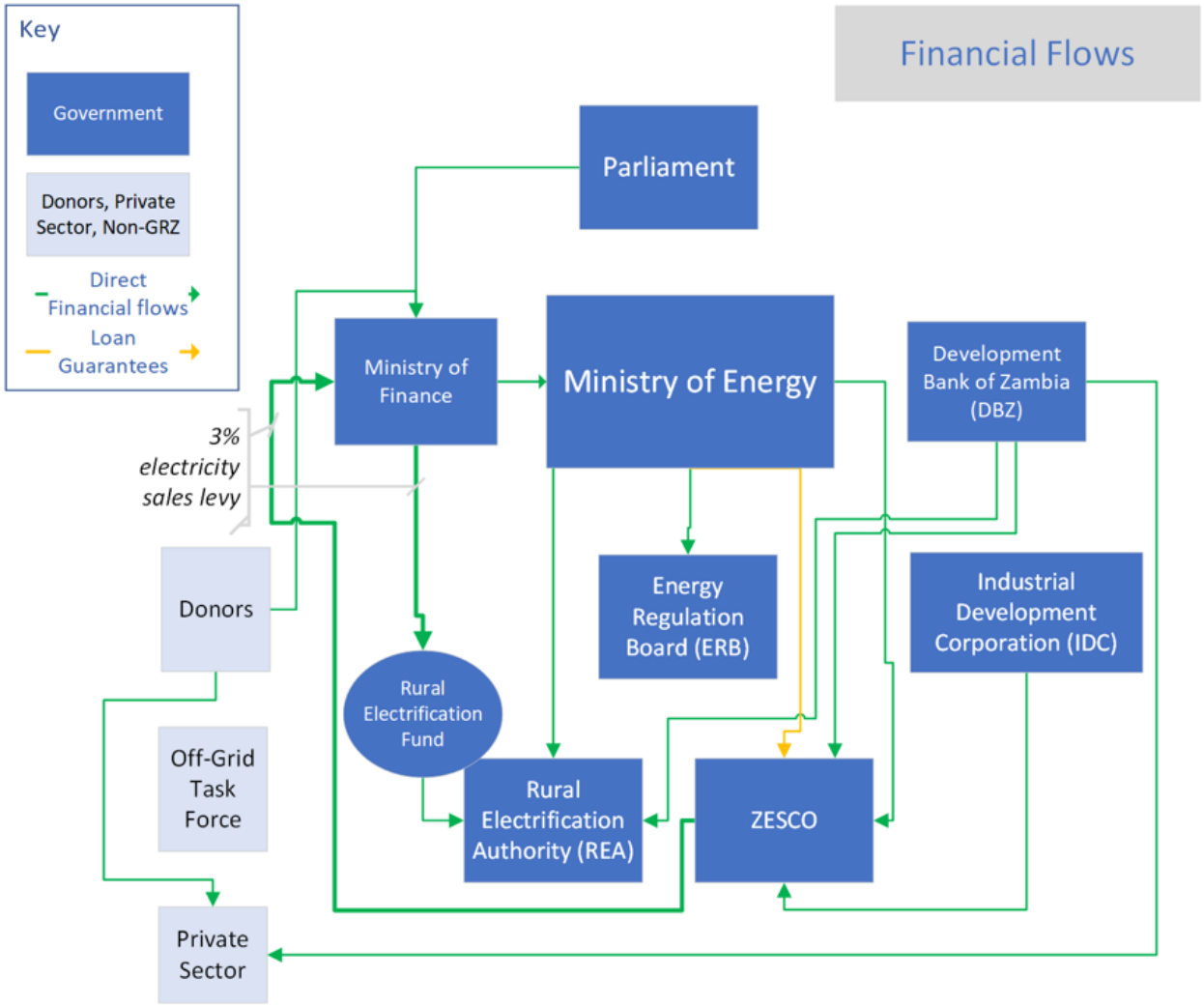

Figure 0.2 Conceptual Framework on Financing of Electrification Projects in Zambia
Source (Ministry of Energy, 2022)

The capital investment by both the public and private sectors can be secured as equity, grant, or loan financing from government or multilateral institutions. Further, the framework shows the stream of grant finance provided by the government as well as its

cooperating partners to support the electrification of rural areas(IEA, 2021; Olanrele, 2020; Pode et al., 2016).

3.3.2 Conceptual Framework for the Study

Globally, Governments' policy plan is to achieve universal access to electricity by the year 2030 in order to unleash the potential for economic development in rural areas and the country's poor access to power in rural areas(Awan et al., 2022b; Benz, 2022; Madurai et al., 2021). For Zambia, it is envisaged that the provision of electricity would be carried out through a central system, with funding and implementation extending to participants in the private sector, donor community as well as the planning aspect of electrification expansion being vested in the Government through public institutions like the Ministry of Energy, REA, and ZESCO Limited (Haanyika, 2008; Ministry of Energy, 2020; MOE, 2019). As such, it is reasonable for this researcher to assume that the financing of electrification projects can be sourced from various streams, such as government funding, supporting partners' support, and private sector investment, in the form of grants and loans, as shown in figure 4.

Due to the significant financial outlay required for grid extension and densification, funding for such projects may be provided through long-term Public Private Partnership (PPP) agreements, on a cost-past-through basis, to enable the service's recipients to pay for it over time through electricity tariffs (Rural Electrification Authority, 2018). Particularly, due to the communities' low capacity to pay the connection fees, these expenses might be financed in part by co-financing from the government, collaborating partners, and beneficiaries in amounts that would be most feasible for them.

By limiting or eliminating subsidies for power connections, this researcher construes that communities would be compelled to pay a commercial rate connection fees, which some or most rural residents could find unsustainable given the many competing demands and the nation's limited resources. As such, some households may resort to not use electricity, delay their access to electricity and, as a result, maintain their high levels of poverty, squandering their economic potential, and having few employment chances (Feron et al., 2016).

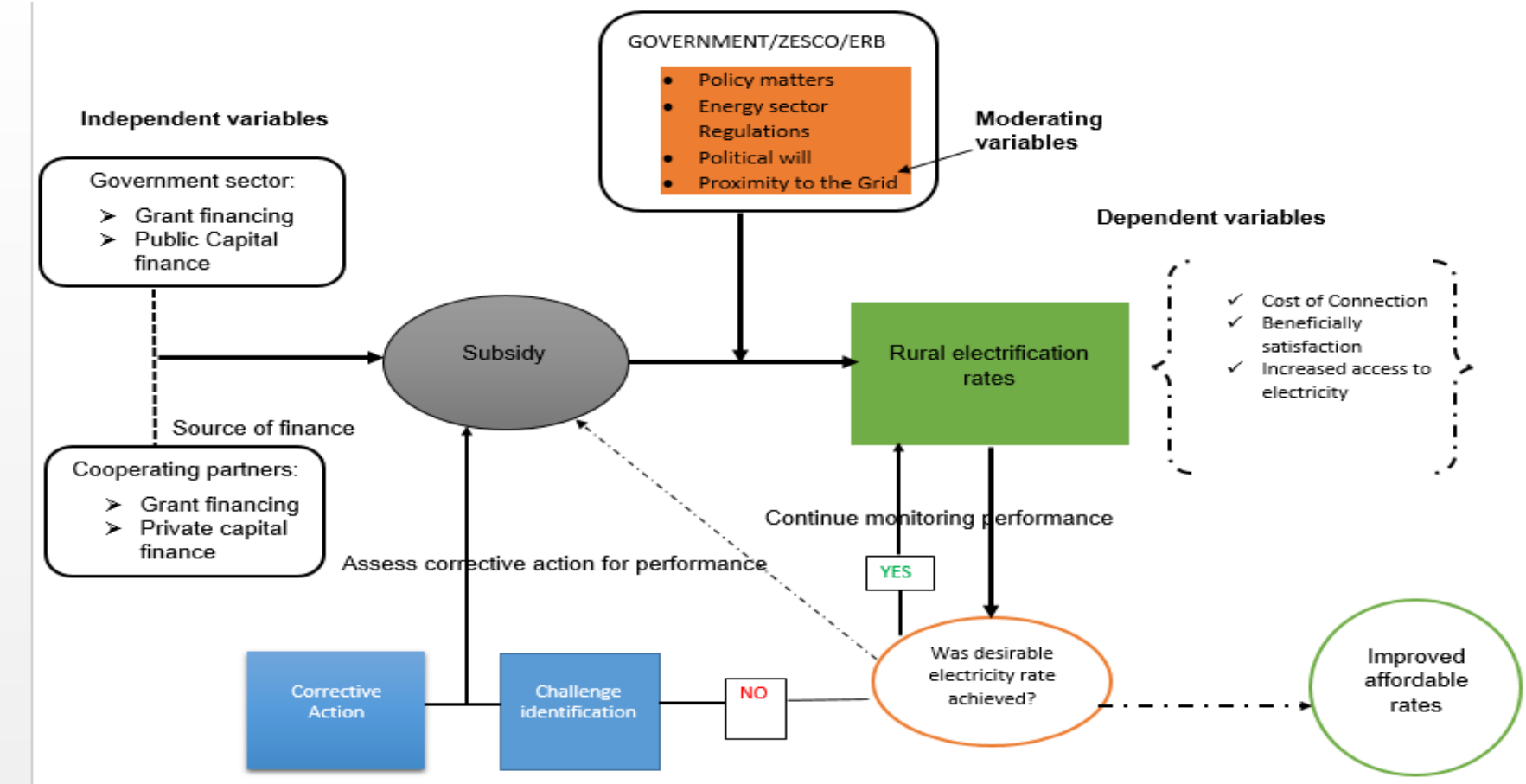

Figure 0.3 Conceptual Framework for the Study

Source: (Author, 2022)

3.3.2 Explanation of Variables

For the purpose of this study, the following are the study variables, classified as independent, dependent as well as mediating variables.

3.3.2.1 Dependent Variables

Sustainable Rural Electrification Rate is the dependent variable in this study. By definition, rural electrification is the process of taking electricity to remote and rural areas which have no access to it (Cook, 2013). According to Ngoma (2019), a sustainable electrification rate for rural areas is crucial to support the socio-economic development of communities and improve their living conditions for present and future generations.

3.3.2.2 Independent Variables

Subsidy (Grant financing, private finance, public capital finance)

The independent variable in this study is the electricity connection fee subsidy, which might be made up of grant funding and public capital funds raised by the government with assistance from cooperating partners who contribute contributing through grant funding and loan concessions as well as private funding. In the context of this research, a connection fee subsidy is a type of financial assistance or support given to low-income households and small companies to access electricity infrastructure and enhance people's economic and social well-being (Rural Electrification Authority, 2018).

3.3.2.3 Mediating Variables

The following are the mediating variables of this research:

Proximity to the grid. The term "proximity to the grid" describes the distance between the connection point, which is the low-voltage power line, and the structure that has to be connected, such as a home or company (Tambatamba & Kumwenda, 2018). Hence, this researcher deduces that the further a location is from the grid, the more expensive it will be for the power utility to provide electricity access to it.

Policy Frameworks, regulations and laws governing the electricity sub-sector: These refer to the National Energy Policy (2019), the Rural Electrification Master Plan (REMP), Rural Electrification Act of 2003, the Revised Energy Regulation Act of 2019,

and other policy-related frameworks that relate to rural electrification in the context of this research. Policy has a considerable impact on the rate of electrification since the rate is impacted if the priority shifts from electrification to another sector. In particular, the government's current policy direction is to stop providing electricity subsidies, hence cost reflective tariffs will have an effect on the rate of electricity access especially in rural areas where low income levels persist the most. Further, this researcher deduces that Political will is also a pivotal component of this mediating variable since policy makers are politicians and the direction they steer the boat of electrification is where the citizenry has to follow under any given political dispensation.

Cost of Connection: This refers to the amount of money a beneficiary must pay to access the electrical infrastructure (Energy Regulation Board, 2022). Further, the Energy Regulation Board guides that this cost is made up of the number and cost of materials, such as the poles, overhead or subterranean conductors, service cables, and meters that the power utility must acquire in order to provide electricity connection. With the exception of the meter, the price of these connecting materials depends on how far away the intended connection location is from the closest viable connection point (Ngoma, 2019).

Income Level/Willingness To Pay: The amount of money made by residents of a particular location over a specific time period is referred to as their income level or willingness to pay (typically, a month)(Abdullah & Markandya, 2012; Koomson & Danquah, 2021). In terms of electrification, a community's residents' capacity to pay for the power connection may be directly impacted by their income level (Bos et al., 2018; Dogan et al., 2021; Koomson & Danquah, 2021).

Availability of Alternatives; This researcher advances that availability of alternative energy sources, such as charcoal and Kerosene lamps, may influence how quickly communities adopt electrification if other forms are thought to be more cost-effective, which could result in a low rate of connection.

3.4. Chapter Summary

The chapter considered various rural development theories, including the modernization theory, equality theory and the dependency theory, to lay out a theoretical foundation of how the cost of electricity connection fees relates to the rate of electrification in rural areas visa vis connection subsidies. Based on the same, the chapter also presented a conceptual framework for the study incorporating the independent, mediating and dependent variables and their relationships in line with this research. The next chapter will focus on the methodology used in this study.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 Introduction

This chapter outlines the research methodology utilized in the study. It starts with describing the research approach, research design, philosophy of the study, epistemology, and ontology. It further describes the study population, sampling techniques, and sample size; and thereafter discusses the validity, reliability, and ethical considerations of the study. Finally, it ends with a conclusion of the chapter.

4.2 Research Approach

A research approach is the strategies and techniques for research that range from broad assumptions to detailed methods of data collection, analysis, and interpretation (Creswell, 2014). Mohajan (2017) also adds that the research approach is a blueprint of action that gives direction to undertake research systematically and efficiently.

Cress well (2014) has highlighted three (3) categories of research approach to include; Qualitative, Quantitative, and Mixed Methods Approach. And according to Kothari (2006), the Qualitative approach to research is a subjective approach that digs deep into the attitudes, opinions, and behavior of participants of the research. A qualitative research approach is also an interpretative approach that allows for the use of multiple subjective perspectives and the construction of understanding rather than seeking to find it in tangibly (Rahi, 2017). A quantitative approach to research on the other hand seeks to tangibly quantify phenomena statistically and is objective in nature (M. S. Rahman, 2016). Further, Stockemer (2018) advances that it is a deductive approach to testing theory numerically in order to factually determine relationships between two (2) or more variables.

A mixed-methods approach to research is a process of collecting, analyzing, and mixing both qualitative and quantitative research approaches in a single study to understand a research problem (M. S. Rahman, 2016). According to Creswell and Clark, (2011), a mixed-methods approach is a form of research in which a researcher combines components of qualitative and quantitative research methodologies in order to provide

coverage and depth of understanding and validation. This approach provides researchers with the chance to make up for intrinsic method shortfalls, build on methodological strengths and offset unavoidable method biases (Doyle et al., 2009). The blending of qualitative and quantitative methods provides an improved understanding of research problems and complex phenomena than either approach alone (Dawadi et al., 2021).

This study used a mixed methods approach to collect and analyze information requiring both statistics and in-depth narrative explanations. The research employed mixed methods approach (both qualitative and quantitative methods) in capturing and analyzing data in order to gain an in-depth insight and to draw conclusions from the findings on the relationship between connection fee subsidies and sustainable rural electrification rates.

4.3 Research Design

Research design is a strategic framework that is a bridge between research questions and the execution or implementation of research (Othman et al., 2020). It is an arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Akhtar, 2016). According to Greener (2018), it is the “glue” that holds all the activities involved in research, which include data source identification, data collection, measurement and data analysis guided by the research questions.

Having adopted the mixed method approach to this study, a mixed method research design was employed. Creswell, (2009) classified mixed methods designs into three major categories i.e. Sequential, Concurrent and Transformative. In the Sequential designs, either quantitative or qualitative data are collected in the initial stage followed by the collection of the other type of data in the second stage (Cameron, 2009; Othman et al., 2020) whilst in the concurrent designs, both qualitative and quantitative data are collected during the same stage (Creswell, 2009; Pardede, 2018). In contrast, transformative designs are those that are guided by theoretical perspectives (Mertens, 2012).

For the purpose of this study, the researcher used a sequential explanatory research design to wholly explore, study and analyze the connections that exist between connection fee subsidies and rural electrification rate numerically and interpretively. This approach, according to Ivankova et al. (2006), offers a convenient mixed method for evaluating and confirming numerous research phenomena including socio-economic aspects. In relation to this study, the approach presented an opportunity for the researcher to firstly conduct quantitative research and analyse the results then build on the results to conduct qualitative research as guided by Cresswell (2014). Hence, quantitative data were firstly collected from respondents via research questionnaires with closed-ended questions then secondly, qualitative data were collected from the informants via the semi-structured interviews with open ended questions.

4.3.1 Research Strategy

Easterby-Smith et al. (2008) have stated that, research strategy is a general plan on how to answer the set research questions. Based on the research question, control on interactive events, and focus on existing events there are five vital research strategies in social sciences which include: experiments, descriptive surveys, archival analysis, histories and case studies (Dawadi et al., 2021).

The descriptive survey research strategy was used for this sequential explanatory study since it demonstrations the effect that one variable has on another as guided by Omondi (2017). According to (Dulock, 1993) descriptive research refers to the systematic and accurate description of the facts and features of a given area of interest. It gives as Blumberg (2005) expostulates, a picture of a condition, person or occurrence or displays how aspects are related to each other and as or as they logically occur. It also endeavors to investigate the what, where and how of an occurrence and helps the researcher to collect, summarize, present and interpret information for the purpose of clarity and amplification (Doyle et al., 2009).

The descriptive survey design was useful in establishing the extent of influence of connection fee subsidies on the rate of rural electrification in Chibombo District. The study then utilized the correlational research design to measure the relationship between the

connection fee subsidies which were the independent variables and the rate of rural electrification in Chibombo district which was the dependent variable.

4.3.2 Data Collection Methods and Tools

The study data collection was two-fold; as secondary and primary data.

a. Secondary data were collected by means of desk research i.e. using Project Design and Planning Documents, journals, books, Survey reports, Implementation reports and Monitoring and Evaluation Reports on rural electrification.

b. Primary data which were quantitative were collected by way of research questionnaires with closed-ended questions administered to the sampled respondent Households and Small and Medium Enterprises in Chibombo District. For qualitative data, semi-structured interview guides with open-ended questions were employed on key informants (Ministry of Energy, Energy Regulation Board, Rural Electrification Authority and Zesco Limited.

c. Additionally, information pertaining to proximity and actual connection of households and small businesses to the grid, was obtained by observation.

4.4 Philosophy of the Study

According to Slife & Williams (1995), philosophical ideals greatly influence the research practice in that they explain why a particular research approach be it qualitative, quantitative or mixed approach was adopted by a researcher. According to Cresswell (2014), philosophies are worldviews (sets of beliefs that influence actions) that a researcher conveys to a research study and arise from past research experiences, mentor-under study predispositions and the field of orientation of the researcher. Cresswell further highlights four (4) world views that are widely available in literature which include; constructivism, transformative, post positivism and pragmatism.

Constructivism according to Crotty (1998) is a worldview that focusses on qualitative data collection relying largely on the informants' view-points derived from their interfaces with

people and their contextual, historical, geographical and cultural interpretations of the world around them. Crotty further highlights that this worldview also involves the researcher's own interpretation of the information given which is also influenced by his/her own background and ideals, hence this world-view is embraced by qualitative research. Transformative worldview according to Mertens (2010) focusses on looking at the world from the perspective of the diverse and traditionally marginalized/oppressed groups such as the differently abled, people with untraditional sexual orientations, ethnic minorities, gender etc and linking them to political and social interventions. Barbules (2000) propagates the post positivism philosophy in which the cause and effect situations are studied and factual data, rational thinking and proof of theory and hypothesis take center stage in this worldview. Hence with its attributes, it is embraced by quantitative research. Lastly, pragmatic worldview is not tied to one form of realism, hence it is embraced by mixed methods research where researchers can freely utilize both qualitative and quantitative norms, techniques and approaches that best suit their research(Cresswell, 2014).

Further, according to Saunders et. al (2015), philosophy includes assumptions about human knowledge (epistemological assumptions), the realities faced in research (ontological assumptions) and the extent that the values upheld by the researcher influence the research process (axiological assumptions). Therefore, research philosophy largely concentrates on epistemology and ontology to bring significance and standpoint to the research(Holden & Lynch, 2004).

For purposes of this study, the pragmatic worldview was used firstly because a mixed approach, mixed strategy and sequential explanatory research design is what was adopted entailing that this is a mixed research study and so this worldview backs this research methodology, then secondly, due to the following additional ideals that this world view upholds according to Cresswell (2014):

- Pragmatic idealists do not look at the world as one absolute unit and so likewise both and not only one method is employed in mixed method research, both qualitative and quantitative data collection and analysis methods are utilized;

- Pragmatists assume that fact is what pertains at a given time and is not based on an opposition between reality viewed in the mind and that independent of the mind. Hence mixed methods research utilizes both quantitative and qualitative data in order to best comprehend the research problem;
- Pragmatists focus at both the “what” and” how” which even as evidenced by the research questions in this study, it is a mixed methods research;
- Pragmatists are of the view that research occurs in political, historical and social and other settings all the time, hence mixed methods research is reflective of these aspects.

Therefore, as deduced by this researcher, pragmatism as a worldview shaped the understanding of this research and the identified research problem ranging from the research objectives and questions developed, research methodology employed to the inclusion of political, social, historical, economic parameters as variables identified. Overall, this mixed methods research cannot overemphasize the degree to which it embraces this philosophy owing to what is already highlighted in the preceding statements.

4.5 Epistemology

As advanced by Fermaton (2006), Epistemology refers to the concept of knowledge or the nature of the correlation between the researcher and how knowledge is acquired and from where. It offers a broad set of assumptions about the best means of learning the knowledge of the world (Holden & Lynch, 2004). As stated by Eriksson and Kovalainen, (2008), epistemology is knowledge, its source and its limitations and is the philosophical foundation for the type of knowledge the research is to communicate including its authenticity and adequacy.

There is a wide spectrum of Epistemology approaches with positivist/post positivist and interpretive-constructivist approaches on the extreme end while the middle ground approaches are the critical approach and the postmodern/post structural approaches among others(Ahmed, 2008). Merriam (2009) defines these four (4) approaches as follows:

- Positivist/post positivist approach is measurement-oriented to determine facts empirically independent of the researcher and his/her research tools while interpretive/constructivist approach's aim is to obtain research information from the informant's view/stand point and have it as the position of the research and;
- Critical approach combines qualitative and quantitative research to identify linkages between the empirical and subjective standpoints providing both fact and in-depth contextualization while postmodern/post structural approach is based on critique of prior schools of thought.

This study adopted the critical approach of epistemology owing to its use of mixed research methods in order to both objectively and via in-depth analysis examine the relationship between connection fee subsidies and the sustainable rate of rural electrification.

4.6 Ontology

Ontology is the notion of being and is a fundamental aspect of philosophy though mostly taken for granted (Dale Jacquette, 2002). Further, according to Snape &Spencer (2003), it refers to the deductions made about the nature of reality to be studied, and what can be known about reality. Ontology is also referred to as the science of "what is", of the types and structures of matter, procedures, actions, and associations in every sphere of reality(Smith Barry, 2003).

Broadly, two categories of ontology exist that is; realism and relativism (Brank et al., 2005). Realism maintains that a reality exists externally away from our cognizance and that particular fixed laws of nature exist perpetually in that reality(Llewellyn et al., 2008). Further, Maxwell, (2012) alludes that realism is a belief that the world exists independently of the researcher's opinions and thoughts. Relativism on the other hand is the certainty that reality is a limited comparative experience and nothing exists externally from our thoughts (Baghramian et al., 2004).

Further, Grady (2002) advances that relativism is also termed pluralism which entails that there is no one absolute validity of reality. This study embraced a realist ontological stance owing to the understanding that fixed laws of nature do exist independent of a

researcher's view point. However, this researcher is of the view that perspective still plays a huge role in how one views and responds to the fixed laws of nature.

4.7 Study Population

The study population of a research is that cluster from which the researcher plans to draw deductions (Cresswell, 2014). It is a subdivision of the target population from which the sample is derived (A. S. Acharya et al., 2013).

The study area (Chibombo district) has a population of over 293,765 people and an average of 58,750 households (Central Statistical Office, 2016). However, the focus of the study will be on households and Small and Medium Enterprises (SMEs) which have benefitted from the subsidy program under the Electricity Service Access Project (ESAP) in Chibombo district. According to the Project Operations Manual, 385 households and Small and Medium Enterprises (SMEs) in the study area were earmarked for connection under the ESAP project. Further, the study incorporated 4 informants (1 from each institution) from the Ministry of Energy, Energy Regulation Board, Rural Electrification Authority and Zesco Limited. Hence the study population was 389 segregated as 321 households ,64 Small and Medium Enterprises and 4 institutions involved in the policy formulation, regulation/pricing and implementation of rural electrification.

Table 0.1 Study Population

s/n	Study Population	Respondents
1	Households	321
2	Small and Medium Enterprises	64
3	Energy Institutions	4
	Total	**389**

Source: (Author,2022)

4.8 Sampling Techniques

The study employed the purposive sampling technique to determine the study population. Purposive or judgmental sampling is a non-probabilistic sampling technique in which particular situations, individuals or occasions are selected intentionally to provide vital information that can only be found from those specific sources (Singh et al., 2014). The study used the purposive sampling technique since it allowed the researcher to choose participants who are beneficiaries of the connection fee subsidy project and institutions responsible for policy, regulation/pricing, and implementation of rural electrification who made up the target population.

Further, the study probabilistically sampled the number of beneficiary households to be respondents in the study using a simple random sampling approach. This probabilistic sampling technique was used because it focusses of creating a representative sample of the target population and allows for generalizations to be made effectively. Additionally, snow-ball sampling was used in that respondents would point out the other beneficiaries.

4.9 Sample Size

Sample size determination plays a key role in quantitative research that uses primary data seeking responses from the use of a questionnaire (Rahi, 2017). Given the complexity in sample determination, various approaches are used to specify the sample size without compromising the accuracy of the research results (Cresswell, 2014). This study proposes to use the Taro Yamane's method to draw the sample of the study, based on the following formula (1a). The Yamane's formula is preferred for this study based on its simplicity and preciseness in approximating sample sizes (Hussey, 1997).

$$n = \frac{N}{(1+Ne^2)} \quad \text{.....1a}$$

Where;

n signifies the sample size, N being population under study and e as the margin error (taken to be 0.05 for this study).

$$n = \frac{389}{(1+389(0.05)^2)} = 197.2 \approx 197$$

On this basis, the study targeted 197 respondents to participate in this study, with the allocation for households and Small and Medium Enterprises (SMEs) and Energy institutions as shown in table 4.2.

Table 0.2 Sample Size

S/N	Type	Study Population	Percentage	Sample Size
1	Households	321	83	160
2	SMEs	64	16	33
3	Energy institution	4	1	4
Total		389	100	197

Source: (Author, 2022)

At 5% precision level, a confidence level of 95% was used to define the sample size for the households and small scale enterprises, i.e., a total of 160 households, and 33 small scale businesses were based on the percentage of sample population and sample size respectively. Further, four (4) informants (semi-structured interview-based) one (1) in each institution were purposively selected from the Ministry of Energy (Electricity Officer), Rural Electrification Authority (ESAP subsidy project manager), Zesco Limited (Engineer on ESAP subsidy project) and the Energy Regulation Board (Pricing officer) based on their involvement in the process of ESAP project implementation and rural electrification as a whole.

4.10 Validity

Validity is a measure of quality in research and is the degree to which a research instrument correctly measures an idea (Heale & Twycross, 2015). When a research is seen to have high validity, it entails that the findings are significant and match to real world

happenings and characteristics for the researcher to derive meaningful conclusions from it (Aweke & Navrud, 2022; merriam, 1995).

This study having adopted the mixed methodology approach utilized the methodological triangulation method to establish validity. Hence responses from questionnaires, information from interviews and observations were utilized as data sources for the study in order to reduce bias and enhance credibility. Further, updating and reviewing of the research instruments by the supervisor to ensure capturing of intended data also formed the basis for establishing validity.

4.11 Reliability

According to (Kumar, 2010) reliability is the amount of accuracy or correctness in the research measurements made by a research instrument. It is concerned with the confidence that when the instrument is administered under the same circumstances to similar populations, it will consistently produce the same results (Rackwitz, 2001).

This study used Cronbach's coefficient alpha test of reliability to test the reliability of the research instruments which was 0.67. According to Nyakundi (2015), a Cronbach's alpha test coefficient measure of 0.6-0.7 is deemed acceptable while one that has a greater value that 0.7 is deemed good or excellent depending on the greatest measure.

4.12 General Analysis

The data was analyzed via descriptive statistical analysis and the statistical measures of central tendency (mean, median and mode) and measures of variability (standard deviation and variance). Sorting and coding was done using excel and the Statistical Package for Social Sciences (SPSS) – 21.0 version. Descriptive analysis was also conducted and correlation analysis was used to establish the relationship between variables. The outputs of the analysis were presented in chapter five (5) of the study as research findings using text, tables and figures.

4.13 Research Ethics

Taking into account the involvement of different stakeholders from whom the data was expected to be collected, the research upheld the highest level of research ethical standards. Before administering the instruments to the respondents, an outline of the study was provided stating its purpose; consent was required from each respondent prior

to the administration of the instrument on their willingness to participate in the research and their names withheld for confidentiality. The research was strictly carried out according to the University of Lusaka's ethical code of practice in research.

Additionally, in conducting the study, the researcher endeavored to obey relevant laws, institutional and governmental policies while carefully taking necessary measures to minimize/avoid harm, discrimination and risk to the respondents and informants.

4.14 Chapter Summary

In summary, this chapter presented the suitable research approach and research design used to implement the study. The chapter also underscored the research philosophy which comprised the epistemological and ontological assumptions of the study. Further, it defined the population of the study and the appropriate sampling techniques utilized in the study. The chapter then presented the specific sample size of the research which was computed using Yamane's formula. Finally, the chapter described the validity and reliability of the data collection instruments and how the two parameters would be determined for the study as well as the ethical considerations taken during the research.

CHAPTER FIVE
PRESENTATION AND ANALYSIS OF FINDINGS

5.1 Introduction

This Chapter presents the findings of the study and explains the results of the study aiming at determining the relationship that exists between connection fee subsidies and sustainable rural electrification in Chibombo district. The study targeted households, Small and Medium Enterprises, Rural Electrification Agency, Zesco Limited, Ministry of Energy and Energy Regulation Board.

5.2 Response Rate Analysis

The study issued a total of 253 questionnaires which were administered to households and Small and Medium Enterprises. The study targeted respondents who were households and Small and Medium Enterprises who had benefited from the Electricity Services Access Project (ESAP) in Chibombo District. Of the 253 survey questionnaires administered via the kobo-collect application, 253 were responsive hence representing a 97% percent response rate. This was attributed to the purposive and snow-bow sampling technique that was employed. Zesco Limited, Chibombo branch had assigned an officer to the researcher who knew which houses had been connected under the ESAP subsidy project. Additionally, the respondents enthusiastically pointed out their fellow beneficiaries. Figure 5.1 shows a summary of the questionnaire response rate.

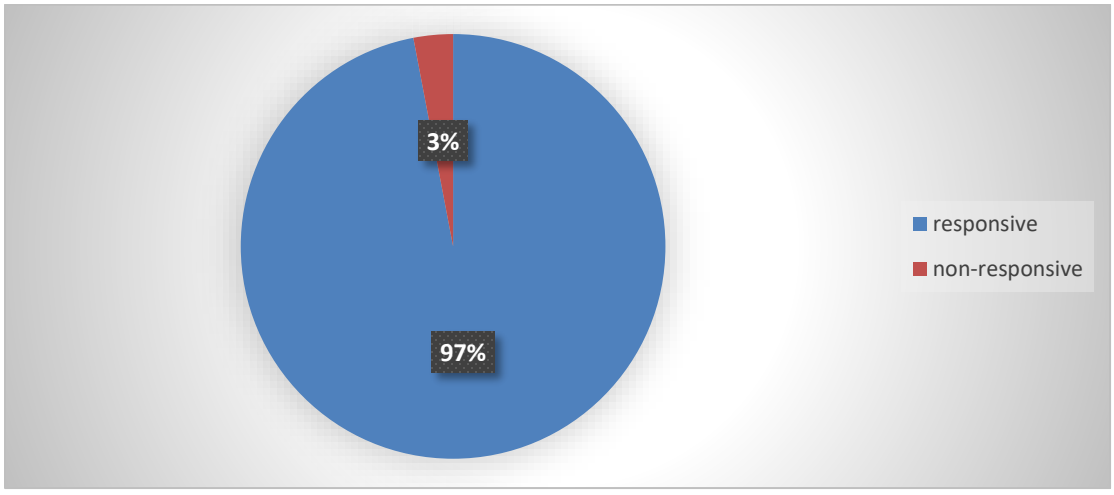

Figure 0.1 Questionnaire Response Rate

Source (Author, 2022)

Prior to the data collection exercise being conducted in Chibombo district, a courtesy call was paid on the District Commissioner, Mr. Lloyd Nkayeka. After understanding the purpose of the research, he gave his consent for the research to be conducted for a period of three (3) days in his district and the researcher had to sign in the district register. The data collection was conducted from 18th to 20th November, 2022. Additionally, written authority was granted by Zesco Limited for the research to be conducted (see attached authority letter in appendix 2).

Table 0.1 Data Collection Areas in Chibombo District

No	Area	Number of respondents	Date
1	Old Boma	10	18-11-22
2	Mwamuyamba village	15	
3	Mulaisho Village	15	
4	Chipelembe village	32	19-11-22
5	John Chinena	54	
6	Kampekete village	25	20-11-22
7	Mutowa village	10	
8	Kaongo Village	10	
9	Kasukwe village	15	
10	Liteta village	40	
11	Shamputa village	20	
Total respondents		**246**	

Source: (Author, 2022)

Table 5.1 shows the areas where data was collected in Chibombo district and the respective numbers per area as well as the day the data was collected. Further, qualitative data was collected using semi-structured interview guide; the researcher conducted interviews with four (4) respondents. The interviewees were experts in the electricity sub sector with vast experience in rural electrification projects. The qualitative data obtained via the interviews was reported in narrative form and was utilized to reinforce the data collected via the research questionnaires.

5.3 Respondent's General Information

The study determined the respondents' contextual characteristics based on gender, level of education, age, source of income and income level.

5.3.1 Gender of Respondents

Table 0.2 Gender Frequency Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	145	58.9	58.9	58.9
	female	101	41.1	41.1	100.0
	Total	246	100.0	100.0	

Source: (Author, 2022)

The researcher investigated the gender representation of the respondents as shown in Table 5.3. The male fraternity represented a larger proportion of the respondents at 58.9% while the females were represented at 41.1%.

5.3.2 Age Range for the Respondents

Table 0.3 Age Range for the Respondents

Age range		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Median	mode	Std deviation
Valid	below_30	64	26.0	26.2	26.2	2.19	2	30-40	.924
	30_40	91	37.0	37.3	63.5				
	40_50	68	27.6	27.9	91.4				
	above 50	21	8.5	8.6	100.0				
	Total	244	99.2	100.0					
Missing	System	2	.8						
Total		246	100.0						

Source: (Author, 2022)

As table 5.4 shows, the respondents were mostly aged between 30-40years of age at 37.3% followed by those aged between 40-50years at 27.9%. Those below 30 years of age were at 26.2% while those aged above 50 years of age trailed behind at 8.6%. Overall, the respondents were of mature age and were heading homes and mostly running Small to Medium Enterprises.

On average, as the mean shows, each respondent was expected to be in the age group 30-40 years. The median on the other hand is the middle number for which half of the numerical scores are greater than or half are smaller, hence, half of the respondents in Chibombo district were below the age group 30-40 years. The majority of the respondents were in the age group 30-40 hence that was the mode of the ages of the respondents. Lastly, standard deviation being how data is spread out from the mean, 0.924 shows that the data was reliable since the probability value of value of 0.924 when rounded off is 1 and is near the mean value (2.19).

5.3.3 Source of Income for the Respondents

Table 0.4 Source of Income for the Respondents

Source of Income		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Formal_employment	38	15.4	15.4	15.4
	Business	154	62.6	62.6	78.0
	Farming	37	15.0	15.0	93.1
	other	17	6.9	6.9	100.0
	Total	246	100.0	100.0	

Source (Author, 2022)

With regard to the source of income for the respondents, the majority ran businesses and stood at 62.6%. Those in formal employment followed at 15.4% and farming at 15%. Further, some respondents could not clearly distinguish what they did and fell in the 6.9% indicated as other. Hence it is evident that the economy of Chibombo at household level was largely run by Small to Medium Enterprises as table 5.4 illustrates.

5.3.4 Highest Academic Qualification for the Respondents

Table 0.5 Frequency Table for Highest Qualification Level of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	primary	42	17.1	17.1	17.1
	Junior_secondary	76	30.9	31.0	48.2
	Senior_secondary	78	31.7	31.8	80.0
	Tertiary	40	16.3	16.3	96.3
	Never_been	9	3.7	3.7	100.0
	Total	245	99.6	100.0	
Missing	System	1	.4		
Total		246	100.0		

Source: (Author, 2022)

With regard to literacy, most of the respondents had reached senior secondary as their highest qualification and stood at 31.8%. Not far behind, those that had plateaued at junior secondary stood at 31%. Primary and tertiary qualifications trailed behind at 17.1% and 16.3% respectively. Lastly, those that had not been in school made up 3.7% of the respondents as shown in table 5.5. Hence, most of the respondents could comprehend the contents of the questionnaire and provided appropriate responses.

5.3.5 Income Level of Respondents

Table 0.6 Income Level of Respondents

Income level		Frequency		Percent	Valid Percent	Cumulative Percent
Valid	below_K1000	105		42.7	42.7	42.7
	K1000_K5000	120		48.8	48.8	91.5
	above_K5000	21		8.5	8.5	100.0
	Total	246		100.0	100.0	

Source: (Author, 2022)

The findings of the study with regard to income level are illustrated in table 5.6. The majority (48%) were able to make between K1000-K5000 per month followed by those who earn below K1000 at 42.7%. The ones nearest to the food basket with an income of above K5000 were the least making up 8.5% of the respondents.

5.4 Descriptive Statistics Data Analysis for Household/Small Scale Enterprise Information on Rural Electrification and Connection Fee Subsidy

According to Akhtar, 2016, descriptive statistics allow the researcher to encapsulate large data sets using procedures that are easily comprehended by an observer. Descriptive statistics analysis is regarded an optimal technique for data collection that defines relationships and displays phenomena as they factually occur (Cresswell, 2006). Hence, this section of the study addresses the descriptive statistical analysis of the research variables. From the questionnaire designed, respondents were required to rate their degree of agreement or disagreement by specifying the appropriate option on a 4- 6 point Likert scale depending on the type of question. The options as indicated on the scale were (1-Neutral, 2-Agree, 3-Strongly Agree, 4-Disagree and 5-Strongly Disagree).

In other instances, the respondents were requested to indicate the extent to which they felt one variable influenced the other as follows: 1-No extent, 2-Low extent, 3- Moderate extent, 4- Great extent and 5-Greater extent. This implied that for a mean response above 3, the respondents agreed that one variable influenced the other to a great and very great extent. On the other hand, a mean response below 3 indicated the respondents agreed that one variable influenced another to no or low extent. Additionally, there were instances where the respondents had to indicate more than one (1) option in the responses and this was holistically captured, analyzed and presented in form of pie charts and bar charts.

5.4.1 Awareness of the Cost Elements of the Electricity Connection Fee in Chibombo District

Table 0.7 Respondents' Awareness of the cost Components of the Connection Fee

Awareness		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	30	12.2	12.2	12.2
	Agree	53	21.5	21.5	33.7
	Strongly_agree	54	22.0	22.0	55.7
	disagree	95	38.6	38.6	94.3
	Strongly _disagree	14	5.7	5.7	100.0
	Total	246	100.0	100.0	

Source: (Author, 2022)

The respondents were asked if Zesco Limited had sensitized them on the constituent elements that make up the connection fee and table 5.7 shows that 38.6% of the respondents were not aware and 5.7% strongly disagreed to being sensitized. Hence 44.3% of the respondents had not been sensitized on the constituent s of the connection fee. However, 22% of the respondents strongly agreed that they had been sensitized followed by 21.5% who merely agreed. 12.2% of the respondents were neutral. Hence, the majority of the people who had benefited from the connection fee under the ESAP project in Chibombo district were not sensitized on the cost elements that make up the connection fee subsidy. As such, most were not aware and had minimal appreciation of what it takes for the power utility to bring electricity to their homes and businesses except for the subsidized cost they had benefited from.

5.4.1.1 Opinions of Respondents on Cost of Connection Fees

Table 0.8 Respondents' Frequency Distribution on Cost of Connection Fees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	44	17.9	18.0	18.0
	Agree	84	34.1	34.3	52.2
	Strongly_Agree	78	31.7	31.8	84.1
	Disagree	38	15.4	15.5	99.6
	Strongly_disagree	1	.4	.4	100.0
	Total	245	99.6	100.0	
Missing	System	1	.4		
Total		246	100.0		

Source:(Author, 2022)

Upon enquiry of the respondents' opinions as to whether the connection fees were high, 34.3% merely agreed with 31.5% strongly agreeing to this fact. 17.9% expressed neutrality whilst 15.4% were of the view that the connection fees were not high. Additionally, 0.4%of the respondents strongly disagreed to the connection fees being high. Table 5.8 shows the frequency distribution for this parameter and it is evident that the majority of people in Chibombo district view connection fees as being costly.

5.4.1.2 High Cost of Connection Fees Reduces Demand for Electricity

Table 0.9 High Cost of Connection Reduces Electricity Demand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	21	8.5	8.6	8.6
	Agree	92	37.4	37.6	46.1
	Strongly_agree	119	48.4	48.6	94.7
	Disagree	9	3.7	3.7	98.4
	Strongly_disagree	4	1.6	1.6	100.0
	Total	245	99.6	100.0	
Missing	System	1	.4		
Total		246	100.0		

Source: (Author, 2022)

When asked if high cost of connection results in low electricity rates, 48.7% of the respondents strongly agreed with 37.6% merely in agreement. Those that were neutral, in disagreement and strongly disagreed stood at 8.5%,3.7% and 1.6% respectively as table 5.9 shows. Hence it is clear that the Chibombo residents' position is that high connection fees are a cause of low electrification rates in their district and that the inverse is also the case.

In a similar vein, table 5.10 and 5.11 show the frequency of responses on whether low connection fees increase the electrification demand and the need for the current connection fee to be reduced respectively. The responses in both tables amplify the position of high connection fees as a cause of reduced demand for electricity.

Table 0.10 Low Connection Cost Results in Higher Electricity Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	18	7.3	7.3	7.3
	Agree	72	29.3	29.4	36.7
	Strongly_Agree	141	57.3	57.6	94.3
	disagree	4	1.6	1.6	95.9
	Strongly_disagree	10	4.1	4.1	100.0
	Total	245	99.6	100.0	
Missing	System	1	.4		
Total		246	100.0		

Source: (Author, 2022)

As shown in table 5.10, 57.6% of the respondents strongly agreed that low connection cost increases electricity access.29.4% merely agreed with 7.3% and 4.1% and 1.6% of the respondents being neutral, strongly disagreed and merely disagreed respectively.

Table 0.11 Reduction of Current Cost of Connection for Electricity Connections to Increase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	16	6.5	6.5	6.5
	Agree	85	34.6	34.6	41.1
	Strongly_agree	127	51.6	51.6	92.7
	Disagree	18	7.3	7.3	100.0
	Total	246	100.0	100.0	

Source: (Author, 2022)

With regard to the need for the current cost of connection to be reduced in order to increase electricity connections, 51.6% of the respondents strongly agreed while 34.6% merely agreed. Those not in agreement stood at 7.3% and those without a standpoint made up 6.5% of the respondents as indicated in table 5.11.

5.4.2 Assessment of the Capacity of Households/SMEs to Pay for Electricity Connection

Table 0.12 Capacity of Households/SMEs to Pay for Electricity Connection

Capacity to pay for connection		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	K250_K500	171	69.5	70.1	70.1
	K500_K1000	44	17.9	18.0	88.1
	K1000_K1500	20	8.1	8.2	96.3
	K2000_K2500	5	2.0	2.0	98.4
	5	4	1.6	1.6	100.0
	Total	244	99.2	100.0	
Missing	System	2	.8		
Total		246	100.0		

Source (Author, 2022)

The researcher sought to ascertain the capability of households/SMEs to afford electricity connection and the price range that the majority of the respondents (70.1%) could afford was K250-K500. Only 18% of the respondents could afford K500-K1000 and 8.2% of the respondents could afford a connection fee of between K1000-K1500. Lastly, those that could afford between K2000 and K5000 stood at 2% only. Hence the majority of the respondents could only afford the connection fee price range of K250-K500 which is the category of the subsidy that was provided under the ESAP project.

5.4.2.1 Source of Alternative Energy for Cooking and Lighting

In line with the capacity to pay for electricity connection, the researcher also sought to ascertain the respondents' source of alternative energy for cooking and lighting. It is generally known that an electric stove consumes more electricity units than a light bulb

does, hence most people tend to use alternative energy for cooking. However, others tend to only use alternatives during load-shedding.

As such, the respondents were asked what source of energy they use for cooking as an alternative to electricity. Therefore, figure 5.2 shows that most of the respondents (82%) use charcoal as an alternative to electricity for cooking. 15.1%,1.7% and 1.3% use firewood, Liquified Petroleum Gas (LPG) and Biogas as alternatives to electricity. Evidently, the usage of charcoal and firewood shows that the fight for reduced deforestation in light of climate change interventions is a battle which is very far from being won in Chibombo district.

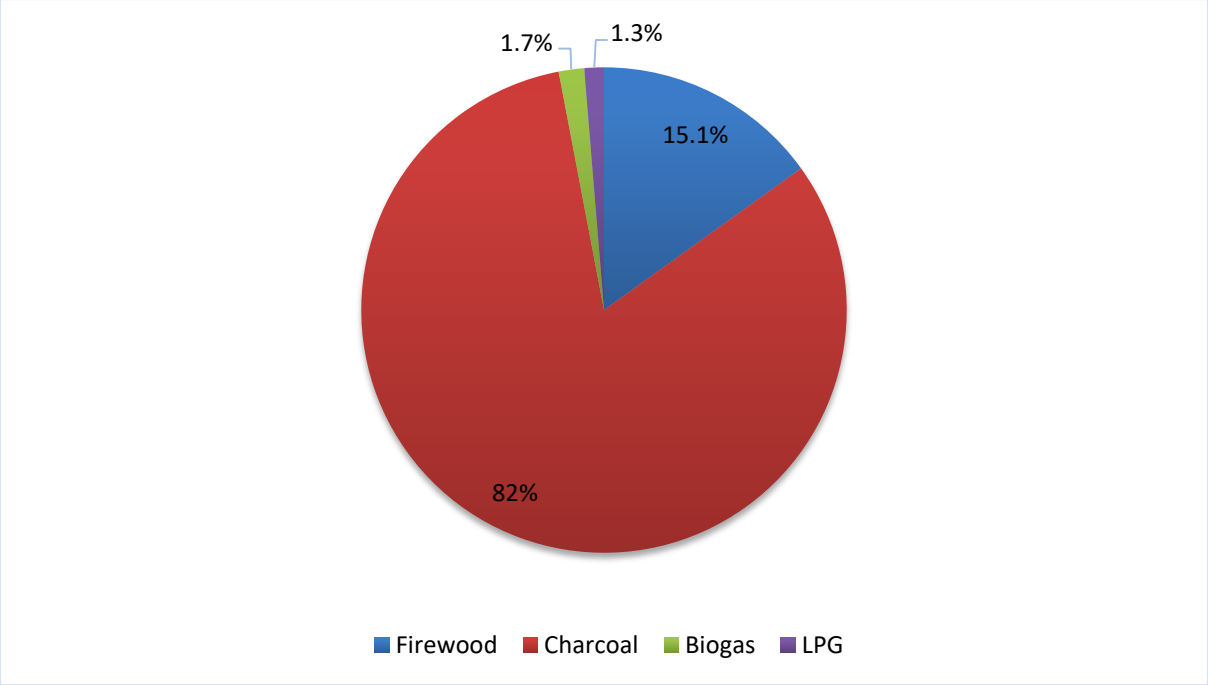

Figure 0.2 Alternative Energy for Cooking in Chibombo District

Source: (Author, 2022)

With regard to lighting, the respondents were asked what they alternatively use for lighting in the context of load-shedding since they were beneficiaries and have access to electricity already. As shown in figure 5.3, the majority of the respondents (61%) used solar lamps while those utilizing candles stood at 32%. The least category (7%) were

those that use kerosene lamps. Hence the Chibombo residents have the capacity to utilize both electricity and solar lamps for lighting.

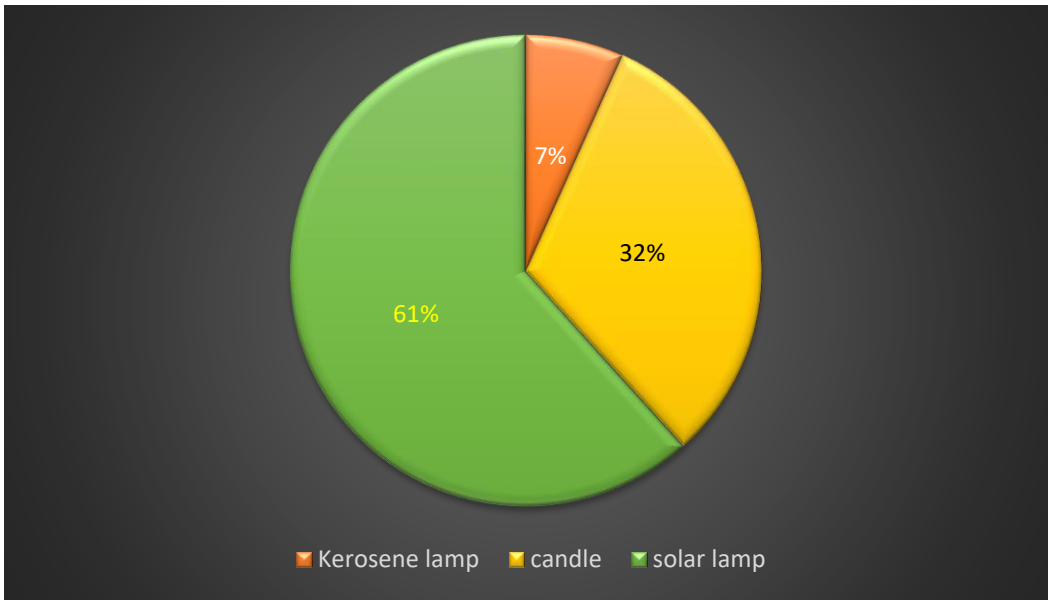

Figure 0.3 Alternative Energy for Lighting In Chibombo District

Source: (Author, 2022)

5.4.2.2 Causes of Low Electricity Access

The respondents were asked what makes people in rural areas fail to access electricity. This was to further probe whether capacity to pay was a factor with regard to electricity access. A likert scale of five (5) options was used and the respondents could choose more than one (1) category. Figure 5.4 shows the categories and respective proportions of respondents.

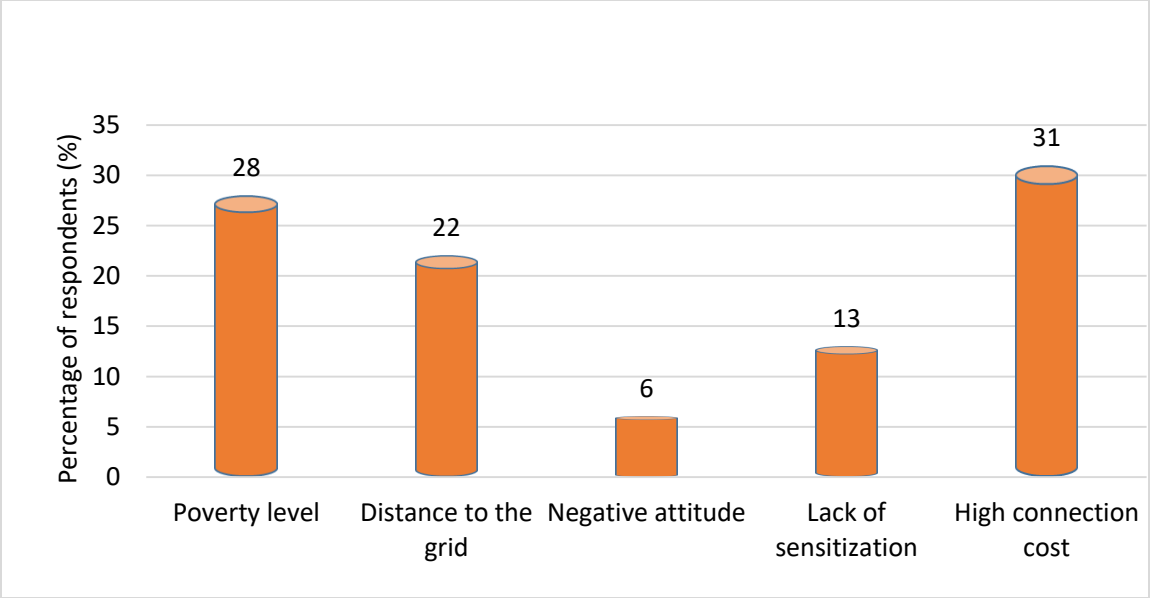

Figure 0.4 Causes Of Low Electricity Access In Chibombo District

Source: (Author, 2022)

As shown, high connection cost was the major cause of low electrification that the respondents highlighted with 31% of them choosing this option. Closely behind, poverty level stood at 28% of the respondents acknowledging this aspect. Thirdly, 22% of the respondents chose distance to the grid as a cause of low access to electricity as well. Lack of sensitization and negative attitude were the least causes standing at 13% and 6% respectively. From what was found, high connection cost, poverty levels and distance to the grid are critical hindering factors to rural electrification. High cost of connection being the most critical, the proposed foreseeable increase in cost of connection fees as recently applied for by Zesco Limited possess a risk of Chibombo district not reaching universal access by 2030.

Table 0.13 Measures of Central Tendency for Causes of Low Electricity Access

Causes of low electricity Access	Poverty Level	Distance to the Grid	Negative Attitude	Lack of sensitization	High cost
Mean	.62	.47	.13	.27	.67
Median	1.00	.00	.00	.00	1.00
Mode	1	0	0	0	1
Std. Deviation	.487	.500	.342	.442	.471

Note: Key:1=yes, 0=No, the values in the interpretation were rounded off to the nearest one decimal place

Source: (Author, 2022)

Further, the measures of central tendency as shown in table 5.13 indicate that poverty level as a cause of low electricity access had a mean value of (m=0.6) and a standard deviation of (std. dev.=0.5). The mode was 1 (yes)and the median was 1 (yes). Distance to the grid as a cause for low electricity access had a mean of (m=0.47), standard deviation (std. dev.=0.5). The mode was 0 (No) and the median was 0 (No).

On the other hand, Negative attitude had a mean of (m=0.1) and a standard deviation of (std. dev.=0.3) while the mode was 0(No) and the median was 0(No). Lack of sensitization as a cause of low electricity access had a mean of (m=0.3) and standard deviation of (std. dev =0.4). The mode was 0(No) and the median was 0(No). Further, High cost as cause of low electricity access had a mean of (m=0.7) and standard deviation of (std. dev=0.5). The mode was 1 (yes) and the median was 1 (yes).

Overall, the findings show that on average, the respondents agreed to poverty level, distance to the grid and high cost as being the causes of low electricity access. While on average, they disagreed with lack of sensitization and negative attitude as being the causes of low electricity access. Further, most respondents mostly agreed to poverty level and high cost as being the causes whilst others mostly disagreed with lack of sensitization, negative attitude and distance to the grid as the mode values showed.

Additionally, as shown by the standard deviations, the responses were reliable because the standard deviation values were close to the mean values.

5.4.3 Number of ESAP Project Beneficiary Households and Small and Medium Enterprises in Chibombo District

As indicated in section 5.3.3 above, where the source of income for respondents was addressed, their major source of income was business which stood at 62.6% followed far behind by formal employment and farming at 15.4% and 15% respectively. Those that chose the option of “other” were 6.9% of the respondents. This evidently entailed that 154 out of the 246 respondents were Small to Medium Enterprises (SMEs) that had benefited from the ESAP subsidy project and the remaining 37.4% (92 respondents) fell purely in the category of households in the eleven (11) areas that were visited in Chibombo district. Overall, since the study was targeted, all the 246 respondents were connected to the electricity grid as beneficiaries. However, according to the record that was made available by Zesco Chibombo branch, 938 beneficiaries had been connected to the grid under the subsidy which exceeded the initial project target of 385 beneficiaries by almost three-fold. The full list of beneficiaries in Chibombo district and summarized pictorial evidence of the businesses and households is in Appendix 2.

Further, in order to have a perspective on what the respondents used electricity for as beneficiaries of the subsidy project, they were asked to indicate as such. As shown in figure 5.5, the majority of the respondents (33%) indicated that they used electricity for lighting. On the other hand, 21% used electricity for entertainment in the form of television/radio and 18% used it for refrigeration. Further, 13% of the respondents cooked with electricity and lastly, 3% used it for water pumping. Hence, it is evident that electricity is mostly used for lighting and entertainment in Chibombo district.

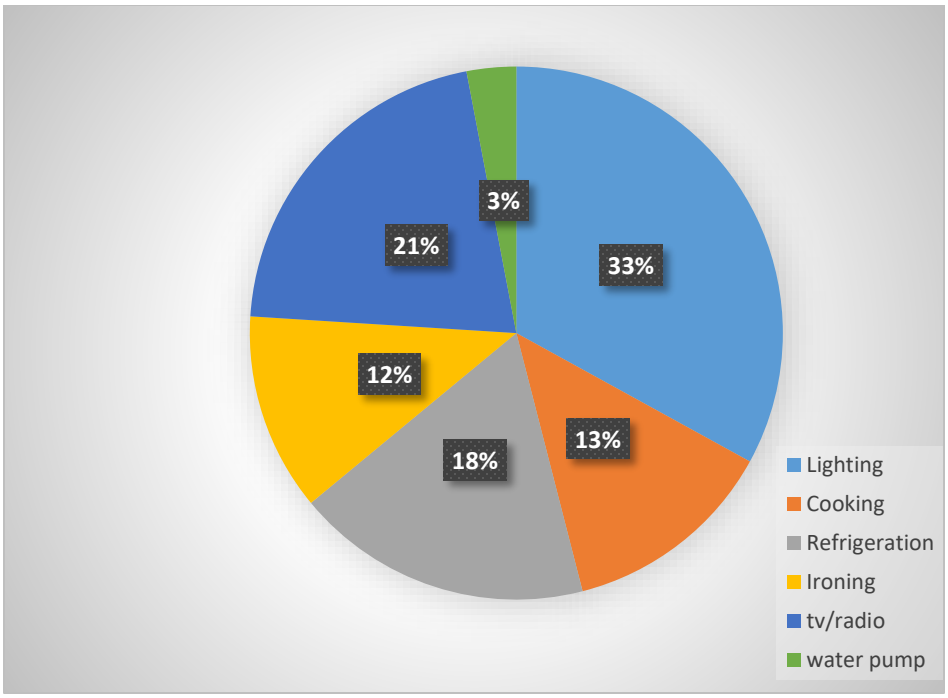

Figure 0.5 Uses of Electricity by ESAP Project Beneficiaries in Chibombo District

Source: (Author, 2022).

5.4.3.1 Emphasis on the Benefit of Connection Fee Subsidies in Chibombo District

Subsidy-oriented rural electricity projects are thought to have benefited a lot of rural areas and ensured that most people are given chance to have access through lower connection fees as the project mandate (Awan et al., 2022a). In this regard, the respondents were asked to state if really the ESAP subsidy project was of benefit to them. As indicated in figure 5.6, 97% of the respondents indicated that the project was really a benefit whilst the remaining 3% were of the view that it was not. Therefore, based on the findings, the subsidy project was really of benefit to Chibombo district.

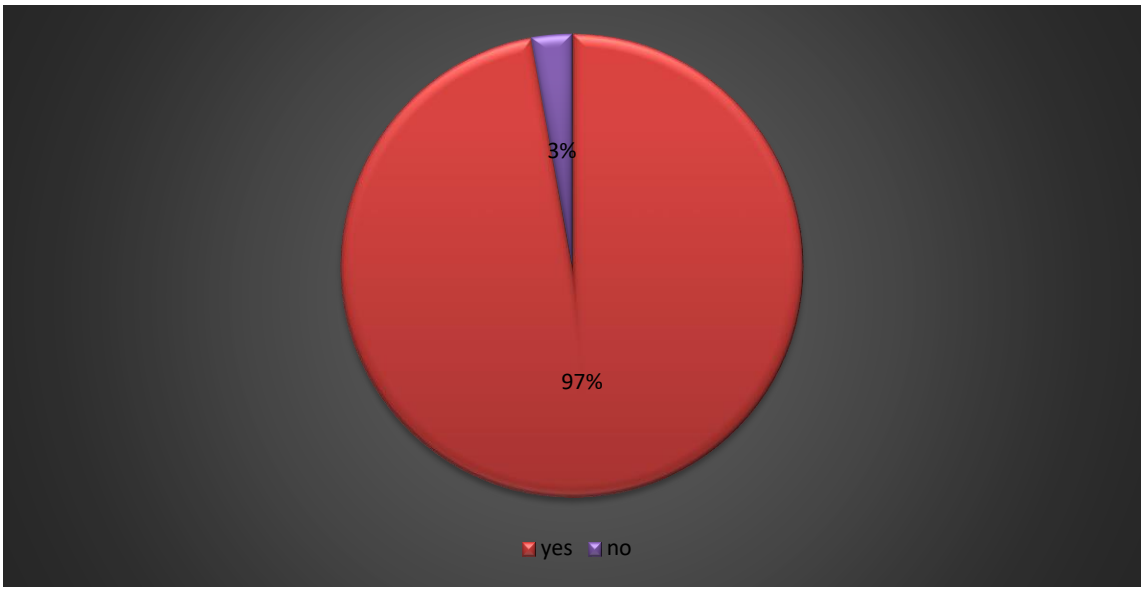

Figure 0.6 Emphasis on the Benefit of Connection Fee Subsidies In Chibombo District

Source: (Author, 2022)

5.4.3.2 Benefits of Subsidized Rural Electrification in Chibombo District

For the respondents to outline the actual benefits emphasized in section 5.4.3.1, they were presented with a likert scale of six (6) parameters which they needed to choose from and had an option of picking more than one (1) option. Figure 5.7 shows the parameters and the respective percentages of the respondents' preferences.

From figure 5.7, the majority of the respondents (23%) indicated that improved willingness to pay (synonymous with ability to pay) was the most benefit realised followed by improved social status of the communities standing at 19%. 17% of the respondents indicated a tie between improved grades for school going children and improved business opportunities. On the other hand, 13% of the respondents indicated that at least 1-3 Small to Medium Enterprises (SMEs) had benefited from the ESAP subsidy project while 12% indicated that they knew at least 5 households that had benefited from the subsidy project. Therefore, based on the closeness of the percentages of respondents among the parameters, it is evident that all the six (6) parameters were significant benefits from the subsidized rural electrification project.

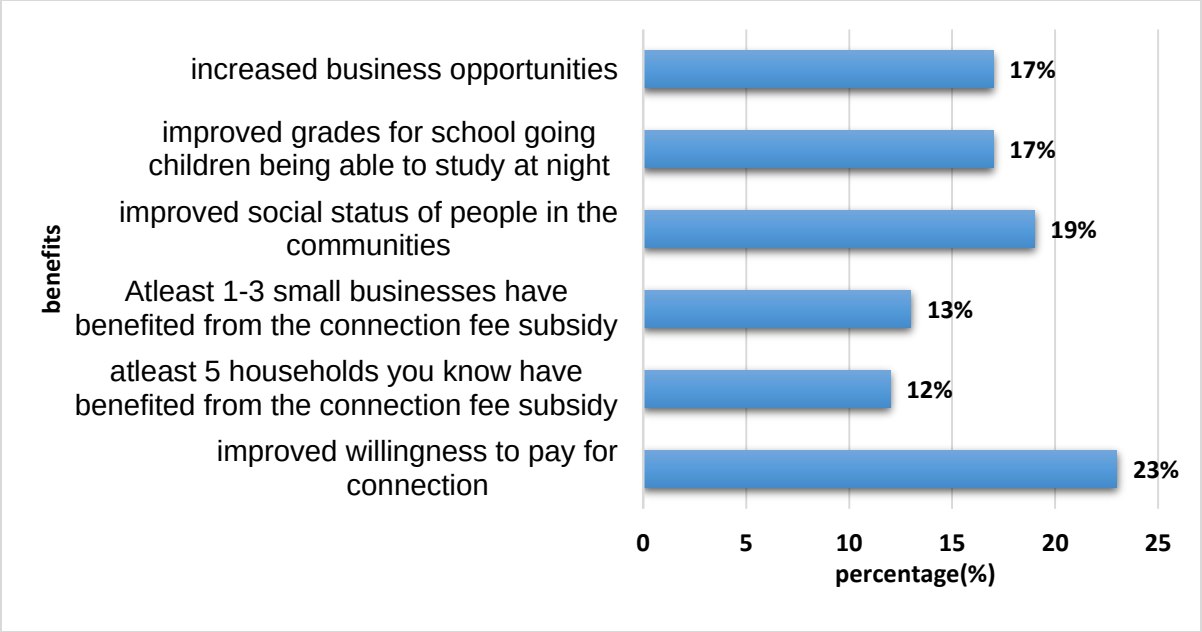

Figure 0.7 Benefits of Subsidized Rural Electrification in Chibombo District

Source: (Author, 2022)

5.4.3.3. Extent of the Influence of Connection Fee Subsidy on Cost of Connection and Income Levels in Chibombo District

Table 0.14 Extent of the Influence of Connection Fee Subsidy on Cost of Connection and Income Levels in Chibombo District

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Greater_extent	129	52.4	53.1	53.1
	Moderate	71	28.9	29.2	82.3
	less_extent	28	11.4	11.5	93.8
	Neutral	15	6.1	6.2	100.0
	Total	243	98.8	100.0	
Missing	System	3	1.2		
Total		246	100.0		

Source (Author, 2022)

Tables 5.14 and 5.15 show the respondents' position regarding the extent to which the connection fee subsidy influenced the cost of connection and their income levels. Evidently, the majority of the respondents indicated that the connection fee subsidy had to a greater extent influenced the cost of electricity connection and their income levels at 53.1% and 49% respectively.

Table 0.15 Extent to which Connection Fee Subsidy Influences Income Level in Chibombo District

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Greater_extent	119	48.4	49.0	49.0
	Moderate	77	31.3	31.7	80.7
	less_extent	30	12.2	12.3	93.0
	Neutral	17	6.9	7.0	100.0
	Total	243	98.8	100.0	
Missing	System	3	1.2		
Total		246	100.0		

Source: (Author, 2022)

With regard to the adequacy of the connection fee subsidy in Chibombo district, 82% indicated that it was adequate while the remaining 18% indicated that it was not adequate as illustrated in figure 5.8. Hence, despite the majority indicating that the subsidy was adequate, the fact that some still do not agree entails that there is still room for more provision of the subsidy.

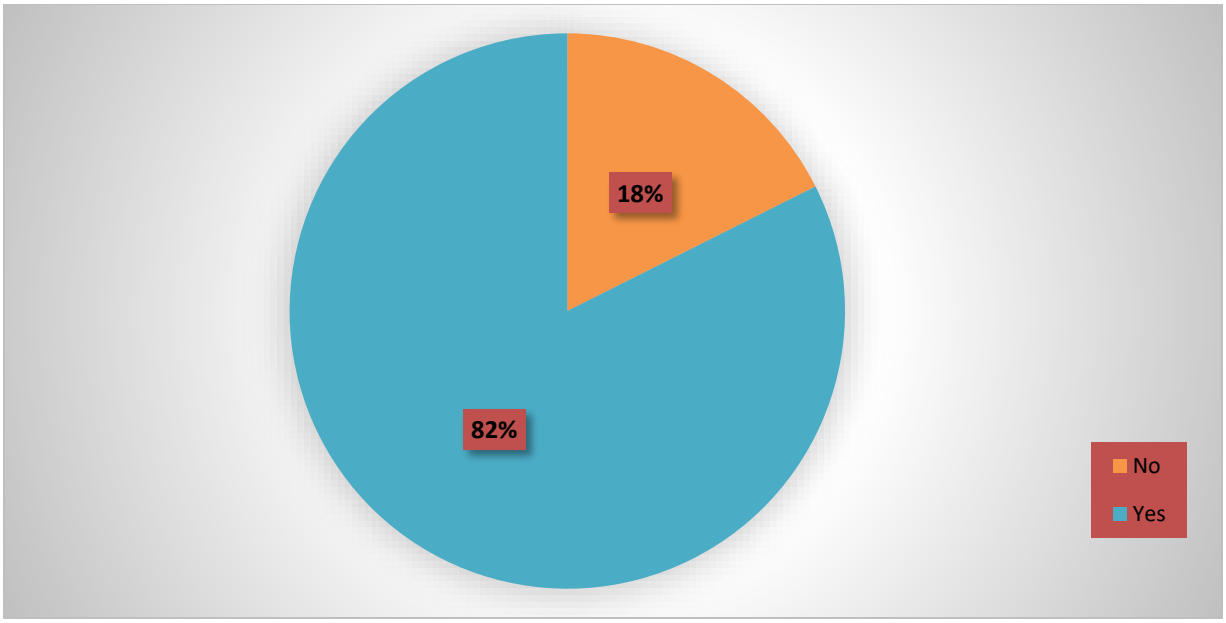

Figure 0.8 Adequacy of Connection Fee Subsidy in Chibombo District

Source: (Author, 2022)

5.4.4 Critical Success Factors for Implementation and Sustainability of Rural Electrification in Chibombo District

Sustainable rural electrification is critical for long term improvement and posterity (López-González et al., 2019). Therefore, in the context of Chibombo district, the respondents were asked to give their opinion regarding the effectiveness of the connection fee subsidy and what criteria will ensure sustainable increase of electricity connections in the district. Likert scales of four (4) and six (6) parameters were used to determine the effectiveness of the connection fee subsidy and sustainability criteria for increased electricity connections respectively as indicated in figure 5.9 and 5.10.

5.4.4.1 Effectiveness of Connection Fee Subsidy in Chibombo District

Figure 5.9 shows that the majority of the respondents (45%) indicated that the connection fee subsidy was effective in increasing the number of connections and sustainable consumption. This was followed by 32% of the respondents who indicated that the subsidy was not adequate to cater for all parts of the community resulting in low electricity access. 20% of the respondents indicated that the subsidy project was effective in increasing connections but consumption was unsustainably low. Lastly, 3% of the

respondents were of the view that the connection fee subsidy was not effective or sustainable. Therefore, despite the connection fee subsidy being effective in increasing the number of electricity connections and consumption for the beneficiaries, it was evidently not adequate to cater for all parts of the community. And as indicated by those whose view point was that the connection fee subsidy was neither adequate nor sustainable, upscaling of the subsidy to cater for more communities would be required. With regard to consumption, as indicated by 20% of the respondents, people connect to the grid but do not utilize the power significantly insinuating that they use it for only electrical appliances with low wattage. This is validated in figure 5.5 above where the ways in which electricity is used in Chibombo district is indicated with lighting being the highest at 33%.

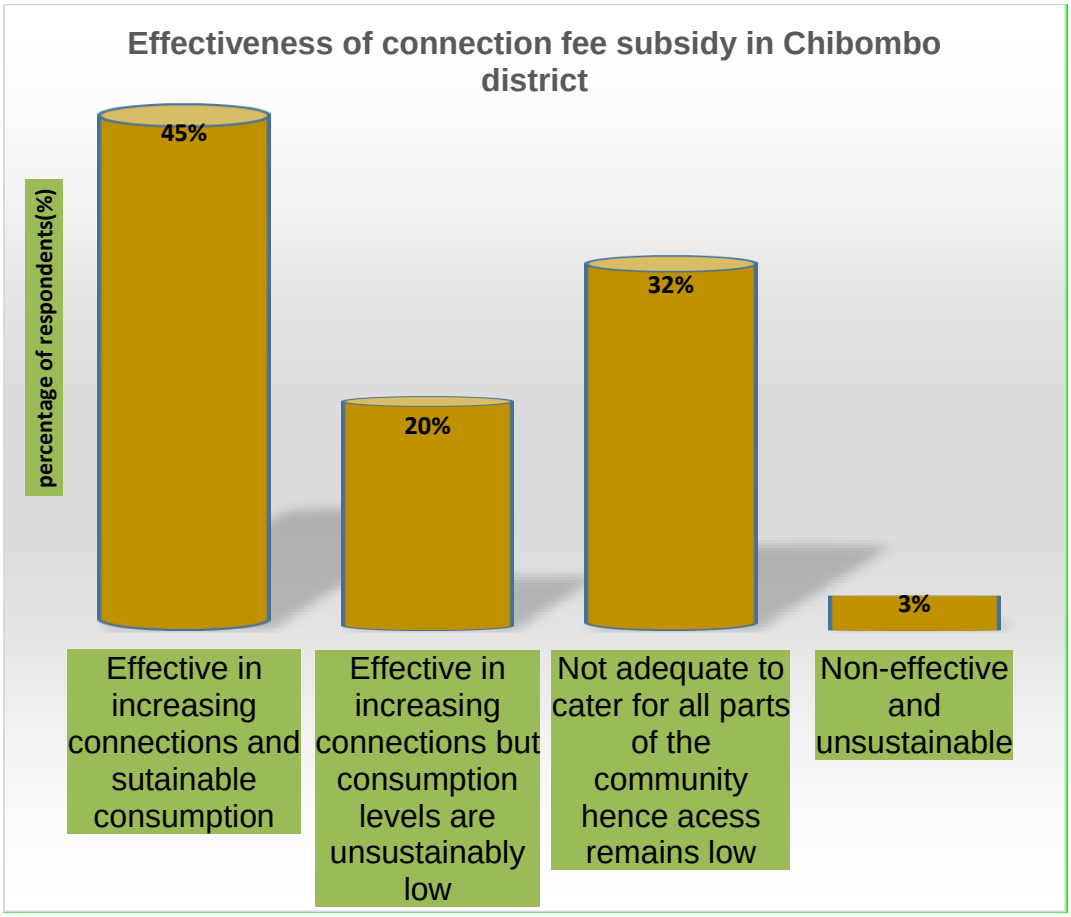

Figure 0.9 Effectiveness of Connection Fee Subsidy in Chibombo District

Source (Author, 2022)

Further, the study sought to determine the relationship between the connection fee subsidies and is effectiveness to increase connections in Chibombo district.

Table 0.16 Correlation Between Connection Fee Subsidy and Effectiveness to Increase Electricity Connection

Effectiveness to increase electricity connections		Connection fee subsidy
Not effective and unsustainable	Pearson Correlation	-.054
	Sig. (2-tailed)	.399
Effective in increasing connections and sustainable consumption levels	Pearson Correlation	.176**
	Sig. (2-tailed)	.006
Effective in increasing connections but consumption levels are unsustainably low	Pearson Correlation	.049
	Sig. (2-tailed)	.449
Not adequate to cater for all parts of the community hence access remains low	Pearson Correlation	.046
	Sig. (2-tailed)	.479

**. Correlation is significant at the 0.01 level (2-tailed). - *. Correlation is significant at the 0.05 level (2-tailed).

Source: (Author, 2022)

The correlations in table 5.11 indicated that there was a weak negative correlation between connection fee subsidy and it being ineffective and unsustainable (r = 0.54, p=0.399) whilst there was a statistically significant positive correlation between connection fee subsidy and it being effective to increase connections and sustainable consumption levels (r =0.176, p=0.006). Further, a weak positive correlation was found

between connection fee subsidy and its being effective to increase connections but the consumption levels remain unsustainably low (r =0.49, p=0.449). Lastly, there was a weak positive correlation between connection fee subsidy and it not being adequate to cater for all parts of the community (r=0.46, p=0.479).

Overall, the correlation analysis showed that the connection fee subsidy is effective in increasing connections and sustainable consumption levels. However, in some cases consumption levels tend to be low for the utility to obtain revenue via tariffs. Further, despite being effective in increasing connections, the subsidy is not adequate to cater for all parts of the community hence indicating a need for up scaling.

5.4.4.2 Sustainability Criteria for Rural Electrification in Chibombo District

The main deliverable of the study was to develop a sustainability framework for the critical success factors for the sustainable implementation of rural electrification in Chibombo district. Hence, during data collection, the researcher sought to ascertain the respondents' position regarding the critical success criteria for sustainable rural electrification. A likert scale of five (5) parameters was used namely: (1) Economic sustainability via subsidy support; (2) social sustainability via community participation; (3) Environmental sustainability via consistent sensitization on both benefits and effects of electrification on the environment; (4) Institutional sustainability via policy reforms and legislation and Mutual cooperation among the Rural electricity authority, Zesco Limited, and Ministry of Energy; (5) People should just pay the cost reflective connection fee to keep Zesco afloat. Figure 5.10 provides the feedback obtained from the respondents.

The majority of the respondents (33%) indicated that economic sustainability via subsidy support was the most important sustainability criteria. Second in importance was social-cultural sustainability with 22% of the respondents indicating as such. Institutional sustainability came third with 21% of the respondents agreeing to the need for policy, regulatory and implementing agencies in the energy sector to cooperate in tandem with each other. Those that indicated the need for people to pay the cost reflective connection fees as sustainability criteria stood at 14% and lastly, those that considered environmental sustainability as a sustainability criteria were 10% of the respondents.

In light of the above, environmental sustainability as a critical sustainability criterion for rural electricity was secondary in comparison to the economic, social and institutional aspects which were primary criteria. Payment of cost reflective connection fees was a criterion from those that were in formal employment and this is backed by the findings in table 5.4 where the source of income for 15.4% of the respondents was formal employment.

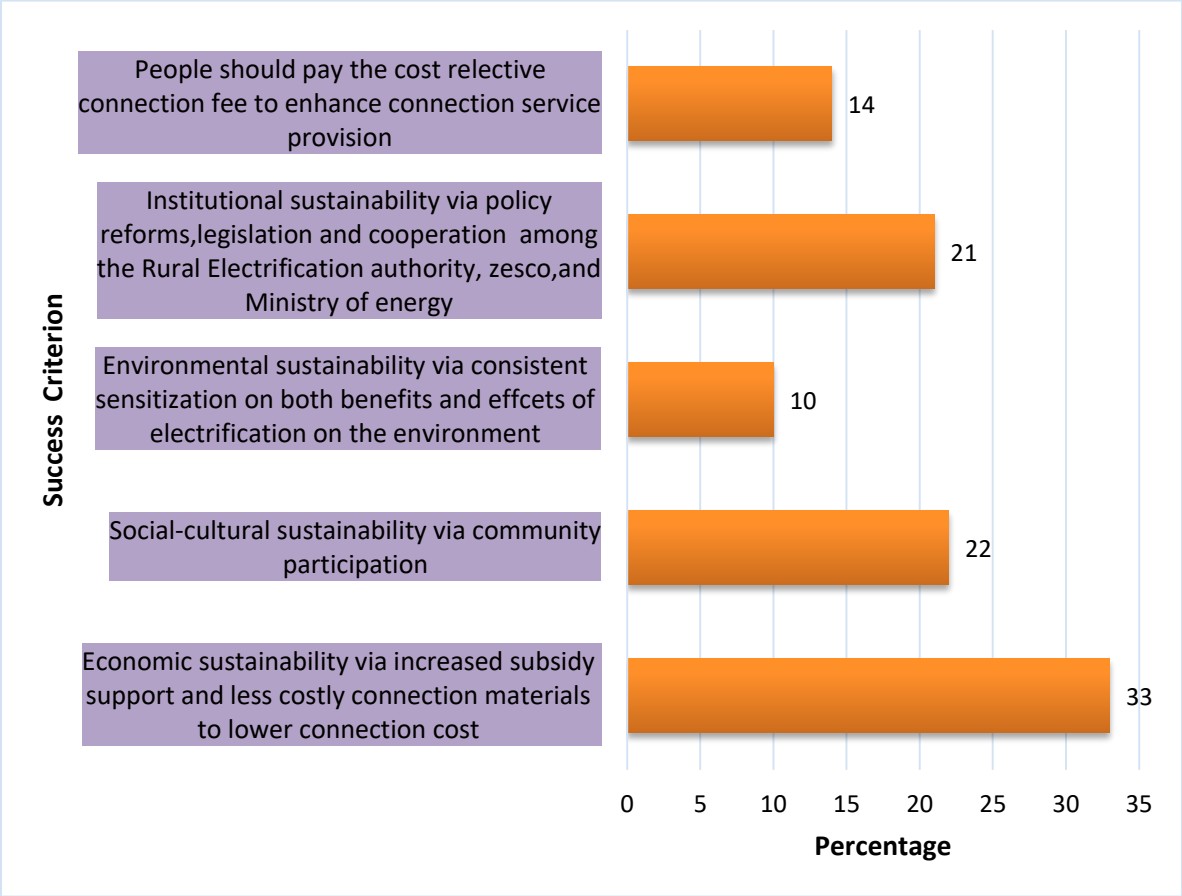

Figure 0.10 Sustainability Criteria for Rural Electrification in Chibombo District

Source: (Author, 2022)

Further, the study sought to establish the correlation between high connection cost and rural electrification success criteria.

Table 0.17 Correlation Between High Connection Fees and Critical Success Criteria

Success Criterion		High connection Fees
Economic Sustainability via subsidy provision	Pearson Correlation	.091
	Sig. (2-tailed)	.158
	N	243
Social Cultural Sustainability via community participation	Pearson Correlation	.097
	Sig. (2-tailed)	.130
	N	243
Environmental Sustainability via climate change sensitization	Pearson Correlation	-.130*
	Sig. (2-tailed)	.042
	N	243
Institutional Sustainability of the Ministry of Energy ,Rural Electrification Authority and Zesco Limited	Pearson Correlation	-.104
	Sig. (2-tailed)	.107
	N	243
People should pay cost reflective connection fees	Pearson Correlation	.028
	Sig. (2-tailed)	.666
	N	243

Source: (Author, 2022)

Table 5.11 showed that there was a weak positive correlation between High connection fees and Economic Sustainability (r =0.091, p=0.158), Social Cultural Sustainability (r = 0.97, p=0.13) and People having to pay cost reflective connection fees (r =0.28, p=0.67). However, there was a statistically significant negative correlation between High connection fees and Environmental Sustainability (r =-0.13, p=0.042) and Institutional sustainability (r = -0.104, p =0.107).

Overall, the results as indicated in Table 5.11 revealed that there was a weak but positive correlation between high connection fees, social/cultural sustainability as well as People

having to pay cost reflective connection fees. Which entails that the more the connection fees get increased, the more there will be need to implement economic sustainability via subsidies, social/cultural sustainability via community participation and also the more people will be required to pay the increased connection fees. However, the statistically negative relationship between high connection fees and environmental and institutional sustainability entails that with the increase in connection fees, there will be less regard for environmental sustainability (people will be more concerned with seemingly cheaper alternatives to electricity such as charcoal than the impact of the deforestation being caused by its use).

Further, with the increase in connection fees, institutional sustainability of Zesco Limited reduces due to lower connection rates and consequently lower power consumption levels (fewer tariff payments) since fewer people would have access to electricity. Additionally, on the policy side and rural electrification implementation side, the Ministry of Energy and Rural Electrification Authority (REA) respectively, would have less traction to meet the universal access target of 51% rural electrification rate by 2030.

5.4.4.3 Focus of the Connection Fee Subsidy in Chibombo District

In order to obtain the people's viewpoints regarding what the connection fee subsidy was focused on achieving in Chibombo district, the respondents were provided with a likert scale of four (4) parameters to choose from.

Table 0.18 Focus of the Connection Fee Subsidy in Chibombo District

Focus		Frequency	Percent	Valid Percent	Cumulative Percent
	Reduced dependency on kerosene lamps for lighting	70	28.5	28.6	28.6
	Increased consumption of electricity	18	7.3	7.3	35.9
	Affordable cost of connection	69	28.0	28.2	64.1
	Number of households and SMEs successfully connected	88	35.8	35.9	100.0
	Total	245	99.6	100.0	
Missing	System	1	.4		
Total		246	100.0		

Source: (Author, 2022)

As shown in table 5.12, 5.9% of the respondents were of the view that the connection fee subsidy under the ESAP project focused on successful electricity connection of households and SMEs which were the majority. Those who were of the view that the focus was reduced dependency on kerosene lamps for lighting made up 28.5% of the respondents. They were followed closely by those who thought that the focus was affordable cost of connection who made up 28% of the respondents. Lastly, those that were for increased consumption of electricity stood at 7.3%.

In view of the above, it is evident that the understanding of the people in Chibombo was that the project mainly aimed at increasing the number of connections, reduction of dependency on kerosene for lighting and affordability of electricity connections in the district.

5.5 Qualitative Data Analysis

In order to obtain detailed information on the relationship between connection fee subsidies and sustainable rural electrification, interviews were conducted with key informants using a semi-structured interview guide. The findings were as outlined below:

5.5.1 Relationship Between Connection Fee Subsidies and Rural Electrification

Based on the informants' experience in the electricity sub-sector, the researcher sought to obtain their understanding of the linkage that exists between connection fee subsidies and rural electrification. The responses were as follows:

One informant's understanding was that rural electrification is a program being implemented in the electricity sub-sector while connection fee subsidies are incentives to enhance the rate of rural connectivity via the provision of affordable connection rates. Another informant mentioned that connection fees for rural areas are high due to lack of electricity infrastructure such as poles and extension power lines. Further, another respondent explained that "*The connection fee subsidy cushions the cost of the connection. Thus, in the case of the Electricity Services Access Project (ESAP), the connection fee subsidy is K250 in comparison to the current 1Phase Overhead Standard rate of K1709 that people would have had to pay without the subsidy project in undesignated and un-reticulated areas like Chibombo*."

Overall, the informants were of the view that Rural electrification is the means of providing electricity to rural areas which are un-electrified whereas connection fee subsidies is the means to offer connections at subsidized (cheaper) rates.

5.5.2 Cost Elements of Connection Fee and its Cost Reflectivity

With regard to what makes up the connection fee, the researcher enquired from the experts to provide the cost components and indicate whether the connection fee was cost reflective or not.

Overall, the informants indicated that the connection fees are made up of the Prepaid meter and duplex service cable for standard connections, whereas for non-standard connections there may be a requirement to include ACSR conductor, wooden poles, transformers and associated oil, cable wires and other accessories required for a connection to be made. Further, the informants mentioned that the connection fees were

not cost-reflective as far as the power utility (Zesco Limited) was concerned in comparison with the cost of the materials.

One informant indicated that connection fees are standard but also depend on the area where connections are done with respect to the distance to the grid. A distance of 30meters within the radius of the grid power lines is a standard connection. Beyond that, the cost increases depending on distance.

Yet another informant said that *"The connection fees without a subsidy are already not cost reflective even though they are deemed expensive from the consumer side of things. This is why Zesco Limited (Zesco) applied for increase of the connection fee subsidies to the Energy Regulation Board in order to keep afloat. Hence, even though the ESAP project paid Zesco back the difference of the subsidized connection cost, the subsidy only helps the consumer while the utility still struggles to keep afloat."*

5.5.3 Informant's Role as an Individual/Organization in Rural Electrification and in Implementation of the Electricity Service Access Project

In order to obtain the roles, the informants played as individuals and as the organizations they represented with respect to rural electrification, they were asked to provide an explanation to this effect. Below are the responses that were provided:

"My role as an individual is to supervise rural electrification with regard to connectivity, while the role of my organization is to plan and formulate policies for rural electrification", according to one informant. Another informant indicated that she coordinated the ESAP project implementation and addressed policy issues that arise as well as conducts monthly reviews of the project performance. As an institution, it was the project implementing agency as per project implementation manual.

Another informant said that, "*In my individual capacity, I am responsible for overseeing all regulatory matters in the energy sector and my institution is the regulatory body in the*

energy sector." The last informant mentioned that he was a senior manager in charge of grid extension, strengthening, and subsidized electricity connections while his institution is the power utility and is responsible for implementing Government policy in line with the generation, transmission, and distribution of electricity.

5.5.4 Contribution of Subsidy Mechanism under the ESAP Project

The following were the responses with regard to the ESAP project's contribution to increased access to electricity:

Overall, the informants mentioned increased number of connections in selected areas due to reduced connection fees. To be specific, another informant said, "*The initial target for the ESAP subsidy project was 22,000 households and 1000 Small to Medium Enterprises (SMEs) country-wide in five (5) years but this has doubled to 50,341 households and 5000 SMEs.*

5.5.5 Successes registered by the ESAP project with regard to the 2030 Universal Access to Electricity Target.

In relation to question 5.5.4 above, the researcher sought to obtain the successes registered under the ESAP project with regard to the 2030 universal access to electricity targets. Below were the responses:

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"Taking into account the Universal access to electricity targets for Zambia (90% urban and 51% rural), it entails 80,000 electricity connections per annum have to be made between now and 2030 for the targets to be reached," one informant said. Further, he said*, "Hence the 55,341 that was reached in five (5) years by the ESAP project is a drop in the ocean*." On the other hand, another informant said the project had to be commended for attaining significant success with the 55,341 connections within the period of the project and available financial resources. Overall, the informants mentioned that there was increased momentum/appetite for rural electrification and other

cooperating Partners such as the European Union have included a subsidy component to their project scope.

5.5.6 Challenges Faced in the Implementation of Rural Electrification in Zambia

The informants provided the following challenges in the implementation of rural electrification:

i. Inadequate financial resources in that the rural electrification program is not consistently funded
ii. Lack of power infrastructure and sparsely populated rural areas add to cost of connections
iii. Rural electrification is left to Government alone, no Private sector participation except cooperating partners because it's not profitable. Further when the cooperating partners leave, projects cannot be sustained
iv. Zesco and the Rural Electrification Authority (REA) plan in Silos. One informant actually said *"There tends to be communication break-down between Zesco and REA in that REA goes to extend the grid while Zesco may have different priority areas and timelines resulting in delayed connections in some areas."*
v. The bulk procurement system at Zesco further delays connections since the project materials are not rein fenced.
vi. Bureaucracy in procurement and contract clearances
vii. In some instances, traditional leaders demand payment from households and SMEs in order to be connected to electricity. Which according to another informant defeats the purpose of the subsidy provision
viii. Wiring for some residents is a challenge which results in delayed connection, since it can only be done once the property is wired

5.5.7 Sustainability of Subsidizing Connection Fees to Increase Rural Electrification Rates

The researcher sought to get the impression of the informants as to whether subsidizing connection fees is a sustainable way of increasing rural electrification rates. As such,

according to one informant, she was in total agreement because the income levels of people in rural areas necessitate the need for subsidies to be applied.

Another informant said, "*Yes subsidizing connections is sustainable in increasing the numbers of connections due to affordability with view to reaching universal access to electricity by all Zambians by 2030*." Yet another informant mentioned that the initial investment may be huge but it pays back in the long run

5.5.8 Opinions on Government Policy Shift From Subsidies on Electricity And Petroleum

With Government policy shifting to remove subsidies on electricity and petroleum in the energy sector, the researcher sought the valued opinion of the informants on this and below were the viewpoints:

"The electrification rate with regard to connectivity will reduce leading to taking longer to attain universal access to electricity by all Zambians by 2030," one informant said. Another added by saying that "*The burden on Zesco will continue thereby increasing the debt position of the utility."* Additionally, another informant mentioned that new generation capacity will be stagnant as demand increases in light of the envisaged copper boom in the next 5 years. The connection fee will increase eighteen (18) fold, hence making it challenging to be met mostly by rural communities.

Yet another informant said,*" electricity unlike petroleum is a necessity in that it can also be a source of livelihood at a very small scale. For instance, selling of freezits or ice blocks by a household is made possible by having refrigeration."* In a nutshell, the informants' view was that the country would have widened energy poverty since the alternative forms of electricity sources are in their infancy in Zambia.

5.5.9 Critical Success Factors for Sustainable Rural Electrification.

The informants provided the following as critical success factors for rural electrification:

i. Economic sustainability via provision of more funding to the rural electrification program and subsidies on connection fees as well as increased economic activity in rural areas to meet the cost of electricity units
ii. Social sustainability via community participation and sensitization on efficient use of power
iii. Promotion of productive use initiatives in the rural communities via public and private sector collaborations
iv. Improved service delivery by Government in health, education, agriculture etc.
v. Institutional sustainability via coordination among policy and implementing agencies in the energy sector

5.5.10 Recommendations from the Informants

The informants provided the following as recommendations to emphasize some of the critical success factors identified in 5.5.9

1. Subsidies need to be continued and maintained as long as there is money for subsidies via Central Government and/or Cooperating partners through increased rural electrification budget to support subsidies.
2. In order to increase the electricity uptake in rural communities, provision of subsidies is key. One informant actually said*, "I was schooled abroad from Junior secondary up to university and I saw the Western World develop via first subsidizing their people and growing their economies, they demanded pay back from later on after they had developed."*
3. Accelerated efforts to provide the much needed electricity infrastructure to facilitate easier connection
4. Continued provision of the lifeline tariff to encourage consumption
5. Upscaling of power generation via an energy mix especially via Solar Home Systems

5.6 Chapter Summary

This chapter provides the presentation and analysis of findings obtained from the questionnaires and interviews conducted based on the three research objectives. The first part gave the quantitative analysis for the findings based on the interfaces of capacity of households and SMEs to pay for the connection fee, benefits from the connection fee subsidies, uses of electricity and the sustainability of the connection fee subsidies and rural electrification. The results were mostly obtained using a five-six point Likert scale to test the respondents' degree of agreement or disagreement further, the study utilized Correlation analysis to determine the relationship between the independent and dependent variables. Pearson's coefficient was used to determine the strength of the relationship between the independent and dependent variables.

The study also used qualitative analysis to present the findings from the interview guide by analyzing the content obtained from the semi-structured interviews. The findings from this chapter were used as a guide for the development of a framework for sustainable rural electrification in Chibombo district.

CHAPTER SIX
DISCUSSION AND ANALYSIS OF RESULTS

6.1 Introduction

This chapter concentrates on deliberating the key findings of the study whose focus was to assess and analyse the connection fee subsidy on rural electrification in Chibombo district. The discussion shall be in line with the specific study objectives outlined in chapter one (1).

6.2 Discussion of Findings

This section provides a comprehensive discussion of the research findings by comparing the results obtained with the literature earlier reviewed in chapter two. The discussions of the main findings indicated below were presented following the order of the research objectives.

6.2.1 Elements Driving the Cost of Electricity Connection in Chibombo District

The study established that the majority of the people who had benefited from the connection fee under the ESAP project in Chibombo district were not sensitized on the cost elements that make up the connection fee subsidy. Therefore, 44.3% (combination of 38.6% who disagreed and 5.7% who strongly disagreed to being sensitized on cost elements of connection fees) of the beneficiaries were not aware of the cost elements of the connection fees. As a result, they had minimal appreciation of what it takes for the power utility to bring electricity to their homes and businesses except for the subsidized cost they had benefited from.

The preceding findings are in agreement with (Mugisha et al.,2021; Oviedo-Cepada et al,2020; Sergi et al., 2018 and Simones & Leder 2022) who opined that world-over, the cost parameters for the connection fee are generally linked to the cost of infrastructure required for the utility company to provide the connection and the logistics associated with it but most consumers are mostly not aware of these cost parameters and just focus on how high the cost of connection is.

The study further found out via the interviews with the informants that the connection fee is made up of cost lines for the Prepaid meter and duplex service cables for standard connections. For non-standard connections which were associated with rural areas, there was a requirement to include ACSR conductors, wooden poles, transformers and associated oil, cable wires and respective accessories required for a connection to be made.

Additionally, the study found that the connection fees also depend on the area where connections are done with respect to the distance to the grid. These findings are in tandem with (Luzi et al., 2019) who observed that costs per connection contrast by factors such as distance from the grid, voltage, and terrain. A distance of 30meters within the radius of the grid power lines is a standard connection, however, beyond that, the cost increases depending on distance (Rural Electrification Authority, 2018).

Further, the study found that the unsubsidized connection fees were high for rural areas based on 65.5% of the consumers who were in agreement. However, as the study learnt, the awareness by the consumers that the high cost was largely due to the lack of electricity infrastructure was minimal. According to (Blimpo et al.,2018), lack or minimal knowledge about what is contained in the connection fees leads to people having the same perception as well regarding the tariffs that they pay for consuming electricity-only that they are high based on the value they have placed on it. In addition, Reber et al., 2018, advanced that the wholesale cost for the generation and distribution of electricity in many parts of Africa are high, however, in many countries, regulated tariffs are set below a level that would allow utility firms to recover these costs.

The resultant effect as advanced by (Long, 2018) is that utility companies lose revenue from each connected customer and low electricity consumption by households creates difficulty of recovering the cost of providing a connection. As argued by (Kojima et al., 2018), the envisaged losses arising from low consumption from connected customers in rural areas cause power utilities to set the connection fees high in order to offset the losses from purchase of electricity units.

However, despite the connection fees being deemed high on the consumer side, the study found that they were not cost reflective for the power utility. The findings agree with the International Monetary Fund (IMF), 2017, who advanced that in the Zambian context, the scenario is the same as the region in that the power utility (Zesco Limited) equally has tariffs that are not cost reflective and in order to keep afloat, some form of compensation is realized through the cost of connection. The findings further agree with the Energy Regulation Board's 2022 call for public opinion on Zesco Limited's application to increase connection fees by 500% for domestic consumers and by 970% for commercial consumers (Energy Regulation Board, 2022).

Further, (Energy Regulation Board, 2022) advanced that Zesco's application was premised on the need for cost reflective standard connection fees to enable faster customer access to the electricity grid while not affecting its financial sustainability and operational efficiency.

The study also established that there was a negative correlation between high connection fees and electrification rates. This entailed that having high connection fees resulted in low electrification rates. The study also found that the policy shift for removal of subsidies on electricity is likely to result in connection fees increasing eighteen (18) fold culminating into reduced electricity connections hereby causing a slower pace of attaining universal access to electricity by 2030. Additionally, new generation capacity will be stagnant as demand increases in light of the envisaged copper boom in the next 5 years. As such, the study found that there is need to still subsidize electricity connections if universal access is to be attained by 2030.

These findings resonate with the World bank IEG evaluation report (2018), which advanced that there still is need to further analyze subsidies, because the poverty dimension of rural electrification can be addressed through cross-subsidization where the urban consumers pay more for power to cushion the rural communities.

Lastly, the study found that there is therefore need for a consensus to be reached between the financial viability of the power utility (Zesco Limited) and the affordability of the cost of connection to the consumers for the sake of economic posterity and security

of supply of electricity to rural communities. Therefore, as construed by this researcher, mindset change via constant sensitization on connection and tariff regimes by the power utilities, Ministry of Energy, the regulator (ERB) and the Rural Electrification Authority (REA) is critical in realizing a balance in cost reflectivity of electricity between the consumer and the power utilities.

6.2.2 Capacity of Households/SMEs to Pay for Electricity Connection in Chibombo District

The study found that the majority of households and SMEs (48%) earned between K500-K1000. Therefore, 70.1% would only afford an unsubsidized connection fee ranging from K250-K500. Therefore, for them to afford the current unsubsidized connection fee of K1709 which is proposed to be revised to K7,000, for their area (Energy Regulation Board, 2022), it requires them to either save and forego most basic needs for a number of months or even years in order to make a once-off payment; or to pay in installments over a period of time.

This resonates with the approach that was taken by the ESAP project to offer the subsidized connection fee of K250 which the beneficiaries paid in installments over a period of three (3) months (Rural Electrification Authority, 2018). Hence, the subsidized connection fee of K250 under the ESAP project had set a precedence with regard to the capacity of the people to pay for electricity connection. Additionally, 86% of the respondents agreed that there was need for the current cost of connection to be reduced in order to increase electricity connections.

These findings are supported by Baurzhan & Jenkins (2016) who opined that once electricity extends to a rural area, the connection charge is a hurdle that prevents the poor from connecting to the grid, even though the benefits they would derive and foreseen Willingness to Pay (WTP) would exceed the cost of supply. Additionally, as indicated by the World Bank (2017), even in areas that have had an on-grid power line for 15–20 years, it is not uncommon for 20 to 25 percent of households to remain unconnected and the off-grid scenario is even worse since off-grid systems are already costlier than On-grid ones. This is exacerbated by the absence of credit markets in most cases which entails

that households cannot borrow to pay the connection charge and only a very small number of donor-supported projects have either extended credit to customers or allowed the connection charge to be paid over a number of years (Benalcazar et al., 2020; Muhoza & Johnson, 2018).

In line with the capacity to pay for electricity connection, the study also assessed their capacity to consume electricity. The study found that electricity is mostly used for lighting and entertainment in Chibombo district. Only 13% of the respondents indicated that they used electricity for cooking. Further, the majority (82%) used charcoal as an alternative to electricity for cooking. 15.1%,1.7% and 1.3% used firewood, Liquified Petroleum Gas (LPG) and Biogas as alternatives to electricity for cooking.

Evidently, the usage of charcoal and firewood showed that the fight for reduced deforestation in light of climate change interventions is a battle which is very far from being won in Chibombo district. With regard to lighting, the majority of the respondents (33%) indicated that they used electricity for lighting. On the other hand, 21% used electricity for entertainment in the form of television/radio and 18% used it for refrigeration. Lastly, 3% used electricity for water pumping.

In view of the immediate previous paragraph, the findings also point to the concern that power utilities have that despite the connections being made, Return on Investment (RoI) through payment of tariffs for electricity consumed is very slow and low due to the consumption patterns prevalent in rural areas (M. M. Rahman et al., 2013). Further, according to Reber et al (2018), to foster more use of electricity, rural electrification programmes should consist of credit provision for new businesses and consistent sensitization for households to embrace efficient electric appliances.

However, as opined by (Ngoma, 2019), people's perception of high connection fees is also the same for tariffs due to lack of sensitization. Luzi et al.,(2019) also advanced that the pricing structure that charges lower tariffs to the first block of consumption and higher tariffs to higher blocks of consumption (Increasing Block Tariff(IBT)) is the subsidy regime

applied on tariffs in Zambia where Zesco Limited subsidizes units under 200kilowatt/hour making subsistence electricity affordable for low income households (Luzi et al., 2019).

Therefore, households in Zambia tend to unknowingly spend more on charcoal instead of utilizing the lifetime tariff of K0.47 per kilowatt hour (kWh) for residential consumers that use less than 200 kWh per month(Energy Regulation Board, 2021). The lifeline tariff is literally on a 1:1 ratio basis (K1:1kWh) and the K150 per 50kg bag of charcoal lasts a week compared to an equivalent amount of 150 units that can last a month when energy efficient appliances and lighting is utilized (Ministry of Energy, 2020).

Additionally, the study found that high connection cost, poverty levels, and distance to the grid are critical hindering factors to rural electrification in descending order. High cost of connection (31%) with a mean value of (m=0.7) and standard deviation of (std.=0.5) being the most critical, the proposed foreseeable increase in cost of connection fees (500% for households and 970% for commercial users) as recently applied for by Zesco Limited possess a risk of rural areas such as Chibombo district not reaching universal access to electricity by 2030.

In terms of the findings on poverty levels, 28% of the respondents indicated as such and it had a mean value of (m=0.6) and standard deviation (std=0.5). This resonates with Khandker et al (2014), who promulgated that only 7 percent of dedicated energy sector projects have an explicit poverty-reduction objective entailing that poverty reduction is yet to become the central concern for energy projects. Further, Aklin et. Al., 2018 opined that there is rarely any explicit consideration either of how the poor will be included or of any poor-specific activities in advancing rural electrification by Central Governments. Additionally, Boliko and lalnazov, (2019) advanced that the driving force is energy access to meet the set Sustainable Development Goals (SDGs) with poverty reduction as a secondary element observed as a result of electrification after project close-out hence this factor is rarely incorporated at project design of electrification projects.

The study found “distance to the grid” as a hindering factor to rural electrification stood at 22% of responsiveness with a mean value (m=0.47) and standard deviation (std.=0.5).

This agreed with Boait, (2014) who opined that in many countries, settlements to be connected to the grid power system are identified on a “least cost” basis, which is advantageous for communities who live nearby the existing grid, roads, and towns. Pathak, (2020) also advanced that this approach is encouraged in order to safe guard the financial viability of the electrification projects in a number of countries.

Hence, overall, with the standard deviations being very close to the mean values, high connection cost, poverty levels and distance to the grid were found to be the critical hindering factors to rural electrification.

6.2.3 Number of Households and SMEs Connected to the National Grid via the ESAP Project in Chibombo District

The study having been purposive in nature with regard to study population, the findings were that overall, since the study was targeted, all the 246 respondents were connected to the electricity grid as beneficiaries. These findings resonated with the full record that was made available by Zesco Chibombo branch which indicated that 938 beneficiaries (721 households and 217 SMEs) had been connected to the grid under the subsidy which exceeded the initial project target of a total of 385 beneficiaries by almost three-fold. The full list of beneficiaries in Chibombo district is in Annex 2.

Under this research objective, the study also found that the majority of respondents (97%) emphasized the subsidy project as having been of great benefit to them. In terms of what those benefits were, the study found that the majority (23%) indicated that improved willingness to pay (synonymous with ability to pay) was the most benefit realised since people’s income level had been greatly influenced by access to electricity.

This is in agreement with Cook, 2011 and Pereira et al.,2010 who opined that since electricity consumption is linked to income, rural electrification is expected to contribute to the income of its users. Improved social status of the communities stood at 19% while 17% of the respondents indicated a tie between improved grades for school going

children and improved business opportunities. On the other hand, 13% of the respondents indicated that at least 1-3 Small to Medium Enterprises (SMEs) had benefited from the ESAP subsidy project while 12% indicated that they knew at least five (5) households that had benefited from the subsidy project. Therefore, based on the closeness of the percentages of respondents among the parameters, the study found that all the six (6) parameters were significant benefits from the subsidized rural electrification project.

These findings resonated with Thomas et. Al, (2020), who propagated that connection fee subsidies are increasingly common in developing countries as a way of increasing access to electricity services in order to work at attaining universal access by 2030. Further, the findings collaborated with Sedai et al., (2021) who opined that also because from time in memorial connection fees have always been very high and in some instances so high that they tend to be equivalent to some households' monthly income therefore, poor and rural communities are greatly assisted by connection fee subsidies.

Sedai et al., 2021 further advanced that despite the benefits of subsidizing electricity being undisputed, having an applicable subsidy and delivery mechanism is challenging and largely depends on political will (Sedai et al., 2021).This resonated with the majority's plea that despite the connection fee subsidy being adequate for the beneficiaries in Chibombo, Government through the World Bank should extend the ESAP subsidy mechanism in order for more people to have access to electricity.

6.2.4 Sustainability Framework for Critical Success Factors for Implementation Rural Electrification in Chibombo District

The last objective of the research study was to develop a framework for the sustainable implementation of rural electrification in Chibombo district. Further, the framework would inform policy interventions in the electricity sub-sector with regard to addressing the cost of electricity connections to the consumer and cost reflectivity of connection fees for the power utility (Zesco Limited).

6.2.4.1 Challenges Faced in the Implementation if Rural Electrification in Zambia

Firstly, the study established the comprehensive challenges that implementing/policy agencies face in the implementation of rural electrification order to enrich the base from which the critical success factors would be derived. As such, the informants provided the following challenges in the implementation of rural electrification:

i. Inadequate financial resources in that the rural electrification program is not consistently funded

ii. Lack of power infrastructure and sparsely populated rural areas add to cost of connections

iii. Rural electrification is left to Government alone, no Private sector participation except cooperating partners because it's not profitable. Further when the cooperating partners leave, projects cannot be sustained.

iv. Zesco and the Rural Electrification Authority (REA) plan in Silos leading to communication break-down between Zesco and REA in that REA goes to extend the grid while Zesco may have different priority areas and timelines resulting in delayed connections in some areas.

v. The bulk procurement system at Zesco further delays connections since the project materials are not rein fenced.

vi. Bureaucracy in procurement and contract clearances

vii. In some instances, traditional leaders demand payment from households and SMEs in order to be connected to electricity. Which according to another informant defeats the purpose of the subsidy provision

viii. Wiring for some residents is a challenge which results in delayed connection, since it can only be done once the property is wired

These findings correlate with Kaoma, (2022) who emphasized that the lack of electricity infrastructure, financing and coordination among the implementing agencies are major hindrances to rural electrification. Further, the findings resonate with Ngoma, (2019) who

championed the need for efficient Government procedures and a holistic culture of ethics in the implementation of rural electrification.

6.4.2.2 Critical Success Factors for Sustainable Rural Electrification

The study found that with regard to critical success factors (sustainability criteria) for rural electrification, the majority (33%) indicated that economic sustainability via subsidy support was the most important sustainability criteria with followed by social-cultural sustainability at 22%. Institutional sustainability came third with where 21% of the respondents indicated to the need for policy, regulatory and implementing agencies in the energy sector to cooperate in tandem with each other. Payment of cost reflective connection fees as sustainability criteria came fourth at 14% and the environmental sustainability at 10% was considered as the least sustainability criteria in order of importance.

In this regard, environmental sustainability as a critical sustainability criterion for rural electricity was secondary in comparison to the economic, social and institutional aspects which were primary criteria. As a matter of emphasis on social sustainability, the study found that initiatives promoting productive uses of electricity in the rural communities via public and private sector collaborations is critical to sustainability.

These findings resonate with Gonzalez et al., (2019) who opined that environmental criteria as critical success factor for rural electrification are preferred in developed countries, whereas technical and economic criteria are desired in the developing countries. Further, Guerreiro & Botetzagias, (2018) advanced that a mixture of community-level participation (socio-cultural sustainability) as well as the role of Rural Electrification Authorities and Energy Ministries in building rural communities' ownership, improving technical, entrepreneurial and managerial capabilities, knowledge and technology transfer, creating inventive financing models and influencing policy are critical for the development of cohesive sustainability frameworks for rural electrification.

6.2.4.3 Correlation Between High Connection Fees and Critical Rural Electrification Success Criteria

Further, the study sought to establish the correlation between high connection fees and the critical success factors. The study revealed that there was a weak positive correlation between high connection fees, economic sustainability via subsidy provision, social/cultural sustainability as well as payment of cost reflective connection fees. Which entailed that the more the connection fees get increased, the more there would be need to implement economic sustainability via subsidies, social/cultural sustainability via community participation and also the more people will be required to pay the increased connection fees.

These findings were in line with Fenner et al., (2006) who opined that it is imperative to ensure socio-cultural sustainability, that the concept of cultural justice is embraced, which in this context denotes justice through participation and recognition. Further, Demirtas, (2013) advanced that cultural justice in rural electrification hinges on the capacity to assimilate the technology into the existing social structures. As also argued by Dunmade I (2002) and Axelssen et. al. (2013), the socio-cultural context defines to what degree a technology is accepted and consequently adopted.

On the other hand, the study found a statistically significant negative relationship between high connection fees and environmental and institutional sustainability which entailed that with the increase in connection fees, there will be less regard for environmental sustainability (people will be more concerned with seemingly cheaper alternatives to electricity such as charcoal than the impact of the deforestation being caused by its use). Therefore, as advanced by Auty &De Soysa, (2005), environmental sustainability needs civil society's awareness on environmental issues, as their backing is needed to implement environmental policies and regulations.

With regard to institutional sustainability, the study found that increase in connection fees would reduce the viability of Zesco Limited due to lower connection rates and consequently lower power consumption levels (fewer tariff payments) since fewer people would have access to electricity. Further, on the policy side and rural electrification implementation side, the Ministry of Energy and Rural Electrification Authority (REA) respectively, would have less traction to meet the universal access target of 51% rural electrification rate by 2030. This resonates with White et al. (2013) who advanced that

unforeseen policy changes have undesirable impacts on investments and cause economic uncertainty.

Furthermore, several studies have highlighted the fact that sustainable institutions for rural electrification should possess the ability to adjust to future needs and not only need to preserve themselves over time but should also be open to the public and its interests and be accountable and transparent in their decision-makings (Dunmade, 2002; Immaculata Taufi, 2007; Pfahl, 2005). Lastly, these findings correlate with an assessment of rural electrification sustainability factors concluded by Feron et al. (2016) which embraced four dimensions of rural electrification sustainability which are institutional, economic, environmental, and socio-cultural success factors.

6.2.4.4 Correlation Between Connection Fee Subsidy and Effectiveness to Increase Electricity Connection

The study also investigated the correlation between connection fee subsidy and effectiveness to increase electricity connection.

The study found that there was a negative correlation between connection fee subsidy and it being ineffective and unsustainable whilst there was a statistically significant positive correlation between connection fee subsidy and it being effective to increase connections and sustainable consumption levels. Further, a weak positive correlation was found between connection fee subsidy and its being effective to increase connections but the consumption levels remain unsustainably low.

Lastly, there was a weak positive correlation between connection fee subsidy and it not being adequate to cater for all parts of the community. Overall, the correlation analysis found that the connection fee subsidy is effective in increasing connections and sustainable consumption levels. However, in some cases, consumption levels tend to be low for the utility to obtain revenue via tariffs. Further, despite being effective in increasing connections, the subsidy is not adequate to cater for all parts of the community hence indicating a need for up scaling.

These findings are in tandem with Awan et al., (2022) and Carbaugh et al., (2021) who opined that minimizing subsidies and spreading them equally is an important objective, but one that, in many developing countries, is only secondary to the objective of speedily and cheaply increasing capacity and access to meet rapidly growing energy demand and encourage economic growth.

6.2.4.5 Rationale for Developing the Sustainability Framework for Rural Electrification

The assumption for the development of the current study's proposed sustainability framework was that measuring sustainability of rural electrification is a huge challenge with regard to meeting the cost for connection by the consumers and recovering the operational and investment costs for power utility companies. Further, what is at the heart of the development of the framework is the connection fee subsidies and a financing structure in general for achieving the Sustainable Development Goal of universal electricity access rate of 51% for rural areas by 2030 looking at the current rate of 8% and the proposed policy shift to increase the standard connection fees to 500% for domestic consumers and 790% for commercial consumers.

However, with shift in Zambia's economic tenets to do away with subsidies on fuel and electricity as part of the structural economic adjustment program under the International Monetary Fund (IMF) for the extension of the pay-back of the USD1.3billion debt (IMF, 2017), the sustainability of subsidy-based rural electrification, the capacity of rural communities to pay for the connection fees and consequently the rate of electrification in rural areas hangs in the balance.

The research used findings from the literature review, theoretical and conceptual analysis as well as those obtained from the quantitative and qualitative data analysis to develop a sustainability framework for rural electrification. This was implemented in order to respond to the fourth research question which investigated the critical success factors for the implementation and sustainability of rural electrification in Chibombo district. Hence, developing a sustainability framework for rural electrification based on the findings of the analysis of connection fee subsidies on rural electrification in Chibombo district serves as

a policy making tool for decision-makers in the electricity sub-sector to foster sustainable development with respect to rural electrification not only in Chibombo district, but country-wide.

The framework developed by the research was anchored on the modernization theory developed in the1950s and 1960s associated with developing policies that would support socio-economic advancement in less developed nations(Gwynne, 2009). It portrays evolution as the same route that all societies undertake, from agricultural, rural, and traditional societies to post-industrial, urban, and contemporary forms (Regmi & Walter, 2017; Ziai, 2007).

The major assumptions of the modernization theory as ascribed by Escobar (1995) are basically that it is a phased and homogenizing process, in this sense, it produces tendencies toward convergence among societies, for example, Levy (1967) maintains that as time goes on, “they and we” will resemble one another because the patterns of modernization are such that the more highly modernized societies become, the more they resemble one another.

Hence, the framework developed focuses on understanding the interdependencies of financing structures for electricity connection, implementing and policy making agencies in the electricity sub-sector, critical success factors and how they contribute towards the attainment of sustainable rural electrification.

6.2.4.6 Framework Validation

According to Taylor, (2013), the attainment of any projected parameter relies on the confirmation of its validation, comprehension by its users and a significant link between the parameter and the characteristic envisioned to be attained. Validation is the procedure that seeks to confirm that the framework embodies the individualities of the general population and is not limited to the sample size used in the estimation(Arafat et al., 2016). Further, Heale, (2015) advanced that validation increases the degree of trustworthiness and buoyancy of the framework.

The sustainability framework for rural electrification in this study was validated by administering questionnaires and conducting semi-interviews with four (4) key informants

at the Ministry of Energy, Energy Regulation Board, Rural Electrification Authority and Zesco Limited who were purposively sampled. Purposive sampling permitted the researcher to intentionally choose informants based on their aptitude to offer vital and accurate information in relation to answering the research questions.

6.2.4.7 Validation Feedback

Table 6.1 shows the thematic areas that the key informants commented on.

Table 0.1 Thematic Areas of the Validation

No	Thematic area	Comment
1.	Political will	Political will needed to be highlighted in the framework in light of the policy shift from subsidies in the energy sector
2.	Payment of cost reflective connection fees	Payment of cost reflective connection fees needed to be incorporated in the framework taking into account the need for the utility to be financially viable
3.	Zesco's bulk procurement process	Inclusion of delays of Zesco's bulk procurement process was proposed in light of some of the extended periods it takes the utility to implement electricity connections
4.	Economic sustainability	The framework should have just focused on economic sustainability since it's the issue of high cost of connection to the consumer and cost reflectivity to the power utility
5.	Stakeholder inclusion	Despite the Ministry of Finance not having been an informant, it needed to be included in the framework among the critical institutions
6.	Monitoring project performance	The aspect of monitoring project performance, taking corrective action and having recommendations for future continuity for rural electrification projects was paramount for

		sustainability of rural electrification. Hence, it was a commendation for the research to have included it.
7.	Integration of critical success factors	The framework effectively showed the integration of the critical success factors for sustainable rural electrification

Source: (Author, 2022)

6.2.4.8 Analysis of Feedback

The researcher analyzed the comments from the validators per thematic area as follows:

i. **Political Will-**The researcher did not agree with political will having to be highlighted because it was addressed in the policy reforms to arise from consistent and timely coordination among the policy and implementing agencies in Government. It goes without saying that political will is obtained via the Ministries responsible for Energy and Finance presenting information and decision Cabinet Memoranda to Cabinet.

ii. **Payment of Cost Reflective Tariffs-**The recommendation to incorporate payment of cost reflective connection fees in the framework was incorporated as *"Monthly payments of cost reflective tariffs*" taking into account the findings of the research that were that unsubsidized connection fees were unaffordable to most rural dwellers to be paid at once. More so that they were proposed to be increased by 500% for households and 790% for commercial consumers as per Zesco Limited's application to ERB for revised connection fees. This is supported by Awan et al, (2022b); Blimpo et al., (2018) and Lee et al al., (2020) who opined that only a few donor-supported projects have either offered credit or permitted the connection charge to be paid over a monthly or annual period and due to the inability of most households to connect, subsidy schemes under donor aided projects are advanced in order to cushion the cost of connection charges for the poor to benefit directly.

iii. **Zesco's Bulk Procurement Process**- The researcher was not in agreement with the comment for inclusion of delays of Zesco's bulk procurement process because the institutional sustainability where coordination is to be timely addresses this aspect. Moreover, the other reason was that the focus of the sustainability framework was to bring out the solutions going forward and not to highlight the known challenges with regard to the power utility.

iv. **Economic Sustainability-**The comment for the framework to have only focused on economic sustainability went against the Institutional Analysis and Development (IDA) Framework for Rural Electrification on which the research had derived the sustainability framework to a significant extent. The IDA framework as propagated by llskog, (2008) advanced that an integration of economic, socio-cultural, institutional and environmental factors is what ensures sustainability of rural electrification.

v. **Inclusion of Ministry of Finance-**The researcher welcomed the need for the Ministry of Finance to be included in the Framework as the National Treasury is key for any public financing to be done. Hence, despite the framework having had "public financing via the national treasury" the Ministry of Finance was included in the framework among the stakeholder institutions.

vi. **Monitoring Project Performance-**The researcher welcomed the commendation of having included monitoring project performance which was a continuous process that involved checking if deliverables were being achieved. Corrective action was to be conducted if deliverables were not being achieved whilst documentation of lessons learnt and recommendations for future continuity for rural electrification projects were to be made when deliverables were being achieved.

vii. **Integration of Critical Success Factors:** The researcher welcomed the commendation that the framework effectively showed the integration of the critical success factors for sustainable rural electrification

Lastly, the researcher highlighted that the sustainability framework that was developed is open for modifications in future research. The framework developed was presented in the next chapter.

6.3 Chapter Summary

This chapter provided the discussions and analysis of the findings based on the four (4) specific objectives of the study and was aligned to the findings of the study as presented in chapter five. The next chapter provides the recommendations and conclusions to the research findings. The chapter also proposes a sustainability framework for sustainable rural electrification projects.

CHAPTER SEVEN
CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

This chapter presents the conclusion obtained from the analysis and discussion of the research findings and brings forth recommendations that are intended to resolve the research problem. It further strives to meet the research objectives by interrogating the research questions. The chapter also brings out the research's contribution to the body of knowledge and the limitations of the study.

7.2 Conclusion of the Research Findings

The study was aimed at analyzing the relationship that exists between electricity connection fee subsidies and sustainable rural electrification with respect to Chibombo district. The study purposively analyzed the level of awareness of the cost elements for electricity connection and their determinants. The study further investigated the capacity of households to pay for electricity connection as well as the number of households and Small and Medium Enterprises (SMEs) that benefited from the subsidized connection fees under the Electricity Services and Access Project (ESAP). Further, the study sought to find out the critical success factors for sustainable rural electrification and their correlation with the cost of electricity connection, which fed into the development of a sustainability framework for rural electrification. The research questions were answered as specified below:

7.2.1 What Elements Drive the Cost of Electricity Connection in Chibombo District?

In light of the majority not being aware of the elements comprising the connection fee, the study concluded that there is an urgent need for extensive sensitization on the cost elements that comprise the connection fee by the power utility, the Ministry responsible for energy, and the rural electrification implementing agency. The study found this as critical in growing a mindset of appreciation and value of the costs involved in taking electricity to rural areas and also serves as a platform for educating the communities on the need for the connection fees to be cost-reflective in light of the policy shift to remove subsidies on electricity. The study further established that the cost of electricity

connection comprised cost lines for the Prepaid meter and duplex service cables for standard connections. For non-standard connections which were associated with rural areas, there was a requirement to include ACSR conductors, wooden poles, transformers, and associated oil, cable wires, and respective accessories required for a connection to be made. Additionally, the study found that the connection fees also depend on the area where connections are done with respect to the distance to the grid.

7.2.2 What is the Capacity of Households in Chibombo District to Pay for Electricity Connection?

The study concluded that the majority of households and SMEs in Chibombo district earned between K500-K1000 and therefore would only afford an unsubsidized connection fee ranging from K250-K500. The study also concluded that based on the income levels of the majority, the subsidized connection fee of K250 under the ESAP project had set a precedence with regard to the capacity of the people to pay for electricity connection and therefore, such subsidy-based projects from cooperating partners needed upscaling.

Under the same objective, the study concluded that the cost of unsubsidized connection was high for the consumers whilst it was not cost-reflective for the power utility. In the same vein, the study concluded that there was a negative correlation between high connection cost and electrification rates. As such, the study concluded that the policy shift for removal of subsidies on electricity (upward revision of connection fees as applied for by Zesco Limited) is likely to result in reduced electricity connections hereby causing a slower pace of attaining universal access to electricity by 2030. Additionally, the study found that high connection cost, poverty levels, and distance to the grid are critical hindering factors to rural electrification in descending order.

7.2.3 How Many Households and SMEs are Connected to the National Grid via the ESAP Project in Chibombo District?

The study having been purposive in nature with regard to study population and sample size, the research concluded that 246 households and beneficiaries were connected to the electricity grid as beneficiaries. Further, based on the full record that was made available by Zesco Chibombo branch, the study concluded that a total of 938 beneficiaries (721 households and 217 SMEs) had been connected to the grid under the ESAP project subsidy mechanism which exceeded the initial project target of a total of 385 beneficiaries in Chibombo district by almost three-fold.

Also under this research objective, the study concluded that the most benefit derived from the connection fee subsidy offered under the ESAP project was improved willingness to pay for electricity connection. The willingness to pay was synonymous with ability to pay since people's income level had been improved by having access to electricity.

7.2.4 What are the Critical Success Factors for Implementation and Sustainability of Rural Electrification in Chibombo District?

The study concluded that most critical success factors (sustainability criteria) for rural electrification included: economic sustainability via subsidy support; social-cultural sustainability via sensitization on cost elements of connection fees and promoting productive use of electricity; and institutional sustainability which pointed to the need for policy, regulatory and implementing agencies in the energy sector to enhance timely cooperation. The study also concluded that payment of cost reflective connection fees and environmental sustainability were critical success factors as well though superseded by the prior three (3) which were most significant.

Under the same objective, the study also established the ccorrelation between high connection fees and critical success factors for rural electrification. As such, the study concluded that there was a weak positive correlation between high connection fees, economic sustainability, social/cultural sustainability as well as payment of cost reflective connection fees. Which entailed that the more the connection fees get increased, the

more there would be need to implement economic sustainability via subsidies, social/cultural sustainability via community participation/sensitization and also the more people will be required to pay the increased connection fees.

On the other hand, the study concluded that there was a statistically significant negative relationship between high connection fees and environmental and institutional sustainability which entailed that with the increase in connection fees, there would be less regard for environmental sustainability (people will be more concerned with seemingly cheaper alternatives to electricity such as charcoal than the impact of the deforestation being caused by its use). That further entailed that increase in connection fees would reduce the viability of Zesco Limited due to lower connection rates and consequently lower electricity consumption levels (fewer tariff payments) since fewer people would have access to electricity. Further, on the policy side and rural electrification implementation side, the Ministry of Energy and Rural Electrification Authority (REA) respectively, would have less traction to meet the universal access target of 51% rural electrification rate by 2030.

Lastly under this objective, the study further established the correlation between connection fee subsidy and its effectiveness to increase electricity connection.

The study concluded that there was a negative correlation between connection fee subsidy and it being ineffective and unsustainable whilst there was a statistically significant positive correlation between connection fee subsidy and it being effective to increase connections and sustainable consumption levels. Further, the study concluded that a weak positive correlation existed between connection fee subsidy and its being effective to increase connections but the consumption levels remain unsustainably low. Lastly, the study concluded that a weak positive correlation exists between connection fee subsidy and it not being adequate to cater for all parts of the community. Overall, the correlation analysis found that the connection fee subsidy is effective in increasing connections and sustainable consumption levels. However, in some cases, consumption levels tend to be low for the utility to obtain revenue via tariffs. Further, despite being effective in increasing connections, the subsidy is not adequate to cater for all parts of the community hence indicating a need for up scaling.

7.2.5 Develop a Sustainability Framework with Critical Success Factors for Implementation of Rural Electrification in Chibombo District.

The Author developed the framework with data compiled from the literature review, research findings and validation by the Experts. The framework was envisaged to serve as a policy making tool for decision-makers in the electricity sub-sector to foster sustainable development with respect to rural electrification not only in Chibombo district, but country-wide. Figure 7.1 illustrates a sustainability framework for rural electrification. The instruction manual for the proposed framework is as attached in appendix (i).

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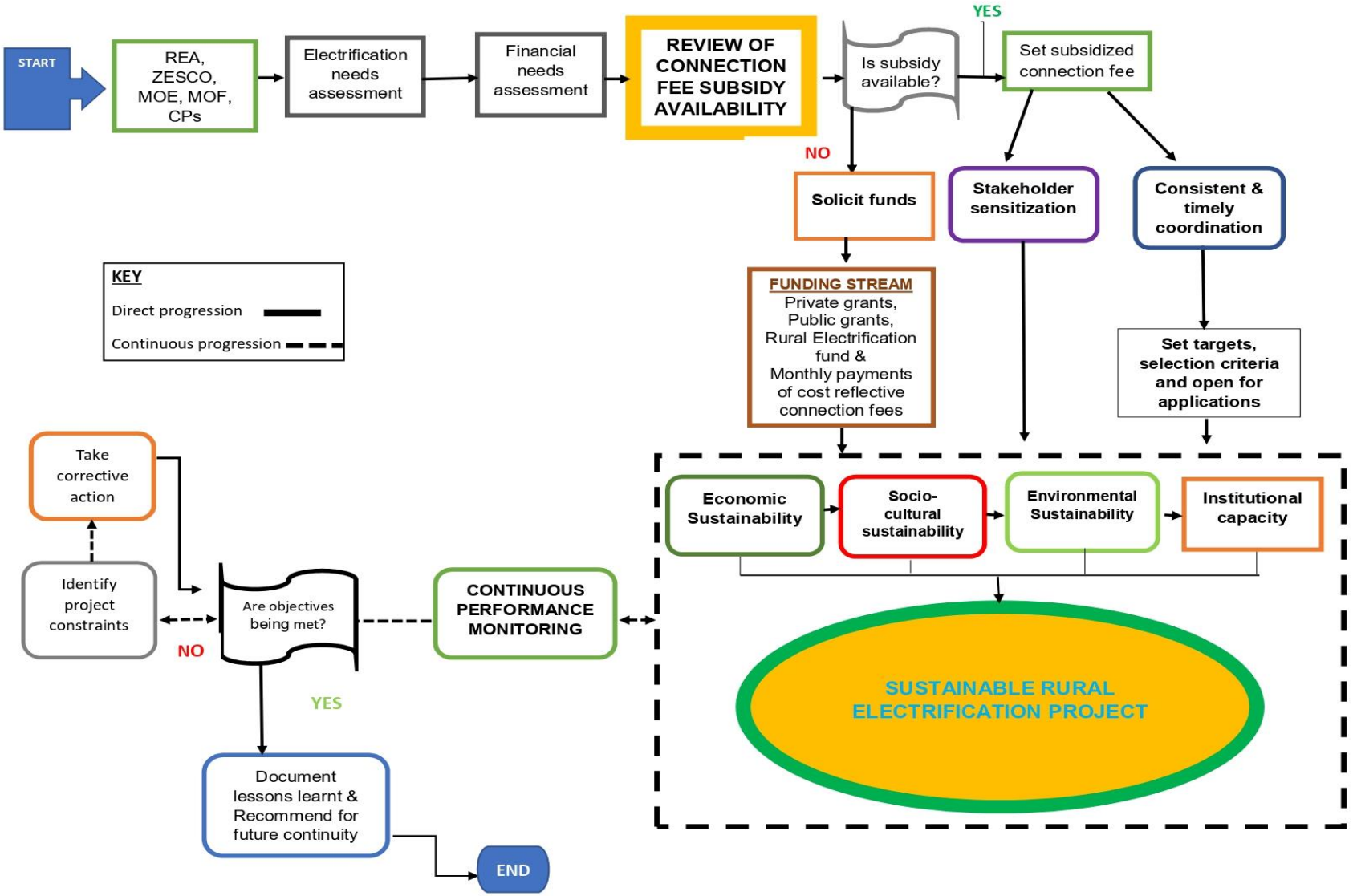

Figure 0.1 Proposed Sustainability Framework For Rural Electrification

Source: Author (2022)

7.3 Recommendations

The research study brought forth the following recommendations:

i. Upscale of Connection Fee Subsidy Projects and Cost-Sharing Mechanism

The study recommended that for rural electrification to be sustainable, subsidizing the cost of connection is inevitable since the income levels of the majority of the rural communities are low. The study found that there was a negative correlation between high connection costs and electrification rates (pace at which households and businesses get connected to electricity). As such, the study concluded that the policy shift for removal of subsidies on electricity (upward revision of connection fees as applied for by Zesco Limited) is likely to result in reduced electricity connections hereby causing a slower pace of attaining universal access to electricity by 2030. Further, the subsidized connection fee under the ESAP project had set precedence with regard to the capacity of the people to pay for electricity connections and the most benefit derived from the subsidy mechanism was improved willingness to pay for the connections. Therefore, subsidy-based electricity projects from cooperating partners need to be up-scaled.

Additionally, the Government through either the Ministry of Finance or the power utility (Zesco Limited) also needs to put in place cost-sharing mechanisms of cushioning the consumers' costs of electricity connection. This would be achieved via setting of a shared percentage of the cost to be covered by both the consumer and the Government and also through permitting the consumers to pay connection fees on a monthly basis over a feasible period of time (6-12months). Furthermore, the study recommended that the power utility should mostly consider using lower-gauge cables (6-10cubic millimeters) instead of the 16 or 25-cubic millimeter cables which transmit in excess of 50 amperes. The maximum load from most rural and urban poor consumers is only 1 or 2 amps, hence use of the lower gauge cables would enhance efficiency and hereby reduce the cost of service connections for both the consumer and the utility.

ii. Institutional Capacity and Stakeholder Sensitization

The study also recommended that in order to upscale electricity connections and consumption in rural areas, the Ministry of Energy and its implementing agencies (REA, Zesco Limited, and ERB) should on a quarterly basis conduct consistent and effective sensitization of rural communities on the cost elements of connection fees and productive

uses of electricity. For this to happen, the study also recommended increased institutional capacity and effective, timely coordination among the Ministries responsible for Energy and Finance, implementing agencies (Zesco Limited, Rural Electrification Authority), and the energy regulator (Energy Regulation Board) as well as cooperating partners. The study considered this recommendation as critical in growing a mindset of appreciation and value of the costs involved in taking electricity to rural areas thereby also reducing cases of vandalism of infrastructure. Further, this would encourage more consumption of electricity via the purchase of electricity units and also serve as a platform for educating the communities on the need for the connection fees to be cost-reflective in light of the policy shift to remove subsidies on electricity. Lastly, this would encourage a form of balance between the affordability of electricity connection to consumers and financial viability of the power utility.

iii. Sustainability Framework for Rural Electrification

The study recommended the adoption of the proposed sustainability framework which integrates the critical success criteria for rural electrification which primarily include: economic sustainability via private and public subsidy support; social-cultural sustainability via sensitization on cost elements of connection fees and promoting productive use of electricity; and institutional sustainability via timely coordination among policy and implementing agencies as well as the correlation of legislation and regulatory policy. The framework also integrates payment of cost-reflective connection fees and environmental sustainability as tributary success criteria based on the findings of the study.

The proposed framework was envisaged to influence policies/legislation and implementation strategies for rural electrification in Chibombo district and the nation at large. Further, the framework recommends fathoming of the interactions and interdependencies between the success criteria vis a vis connection fee subsidies and how they contribute to sustainable rural electrification in order to enhance the rate of rural electrification in light of the 51% universal access to electricity Sustainable Development Goal (SDG) target for Zambia by 2030.

7.4 Future Research Areas

The study proposed the following as possible areas of further/future research;

i. The study aimed to analyze the interaction between connection fee subsidies and sustainable rural electrification. Hence, the study proposes conducting analyses of the influence of subsidies in other economic sectors as well in order to investigate their sustainability in the absence of subsidies. Further studies could also evaluate the applicability of the developed sustainability framework in other sectors.

ii. The study was only conducted in Chibombo District due to financial and time restraints, as such, the study recommends that comparable research be carried out in other districts in order to interrogate and broaden the results.

7.5 Contributions to the Body of Knowledge

The contribution of this research to the body of knowledge is mainly the development of the sustainability framework for the implementation of rural electrification based on the identified critical success factors. This study contributes towards improving rural electrification rates and ensuring their sustainability via the application of the proposed sustainability criteria independently and jointly. This study affords empirical evidence of the relationship between connection fee subsidies and sustainable rural electrification and also the correlation between high connection cost and the sustainability criteria (critical success factors for rural electrification). Further, the study contributes to bridging the knowledge gaps in literature on the influence of connection fee subsidies on sustainable rural electrification.

7.6 Limitations of the Study

The limitations faced during the undertaking of the study were as outlined below:

i. The quantitative data collection was conducted in Chibombo district at the researcher's own cost. Hence, it had both a financial and physical toll on the researcher. Further, there was a risk of being misunderstood and maimed by people, bitten by dogs, theft, or being soaked by the rains (since not every household was reachable by vehicle). These risks were potential serious hindrances to the data collection. However, a significant and representative sample was achieved.

ii. Some of the respondents were of the view that the questionnaire was too lengthy and as a result, could not commit to filling it in. Consequently, this was a deterrent to attaining full participation from all respondents.

iii. Collection of qualitative data from the informants was challenging in that three-quarters (3/4) of them would keep rescheduling the interview due to other commitments and some would only delegate after constant reminders. This was a hindrance to obtaining more informative data in a timely manner.

7.7 Chapter Summary

The energy sector being the driving force of any economy and the electricity sub-sector being a significantly essential part of it still grapples with low electrification rates especially in rural areas in Sub-Saharan Africa and Zambia is no exception. Currently, rural electrification rates in Zambia stand at 8% (4.4% and 7.4% on-grid and solar respectively) and the country has a Sustainable Development Goal (SDG) of attaining a 51% rural electrification rate by 2030.

In order to work towards the attainment of universal access to electricity, the country has been implementing various projects on renewable energy technologies as well as subsidy-based electrification programs in selected areas. However, the electrification rate remains low. With the shift in Government policy to move away from subsidies in the energy sector, what remained in question was what influence the connection fee subsidies had on sustainable rural electrification projects in order to meet the set rural electrification targets by 2030.

Therefore, the research strived to answer this question by conducting an analysis of the relationship between the connection fee subsidies and the electrification of rural areas with a focus on the Chibombo district where the connection fee subsidy mechanism was implemented under the Electricity Services Access Project (ESAP). The study established that due to the connection fee subsidy, the project target of electrifying 385 households and Small and Medium Enterprises (SMEs) was surpassed three-fold to 938 (721 households and 217 SMEs). Hence the study found that connection fee subsidies have significant influence on the rate of rural electrification in Chibombo district.

The study also identified critical success factors for the implementation of sustainable rural electrification and developed a sustainability framework to this effect. The sustainability framework integrated the critical success criteria for rural electrification

which primarily included: economic sustainability via private and public subsidy support; social-cultural sustainability via sensitization on cost elements of connection fees and promoting productive use of electricity; and institutional sustainability via timely coordination among policy and implementing agencies as well as the correlation of legislation and regulatory policy. The framework also integrated payment of cost reflective connection fees and environmental sustainability as tributary success criteria based on the findings of the study.

The findings of the study were expected to provide an understanding of the association that exists between connection fee subsidies and the rate of rural electrification to Government policy makers, electricity utility companies, rural electrification implementing agencies, rural electrification project sponsors and developers, project managers, contractors, consultants, and other relevant stakeholders. Particularly, the study was anticipated to arm policymakers with the feasibility of applying connection fee subsidies on rural electrification in light of the shift in policy to move away from subsidies in the electricity sub-sector. Additionally, the study is envisaged to assist in expediting the formulation of feasible and holistic policies to address the gaps, maximize end-user outcomes and improve the rural electrification access rates with respect to the 2030 SDG set targets.

The study, therefore, acted as a point of reference for future researchers in similar studies and is anticipated to augment the existing body of knowledge. The study is envisaged to aid researchers to identify more probable areas of research with respect to rural electrification.

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APPENDIX 1: Framework Instruction Manual

The framework proposes a 4-phased integrated approach towards planning, financing and execution of the rural electrification program in Zambia. The framework further shows the integration of the sustainability criteria (critical success factors) and how they are linked to achieve sustainable rural electrification.

PHASE 1-Economic Sustainability

Step 1: Electrification Needs Assessment

Based on the current electrification status, Government bodies, i.e., MOE, MOF, REA ZESCO, ERB, etc. with support from cooperating partners, should initiate phase 1 with a detailed and consultative assessment of electrifications needs in rural. The assessment would specifically look at the number and geographical locality of existing households, businesses and institutions requiring to be electrified in rural areas. This information would then be analyzed in reference to the Rural Electrification Master Plan (REMP), existing electrification infrastructure, the scope of work required to provide electricity to the target communities, based on the most suitable electrification technologies, i.e., on-grid or off-grid methods. This step would also include risk assessments of employing the technologies in the target communities.

Step 2: Financial Needs Assessment And Subsidy Review

At this stage, the financial envelope required to meet the financial requirements for the identified electrification needs in rural areas including financing for sensitization campaigns would be determined and sourced. Financing for rural electrification would come from various streams which include: public grants from the national budget allocation, the existing levy on electricity sales, private grants from donors and cooperating partners such as the World Bank and grants or loans from climate financing initiatives. Further, the framework proposes that the Rural Electrification Fund into which the electricity levy currently feeds should have a dedicated escrow account unlike the current control 99 account housed at the Ministry of Finance in order for the funds to be timely and adequately disbursed for the implementation of rural electrification

.

Step 3: Review Of Subsidy Availability

At this stage, the framework proposes that in the financing that is to be provided, the connection fee subsidies need to implemented. As such, review of subsidy availability via the aforementioned streams would need to be conducted. If there is availability then the subsidized connection fees would be set and if not, solicitation of more funding allocation from the funding streams would need to be done. Further, if the application by Zesco Limited is approved by the ERB for 500% and 790% for increment of connection fees, the framework proposes that a credit facility mechanism would need to be employed with assistance from the funding streams for rural communities to be connected either on credit or for payment to be made in installments.

PHASE 2: Socio-Cultural And Environmental Sustainability

The outputs of phase 1 would then feed into phase 2 which this framework recommends to undertake community-based awareness and engagement campaigns with a view to establish realistic ability of the people to pay for electricity services (both cost of connection and consumption). These quarterly sensitization campaigns would involve the Ministries responsible for Energy and Finance, REA, Zesco Limited, the ERB including cooperating partners as a concerted effort in order for all the relevant stakeholders to have real-time understanding of the socio-cultural climate of the communities they need to electrify. Further, the sensitization campaigns would be aimed at enlightening the communities on the cost elements comprising the connection fees in order to build a mindset of valuing electricity infrastructure hereby reducing cases of vandalism which is a huge cost for the power utility as well.

Furthermore, the sensitization campaigns would serve as a platform for the communities to be educated on why there is need for cost reflective connection fees and tariffs in line with the financial viability of the power utility hereby reducing or even eliminating resistance when revisions are made. Additionally, these sensitization campaigns would be feasible platforms for educating the communities on the productive uses of electricity in order to improve consumption levels and uplift their livelihoods. The study found that charcoal was what was mostly used for cooking in Chibombo district despite the beneficiaries being connected to electricity. Hence, these sensitization campaigns would educate communities on the cost-benefit analysis of efficiently using electricity instead of charcoal. As such, this would trickle down to the people upholding environmental sustainability through awareness of the effects of charcoal use on their natural environment and the benefits of sustaining their vegetative cover for posterity.

PHASE 3: Institutional Sustainability

Step 1: Setting Electrification Targets

With phase 2 as a base, phase 3 would start by setting of community-driven electrification targets, timelines and selection criteria by the implementing agencies (Zesco Limited and REA), policy institutions (MOE, MOF), the regulator (ERB) including the private funders. The framework proposes projections over the target electrification period to be set in spans of short, medium and long-term in line with the national developmental plans.

Step 2: Coordination Among Relevant Stakeholders

This would entail consistent and timely meetings and communication among the relevant stakeholders to avoid working in silos, duplication of efforts and clashing timelines. Strategic meetings as well to harmonize institutional strategies and champion complementarities. With the relevant institutions being coordinated, comprehensive and holistic policies on rural electrification visa vis connection fee subsidies would be formed

via cabinet approvals and resultantly the public would be made aware of the policy direction.

PHASE 4: Implementation of Rural Electricity Connections

Step 1: Open for Connection Application and Selection

This stage would entail the implementing agencies calling for applications in rural areas for electrification at a subsidized connection fee either via a project by private funding or public funding. Further, at this stage, the applications would be considered based on the agreed criteria, community engagements and needs assessments earlier conducted. Then subsequently, implementation of the electrification program in target communities would commence.

Step 2: Monitoring Performance and Lessons Learnt

To foster sustainability of the program, the framework recommends that the financing model for the electrification program employs a mechanism for cost recovery, to the rural electrification fund, over a period of time and sufficient enough not to burden the beneficiaries. This, together with the subsidy rates, would be reviewed periodically based on the planned funding for monitoring and evaluation. Further, study of the economic impact that the electrification projects would bring to the target communities would be undertaken coupled with identification of project constraints.

If the deliverables of increased electrification rates are not being met, corrective action would be taken and if they are being met, recommendations for future continuity would be made. Further, lessons learnt would be documented for application in future rural electrification interventions and projects

APPENDIX 2: Letter of Authority and Beneficiary Lists

14 November 2022

Ms Florence Kambikambi
C/O University of Lusaka
P.O. Box 36711
LUSAKA

REQUEST TO CONDUCT RESEARCH – MS FLORENCE KAMBIKAMBI

I FLORENCE KAMBIKAMBI *agree/do not agree, to the above Terms and Conditions. Phone No: +260-974-348097

Signature: [signature] Date: 14/11/2022

***Delete that which is not applicable.**

Witness: CLIVE MULONGA Phone No: 0976613256

Date: 14/11/2022

ZESCO LIMITED
List of Work Requests

Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662021049929	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,11 SE	DAY KEEMBE SECONDARY
MS9662021061907	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,24 NACHAMBA	JANET NACHAMBA
MS9662021078850	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHU	JAMES CHUNGA
MS9662021050213	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,795 U	THOMAS LUNGU U. C. Z CONGF
MS9662021057454	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,MALOMBE,10 M10	MARTIN SIAME
MS9662021049765	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,11 KEI	PRIMARY KEEMBE SCHOOL
MS9662021063722	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,307 CHIMOTO	BONAVENTURE CHIMOTO
MS9662021063563	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,6 KEEI	PRIMARY KEEMBE SCHOOL
MS9662021041374	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MUKUSA,OLD MUMBWA - KEEMBE,69 M.	EVERETT SIBANDA
MS9662020123503	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,406 ZULU	PHILLIP ZULU
MS9662021015121	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,236 GODFREY	GODFREY MOONGA
MS9662021018893	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,1 1/PEARSON	PEARSON MUNGALABA
MS9662021018015	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,7 / NYANGU	PATRICIA NYANGU
MS9662020100504	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,59 EUNICE	EUNICE CHINSOKELA
MS9662020114766	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,33 /CHILUBA	EVANS CHILUBA
MS9662020102264	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,74 74 NEDAS	NEDAS MWENGWE
MS9662020102209	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,55 / PHIRI	MISHECK PHIRI
MS9662020103660	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	BWALYA VILLAGE H
MS9662020104847	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,6 1/SHOP	LUCKSON MUSOKOTA
MS9662020118793	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CFC,178 OFFER	OFFER SIMATAA
MS9662020102230	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,77 / NGONYA	EDITH MWALE NGONYA
MS9662020127049	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KANGALATI,80 80B/KALU	HARRIET KALUBA MWANSA
MS9662020108815	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,916 B/JOSE	JOSEPH ANUSA
MS9662020107970	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,HEINWOOD,285 NAOMI	NAOMI MBEWE
MS9662020115070	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,158 EFRAME	EFRAME SIZE
MS9662020103368	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,9 /9 PROGRES	PROGRESS CHOONGO PAUL
MS9662020110735	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,720 /B NTALASH	FLORENCE NTALASHA
MS9662020125589	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,2211	PHILLIMON NYIRENDA
MS9662020110781	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MUKUSA,OLD MUMBWA - KEEMBE,26 / I	BRIDGET MULAMBO
MS9662020102132	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,3167	EDINAH LUBILYA

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Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662020064463	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,14 /LYAT	DANIEL LYATUMBA
MS9662020063939	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,55 /55 KALUBA	ESTHER KALUBA
MS9662020066839	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,35 /JULI	JULIUS CHIKUMBUNGO
MS9662020061991	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,70 /HWI	HWIKA CHIKO
MS9662020087272	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,752 NER	NERIA MUNANGISA
MS9662020069067	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,22 /KANGWA	MAYBIN KANGWA
MS9662020068314	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,38 38C LUKL	BWEMBYA LUKUTATI
MS9662020076319	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,889 /MUDET	BOYD MUDENDA M
MS9662020061807	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	DOCUS CHANDA
MS9662020067364	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,11 /BUNDA	PETER BUNDA
MS9662020086390	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	CLEOPATRA CHIRWA
MS9662020085823	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1721 /B MUBANGA	MARY MUBANGA MUTALE
MS9662020062188	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,49 /MWA	LUCKSON CHISENGA MWAPE
MS9662020068473	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	NYELETI MWENDALUBI
MS9662020068129	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1154 1154 I	BOYD MUDENDA MUMBA
MS9662020060613	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,1486 / LOMB	RACHAEL LOMBE
MS9662020061826	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	DOCUS CHANDA
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MS9662020060241	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1555 /KALUBA	ESTHER KALUBA
MS9662020075293	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,421 /99	BASHENGEZI BYAMUNGU
MS9662020085748	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,44 /B MOYO	PAUL MOYO
MS9662020063154	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,340 / IEI	LOVENESS JERE
MS9662020066964	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,72 /	GIDEON KAKOMPE STEPPER
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MS9662022060481	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,697 / PEMBERE	JACOB PEMBERE FREDERICK
MS9662022027112	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,32 /G KALIPEN	ROY CHIBWE KALIPENTA
MS9662022042456	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,735 / CH	JAMES CHUNGA
MS9662022036193	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EMMANUEL MUNDU EMILIO
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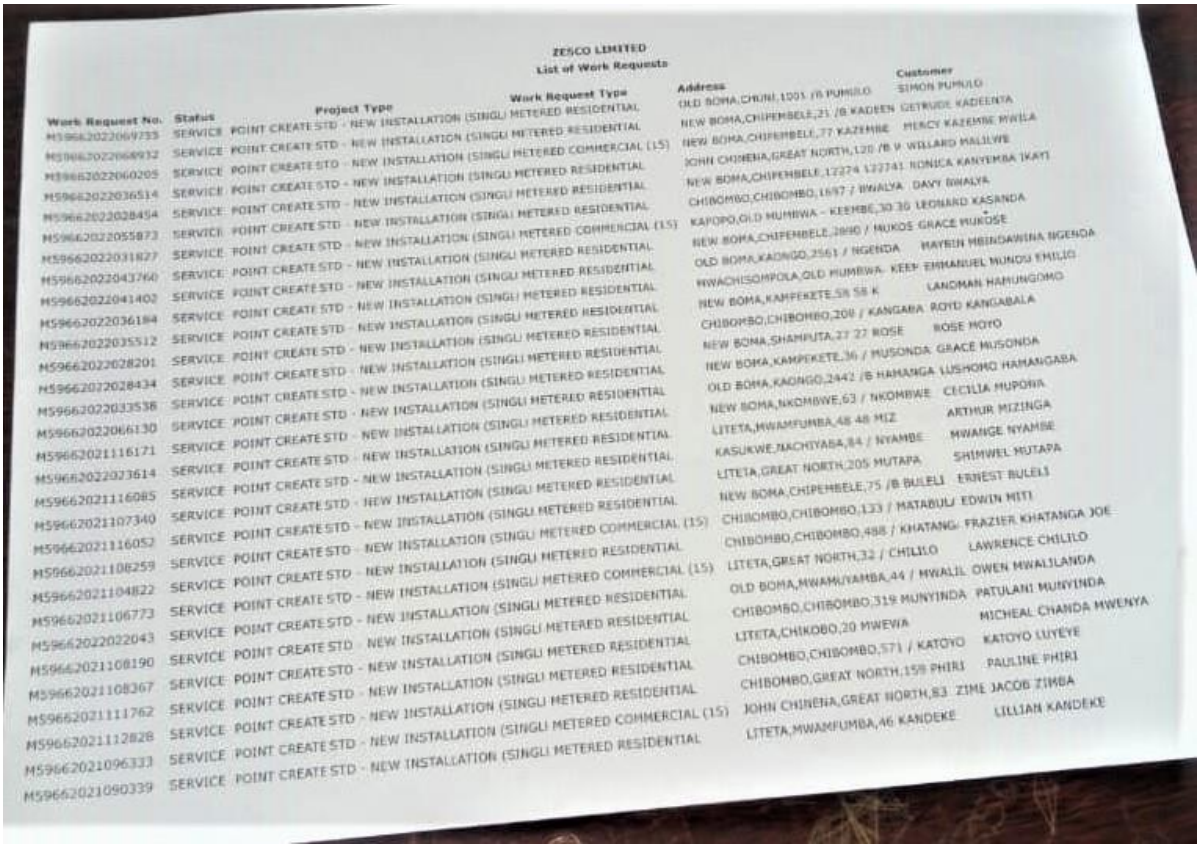

ZESCO LIMITED
List of Work Requests

Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662022069755	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,CHUNI,1001 /B PUMULO	SIMON PUMULO
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MS9662022060205	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		NEW BOMA,CHIPEMBELE,77 KAZEMBE	MERCY KAZEMBE MWILA
MS9662022036514	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		JOHN CHINENA,GREAT NORTH,120 /B P. WILLARD MALILWE	
MS9662022028454	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,CHIPEMBELE,12274 12741	RONICA KANYEMBA (KAT)
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MS9662022031827	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		KAPOPO,OLD MUMBWA - KEEMBE,30 30	LEONARD KASANDA
MS9662022043760	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,CHIPEMBELE,2890 / MUKOS	GRACE MUKOSE
MS9662022041402	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,KAONGO,2561 / NGENDA	MAYBIN MBINDAWINA NGENDA
MS9662022036184	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		MWACHISOMPOLA,OLD MUMBWA. KEEP	EMMANUEL MUNOU EMILIO
MS9662022035512	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,KAMPEKETE,58 58 K	LANDMAN MAMUNGOMO
MS9662022028201	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		CHIBOMBO,CHIBOMBO,209 / KANGABA	ROYD KANGABALA
MS9662022028434	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,SHAMPUTA,27 27 ROSE	ROSE MOYO
MS9662022033538	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,KAMPEKETE,36 / MUSONDA	GRACE MUSONDA
MS9662022066130	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,KAONGO,2442 /B HAMANGA	LUSHOMO HAMANGABA
MS9662021116171	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,NKOMBWE,63 / NKOMBWE	CECILIA MUPONA
MS9662022023614	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,MWAMFUMBA,48 48 MIZ	ARTHUR MIZINGA
MS9662021116085	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		KASUKWE,NACHIYASA,84 / NYAMBE	MWANGE NYAMBE
MS9662021107340	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,GREAT NORTH,205 MUTAPA	SHIMWEL MUTAPA
MS9662021116052	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		NEW BOMA,CHIPEMBELE,75 /B BULELI	ERNEST BULELI
MS9662021108259	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		CHIBOMBO,CHIBOMBO,133 / MATABULI	EDWIN MITI
MS9662021104822	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		CHIBOMBO,CHIBOMBO,498 / KHATANG	FRAZIER KHATANGA JOE
MS9662021106773	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,GREAT NORTH,32 / CHILILO	LAWRENCE CHILILO
MS9662022022043	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,MWAMUYAMBA,44 / MWALIL	OWEN MWALILANDA
MS9662021108190	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		CHIBOMBO,CHIBOMBO,319 MUNYINDA	PATULANI MUNYINDA
MS9662021108367	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,CHIKOBO,20 MWEVIA	MICHEAL CHANDA MWENYA
MS9662021111762	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		CHIBOMBO,CHIBOMBO,571 / KATOYO	KATOYO LUYEYE
MS9662021112828	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		CHIBOMBO,GREAT NORTH,159 PHIRI	PAULINE PHIRI
MS9662021096333	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		JOHN CHINENA,GREAT NORTH,83	ZIME JACOB ZIMBA
MS9662021090339	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,MWAMFUMBA,46 KANDEKE	LILLIAN KANDEKE

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MS9662021102831	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		LITETA,GREAT NORTH,10 10/RUTH	RUTH CHISULU
MS9662021082941	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,SHAMPUTA,30 308 KAONG	ARNOLD KATONGO
MS9662021093746	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,NKOMBWE,15 / MUGWAGWI	SCHOLASTICA MUGWAGWA
MS9662021075063	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		NEW BOMA,NKOMBWE,65 / MUKONK	KENWELL MUKONKA
MS9662021102546	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		KASUKWE,GREAT NORTH,65 / HAMUCHIL	AMOLLY HAMUCHILA
MS9662021081296	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,KAONGO,9513 / HAMUCHIL	MAUREEN MANJOMBA
MS9662021097989	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		CHIBOMBO,GREAT NORTH,176 MANJOM	GLADWELL SHAKONKELA
MS9662021102585	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		CHISOMBO,CHISOMBO,431 / SHAKONK	DANIEL NGOMA
MS9662021098373	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,SHAMPUTA,130 / NGOMA	BA STEVEN BANDA
MS9662021075100	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		JOHN CHINENA,GREAT NORTH,126 / BA	MACKSON NYIRONGO
MS9662021102598	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		CHISOMBO,CHISOMBO,975 / NYIRONGI	RICHARD MWABA
MS9662021102704	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		OLD BOMA,MWAMUYAMBA,360 / MWAB	JOEL CHAMDA
MS9662021102530	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		MWACHISOMPOLA,OLD MUMBWA. KEEP	CHILUPYA PUNGWA JAMESON
MS9662021099606	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		NEW BOMA,CHIPEMBELE,37 /B NANYIN	JEAN NANYINZA
MS9662021082972	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,MWAMFUMBA,950 PUNGWA	CHIPOKOLO KASWENDE AFE
MS9662021093799	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,SHAMPUTA,208 208 / ADDE	ADDEL MPOOMA
MS9662021099690	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,CHIKOBO,261 / AFE	JEAN NANYINZA
MS9662021053161	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,CHIPEMBELE,37 37 JEAN	NELSON NDAKALABA
MS9662021078835	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,NKOMBWE,12 / NDAKALAB	JAMES CHUNGA
MS9662021071194	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		JOHN CHINENA,GREAT NORTH,265 CHU	CLEVER SIMONDA
MS9662021056642	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,MWAMFUMBA,12888 SIMONDA	OWEN MALILWE H
MS9662021060860	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		LITETA,GREAT NORTH,429 LWE	ERNEST BULELI
MS9662021078729	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,CHIPEMBELE,345 BU	FREDRICK KAYOMBO
MS9662021053001	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,KAONGO,286 KAYO	EMMANUEL MWEENE
MS9662021043362	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,CHIKOBO,200 / LITETA	PAISON MUCHINDU
MS9662021021847	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		OLD BOMA,KAONGO,165 PAISON	CECILIA MWANDU
MS9662021026881	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED COMMERCIAL (15)		LITETA,CHIKOBO,45 / MWANDU	MONICA LIWALE
MS9662021041187	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		LITETA,GREAT NORTH,108 / LIWALE	VIVIAN MULILO JAMES
MS9662021023107	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		MUKUSA,OLD MUMBWA - KEEMBE,14 VI	WILLSON TEPULA
MS9662021014114	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLE METERED RESIDENTIAL		NEW BOMA,CHIPEMBELE,321 WILLSON	
				OLD BOMA,CHIBOMBO DAY,1345 B/ KAI	KAPEMBWA SICHILIMA M

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M59662021036150	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	JOHN CHINENA,MALOMBE,19 / MALOME	PAULINE PHIRI
M59662021010254	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	KASUKWE,WELCOME,149 [illegible]	MICHAEL MWACHUNDNDO
M59662020123363	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,CHIBOMBO,13 MULILO	BARCLAS MULILO
M59662021014170	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,POLICE,1761 NSOLOMBA	SUZANGA NSOLOMBA
M59662020123245	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,GREAT NORTH,227 MULE	PEMMAS MULENGA
M59662021017988	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	LITETA,CHIBOMBO,61 / KATEMA	ELIZABETH KATEMA
M59662021039678	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,GREAT NORTH,326 SEMU	REBECCA SEMU
M59662021034163	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	KASUKWE,WELCOME,33 [illegible]	EBBY KACHONDWE
M59662021015305	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,CPC,20 20/ COLA	COLARD SHIBUYUNJI
M59662021032795	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,151 / MOSES	MOSES THUMO
M59662021037503	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,CHIBOMBO,1297 [illegible]	LINESS MWEENGA
M59662020104182	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,22 /NGOBOLA	MARGARET NGOBOLA
M59662020093669	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,GREAT NORTH,213 MOOYA	BARNABAS MOOYA
M59662020105170	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,MWAMFUMBA,852 HARRY	HARRY MWEENGA
M59662020109123	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,5	HARRISON MAAILA
M59662020110772	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,POLICE,67 [illegible]	LISTON MALAMATA
M59662020115973	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,342 JUDITH	JUDITH MUCHIMBA
M59662020110760	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,32 / KOMA	MARTIN MWANGE KOMA
M59662020098366	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,POLICE,254 254C NGWA	VASILIO NGWAKWE
M59662020108755	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,167 MUTU	NORA MUTUBA
M59662020112082	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,27 27/UNI	LINESTER HAMUKOLO
M59662020106398	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,61 SHOP6	EVELYN MUYENDEKWA
M59662020102136	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,3160 / L	SIDNAH LUBESA
M59662020114298	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,209 NELLY	NELLY KANTAKULA
M59662020104611	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,220 MBESU	CHANDA MBESUMA
M59662020103365	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,6 HAGWAMU	GIVEN HAGWAMUNA VOSTA
M59662020102166	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,49 / NAF	FOSTINA NAMONZE
M59662020127432	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EMMANUEL MUNDU EMILIO
[illegible]				KASUKWE,GREAT NORTH,624 FLORENC	FLORENCE KABWE
[illegible]				JOHN CHINENA,GREAT NORTH,222 / NR	RUTH NKUBIKISHA

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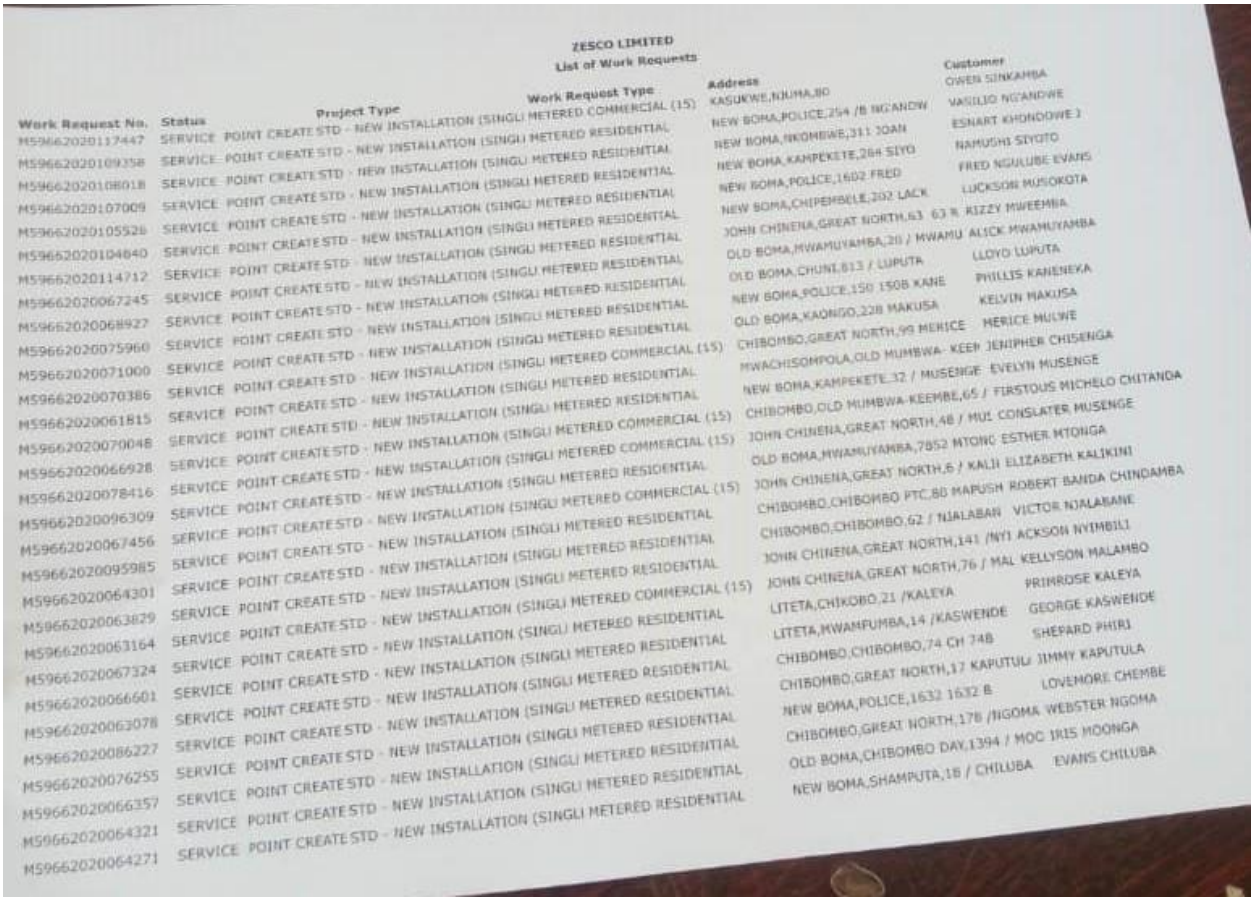
M59662021049606	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,24 CHITETA	KOSTER MAMBWE
M59662021014572	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,MWAMFUMBA,76 76/MAKAI	CASIOUS MAKAI
M59662021014652	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,GREAT NORTH,354 GRACE	GRACE BANDA
M59662021037620	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,32 32F KALIPE	ROY CHIBWE KALIPENTA
M59662020123316	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,744 FLAT A	KHAIZINI MHANGO
M59662021026433	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	KASUKWE,NACHIYABA,35 /KAPUTI	RODAH KAPUTI
M59662021016813	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,40 /2 CHISHIM	BONIFACE CHISHIMBA
M59662021026628	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,60 60/C	CHRISTABEL CHISANGA
M59662021036414	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,43 /TEMBO	NIX TEMBO
M59662021028600	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,23 / MUKUPA	KENNEDY MUKUPA
M59662020123274	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,82 SAISHI	STELLAH SAISHI
M59662021018737	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	NEW BOMA,POLICE,1572 1573/VERO	VERONICA MOONGA
M59662020118017	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EMMANUEL MUNDU EMILIO
M59662020106324	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,61 SHOP2	EVELYN MUYENDEKWA
M59662020126442	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,717 MALASHA	ELIZABETH MALASHA M
M59662020118781	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,17 17/BRIAN	BRIAN CHAPUSHA
M59662020101883	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,1001 1001 EDWAR	EDWARD KAMPEKETE
M59662020110446	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,30 30 / MUNTE	GIVEN MUNTEMBA
M59662020098144	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,121 121/1/B	VICTORIA SAITI BUNZANGA
M59662020109402	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,74 /	TABAIWA SHOZI
M59662020126205	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,64 SIMUKOND	JIMMY SIMUKONDA
M59662020091842	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,13 / MULOWA	GOODSON MULOWA
M59662020104392	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	NEW BOMA,NKOMBWE,279 BWANGA	CHRISTOPHER BWANGA
M59662020114778	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,86 / MUTOYA	FRIDAH MUTOYA
M59662020109832	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,24 / NTA	BRENDA NTALASHA
M59662020126236	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,MWAMFUMBA,51 TEMBO	CHRISTOPHER TEMBO
M59662020108292	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,299 PHI	SARAPHINA PHIRI
M59662020113570	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	OLD BOMA,MWAMUYAMBA,36 /D TAWA	TAWANDA PEMIWA
M59662020104828	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,220 MBESUMA	CHANDA MBESUMA
M59662020102212	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,82 CHELLAH	AGNESS CHELLAH



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M59662020117447	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,NJUMA,80	OWEN SINKAMBA
M59662020109358	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,254 /B NG'ANDW	VASILIO NG'ANDWE
M59662020108018	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,311 JOAN	ESNART KHONDOWE J
M59662020107009	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,284 SIYO	NAMUSHI SIYOTO
M59662020105526	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1602 FRED	FRED NGULUBE EVANS
M59662020104840	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,202 LACK	LUCKSON MUSOKOTA
M59662020114712	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,63 63 R	RIZZY MWEEMBA
M59662020067245	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,20 / MWAMU	ALICK MWAMUYAMBA
M59662020068927	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,613 / LUPUTA	LLOYD LUPUTA
M59662020075960	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,150 1508 KANE	PHILLIS KANENEKA
M59662020071000	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,228 MAKUSA	KELVIN MAKUSA
M59662020070386	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,99 MERICE	MERICE MULWE
M59662020061815	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEM	JENIPHER CHISENGA
M59662020070048	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,32 / MUSENGE	EVELYN MUSENGE
M59662020066928	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,65 /	FIRSTOUS MICHELO CHITANDA
M59662020078416	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,48 / MU	CONSLATER MUSENGE
M59662020096309	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,7852 MTONG	ESTHER MTONGA
M59662020067456	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,6 / KALI	ELIZABETH KALIKINI
M59662020095985	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO PTC,80 MAPUSH	ROBERT BANDA CHINDAMBA
M59662020064301	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,62 / NJALABAN	VICTOR NJALABANE
M59662020063829	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,141 /NYI	ACKSON NYIMBILI
M59662020063164	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,76 / MAL	KELLYSON MALAMBO
M59662020067324	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,21 /KALEYA	PRIMROSE KALEYA
M59662020066601	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMPUMBA,14 /KASWENDE	GEORGE KASWENDE
M59662020063078	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,74 CH 748	SHEPARD PHIRI
M59662020086227	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,17 KAPUTULU	JIMMY KAPUTULA
M59662020076255	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1632 1632 B	LOVEMORE CHEMBE
M59662020066357	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,178 /NGOMA	WEBSTER NGOMA
M59662020064321	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1394 / MOC	IRIS MOONGA
M59662020064271	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,18 / CHILUBA	EVANS CHILUBA

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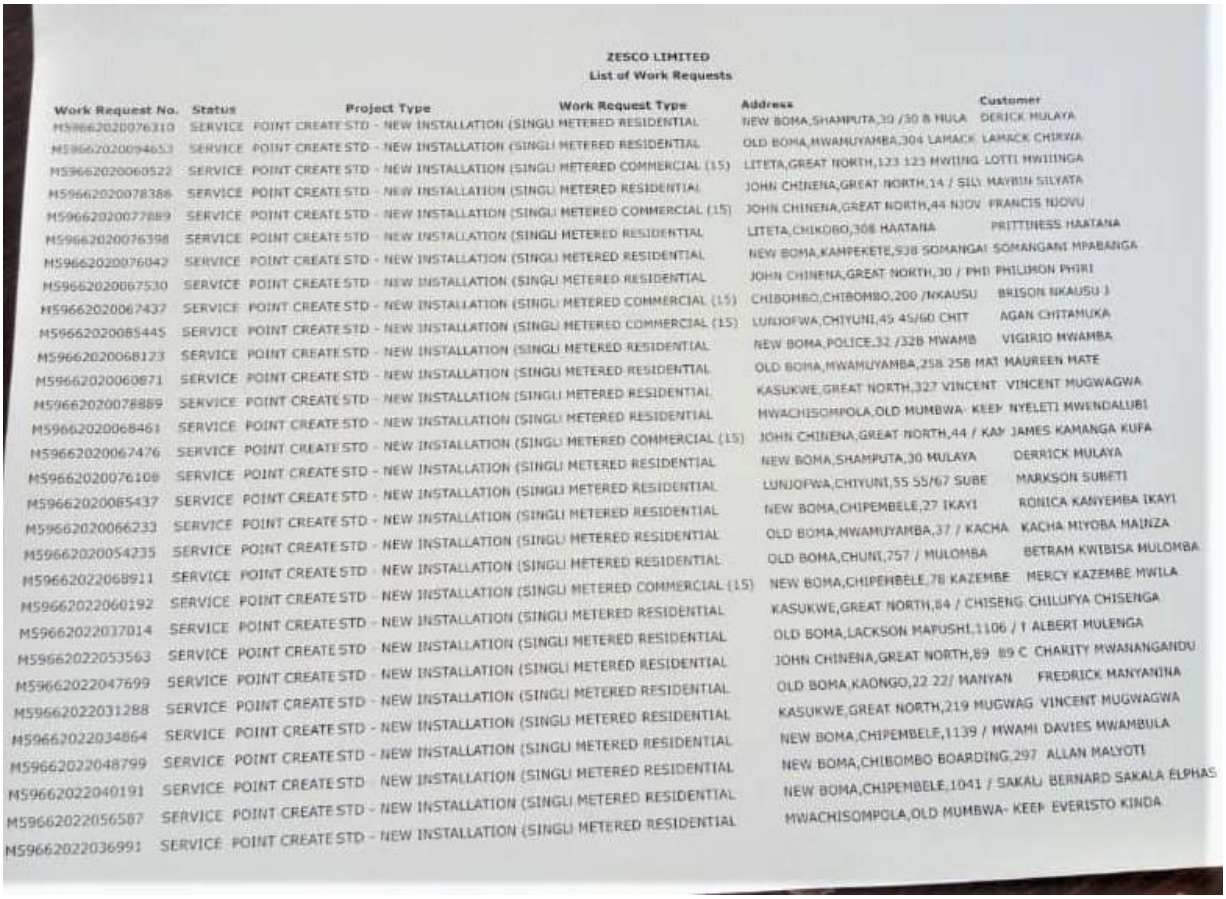
M59662022035232	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,290 / MANDI	HENRY MANDA
M59662022036630	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,322 / PHIRI	EDSON PHIRI GEORZYLE
M59662022052058	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,52 SINYINZA	WECKSON SINYINZA
M59662022036511	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,120 / WI	WILLARD MALILWE
M59662021117626	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,112 NANG'ANDA	KAALA NANG'AMBA
M59662021116027	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,99 /B BYAMU	INNOCENT BYAMUNGU
M59662021114785	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,NJUMA,88 / ZULU	ALICK ZULU
M59662021122263	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,4 04/CHALI	ANDREW CHALIMBA
M59662021091097	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,32 MULOPA	BRYSON MULOPA
M59662021098014	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,432 432 SHAKO	GLADWELL SHAKONKELA
M59662021102740	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,4972 FLAT 3	EVELYN MUYENDEKWA
M59662021098899	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,728 / MITI	EDWIN MITI
M59662021081182	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,316 SICHAMBA	BERNARD SICHAMBA
M59662021090306	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,107 PUTA	BINWELL PUTA
M59662021102746	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,4972 FLAT 4	EVELYN MUYENDEKWA
M59662021103344	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,107 /B MATONG	SHADRECK MATONGO
M59662021058707	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,53 / GOMANI	GOMANI SAKALA
M59662021063371	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,86 J86 C	ABRAHAM CHISALA
M59662021079746	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,161 JOSEPH	JOSEPH ANUSA
M59662021049649	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,5 SEC	DAY KEEMBE SECONDARY
M59662021063378	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,21 321 T	EXSTINE TEMBO
M59662021049643	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,1 SEC	DAY KEEMBE SECONDARY
M59662021067308	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,48 / MPANDE	IREEN MPANDE
M59662021043998	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,41 41 MI	KELVIN MBUTO
M59662021046940	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,67 / MTIKA	MICHAEL MTIKA
M59662021060564	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,251 VI	VERNON MWIINGA
M59662021065750	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,29 /B SIKUTE	AGNESS SIKUTE K
M59662021060665	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,169 EC	EDITH CHIKATULA
M59662020123178	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1333	LYDIA SIKAZWE CHIPILI
M59662021014483	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,LACKSON MAPUSHI,473 MW	EDWIN MWAANGA



ZESCO LIMITED
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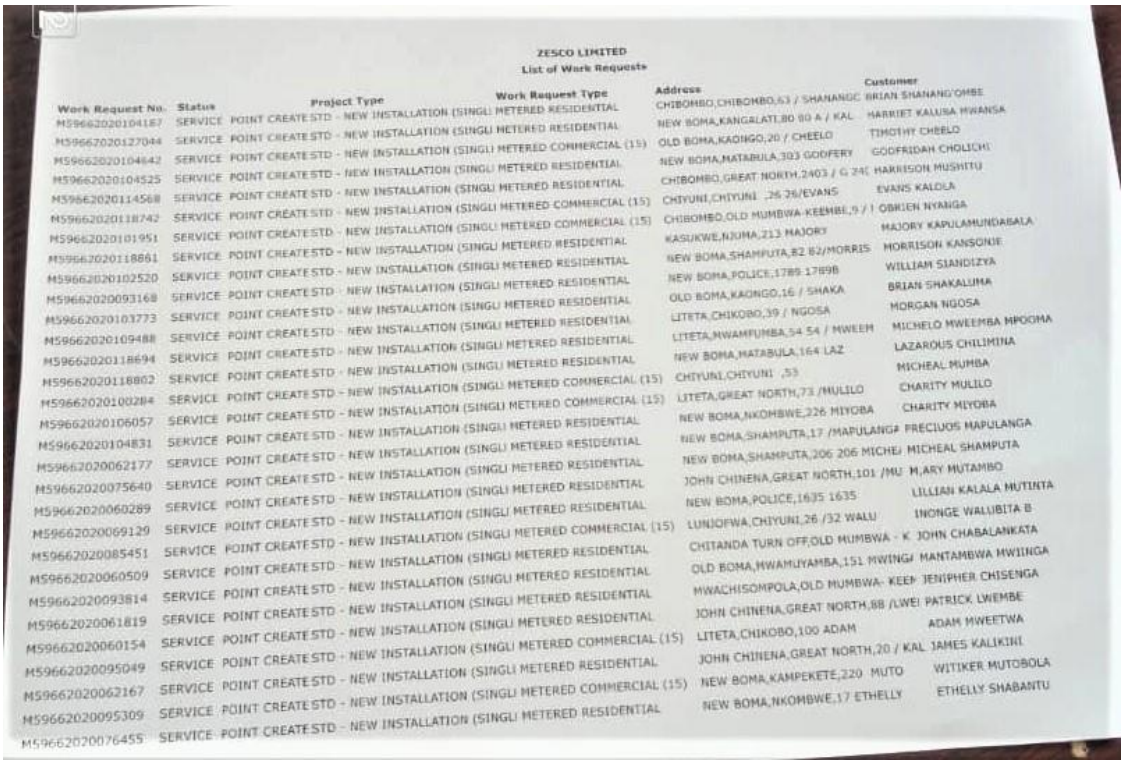
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662020076310	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,30 /30 B MULA	DERICK MULAYA
MS9662020094653	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,304 LAMACK	LAMACK CHIKWA
MS9662020060522	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,GREAT NORTH,123 123 MWIING	LOTTI MWIINGA
MS9662020078386	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,14 / SILI	MAYBIN SILYATA
MS9662020077889	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,44 NJOV	FRANCIS NJOVU
MS9662020076398	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,308 HAATANA	PRITTINESS HAATANA
MS9662020076042	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,938 SOMANGA	SOMANGANI MPABANGA
MS9662020067530	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,30 / PHI	PHILIMON PHIRI
MS9662020067437	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,200 /NKAUSU	BRISON NKAUSU J
MS9662020085445	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,45 45/60 CHIT	AGAN CHITAMUKA
MS9662020068123	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,32 /32B MWAMB	VIGIRIO MWAMBA
MS9662020060871	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,258 258 MAT	MAUREEN MATE
MS9662020078889	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,327 VINCENT	VINCENT MUGWAGWA
MS9662020068461	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	NYELETI MWENDALUBI
MS9662020067476	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,44 / KAI	JAMES KAMANGA KUFA
MS9662020076108	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,30 MULAYA	DERRICK MULAYA
MS9662020085437	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LUNJOFWA,CHIYUNI,55 55/67 SUBE	MARKSON SUBETI
MS9662020066233	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,27 IKAYI	RONICA KANYEMBA IKAYI
MS9662020054235	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,37 / KACHA	KACHA MIYOBA MAINZA
MS9662022068911	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,757 / MULOMBA	BETRAM KWIBISA MULOMBA
MS9662022060192	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,78 KAZEMBE	MERCY KAZEMBE MWILA
MS9662022037014	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,84 / CHISENG	CHILUFYA CHISENGA
MS9662022053563	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,LACKSON MAPUSHI,1106 / 1	ALBERT MULENGA
MS9662022047699	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,89 89 C	CHARITY MWANANGANDU
MS9662022031288	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,22 22/ MANYAN	FREDRICK MANYANINA
MS9662022034864	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,219 MUGWAG	VINCENT MUGWAGWA
MS9662022048799	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,1139 / MWAMI	DAVIES MWAMBULA
MS9662022040191	SERVICE	POINT CREATE STD	NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,297	ALLAN MALYOTI
MS9662022056587	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,1041 / SAKALI	BERNARD SAKALA ELPHAS
MS9662022036991	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EVERISTO KINDA



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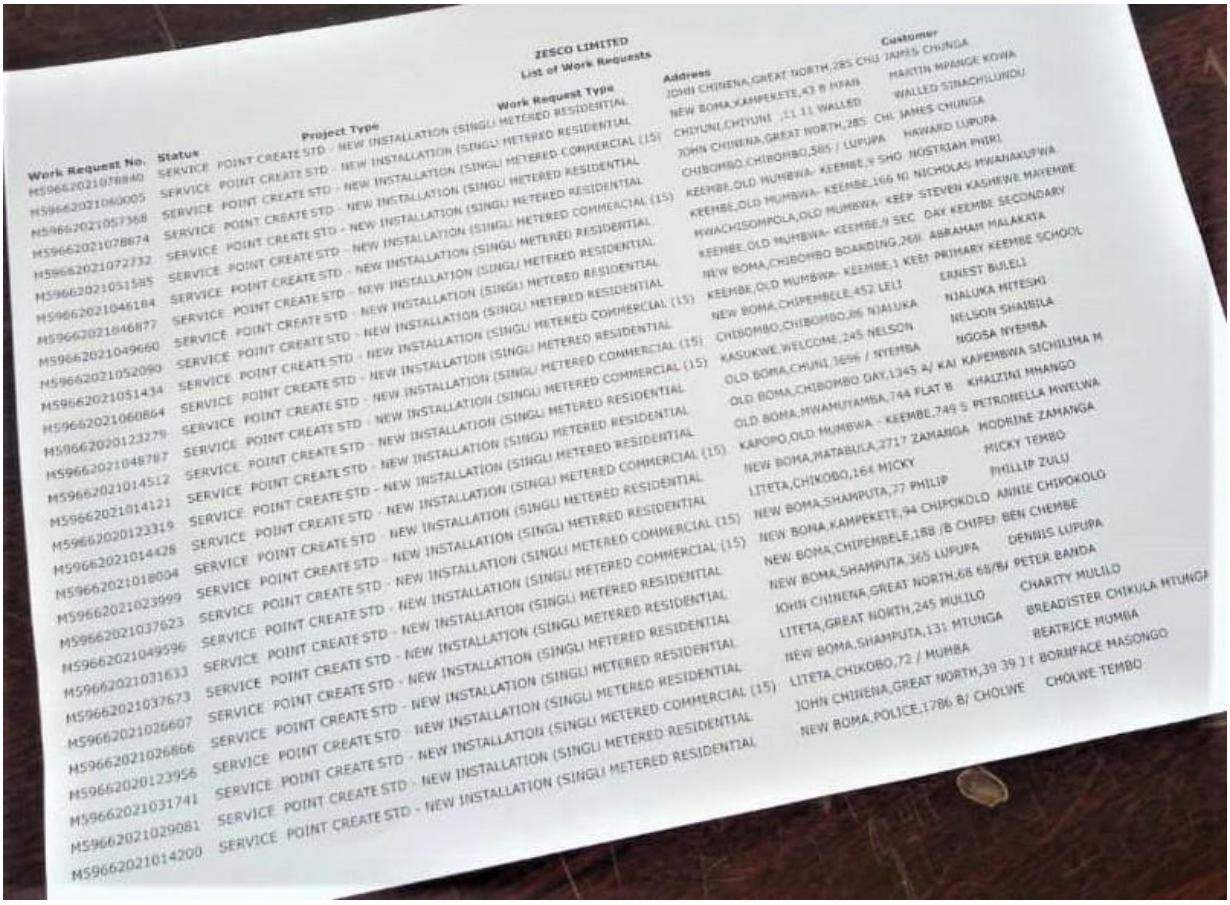
MS9662020104167	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,63 / SHANANGC	BRIAN SHANANG'OMBE
MS9662020127044	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KANGALATI,80 80 A / KAL	HARRIET KALUSA MWANSA
MS9662020104642	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,20 / CHEELO	TIMOTHY CHEELO
MS9662020104525	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,303 GODFERY	GODFRIDAH CHOLICHI
MS9662020114568	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,2403 / G 24(	HARRISON MUSHITU
MS9662020118742	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,26 26/EVANS	EVANS KALOLA
MS9662020101951	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,9 / 1	OBRIEN NYANGA
MS9662020118861	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,213 MAJORY	MAJORY KAPULAMUNDABALA
MS9662020102520	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,82 82/MORRIS	MORRISON KANSONDE
MS9662020093168	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1789 1789B	WILLIAM SIANDIZYA
MS9662020103773	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,16 / SHAKA	BRIAN SHAKALIMA
MS9662020109488	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,39 / NGOSA	MORGAN NGOSA
MS9662020118694	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,NWAMFUMBA,54 54 / MWEEM	MICHELO MWEEMBA MPOOMA
MS9662020118802	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,MATABULA,164 LAZ	LAZAROUS CHILIMINA
MS9662020100284	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,53	MICHEAL MUMBA
MS9662020106057	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,73 /MULILO	CHARITY MULILO
MS9662020104831	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,226 MIYOBA	CHARITY MIYOBA
MS9662020062177	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,17 /MAPULANGA	PRECIUOS MAPULANGA
MS9662020075640	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,206 206 MICHEI	MICHEAL SHAMPUTA
MS9662020060289	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,101 /MU	M,ARY MUTAMBO
MS9662020069129	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,1635 1635	LILLIAN KALALA MUTINTA
MS9662020085451	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LUNJOFWA,CHIYUNI,26 /32 WALU	INONGE WALUBITA B
MS9662020060509	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHITANDA TURN OFF,OLD MUMBWA - K	JOHN CHABALANKATA
MS9662020093814	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,151 MWINGI	MANTAMBWA MWIINGA
MS9662020061819	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	JENIPHER CHISENGA
MS9662020060154	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,88 /LWEI	PATRICK LWEMBE
MS9662020095049	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,100 ADAM	ADAM MWEETWA
MS9662020062167	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,20 / KAL	JAMES KALIKINI
MS9662020095309	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,220 MUTO	WITIKER MUTOBOLA
MS9662020076455	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,17 ETHELLY	ETHELLY SHABANTU



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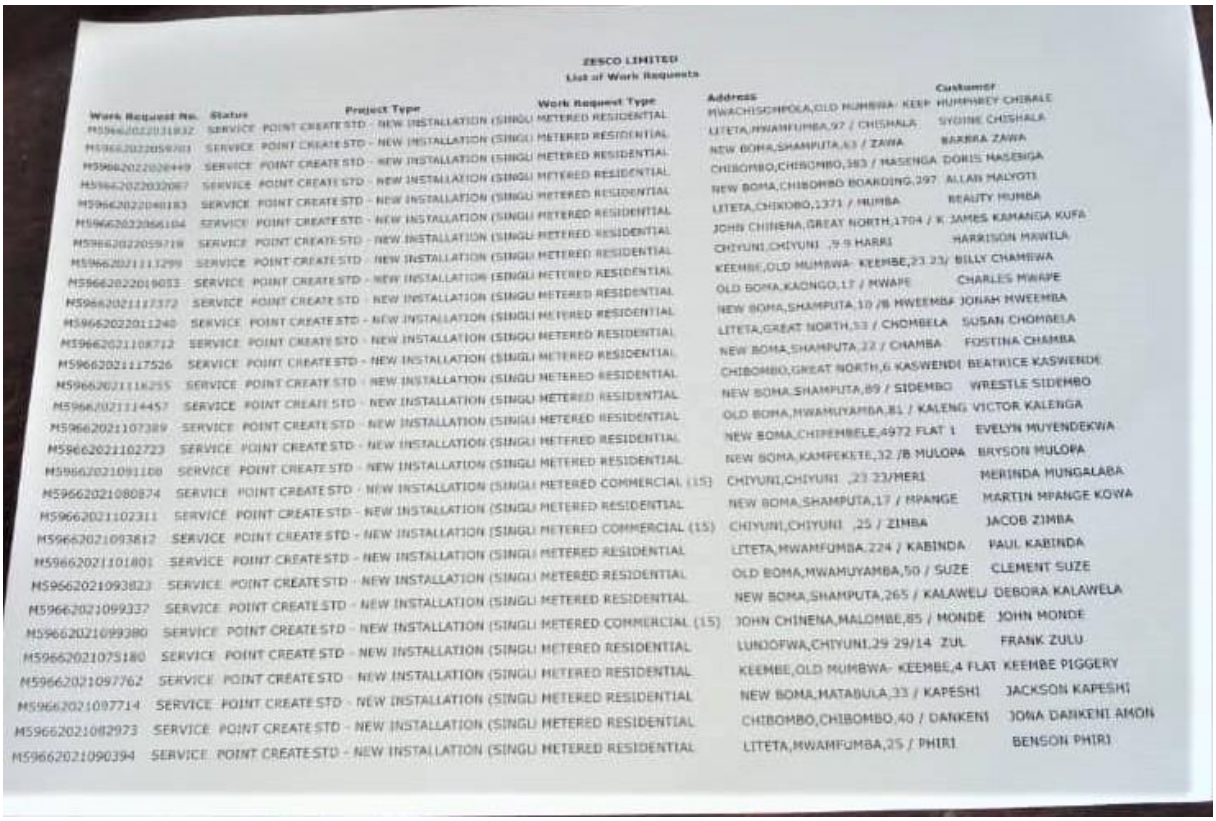
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662021078840	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHU	JAMES CHUNGA
MS9662021060005	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,43 /B MWAN	MARTIN MPANGE KOWA
MS9662021057368	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,11 11 WALLED	WALLED SIMACHILUNDU
MS9662021078674	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHI	JAMES CHUNGA
MS9662021072732	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,585 / LUPUPA	HAWARD LUPUPA
MS9662021051585	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,9 SHO	NOSTRIAH PHIRI
MS9662021046184	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,166 NI	NICHOLAS MWANAKUFWA
MS9662021046877	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEP	STEVEN KASHEWE MAYEMBE
MS9662021049660	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEP	DAY KEEMBE SECONDARY
MS9662021052090	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,9 SEC	ABRAHAM MALAKATA
MS9662021051434	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIBOMBO BOARDING,268	PRIMARY KEEMBE SCHOOL
MS9662021060864	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,1 KEEI	ERNEST BULELI
MS9662020123279	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,452 LELI	NJALUKA MITESHI
MS9662021048787	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,86 NJALUKA	NELSON SHAIBILA
MS9662021014512	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,WELCOME,245 NELSON	NGOSA NYEMBA
MS9662021014121	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,3696 / NYEMBA	NGOSA NYEMBA SICHILIMA M
MS9662020123319	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,CHIBOMBO DAY,1345 A/ KAI	KAPEMBWA SICHILIMA M
MS9662021014428	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,744 FLAT B	KHALZINI MHANGO
MS9662021018004	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA - KEEMBE,749 S	PETRONELLA MWELWA
MS9662021023999	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KAPOPO,OLD MUMBWA - KEEMBE,2717 ZAMANGA	MODRINE ZAMANGA
MS9662021037623	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,2717 ZAMANGA	MICKY TEMBO
MS9662021049596	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,164 MICKY	PHILLIP ZULU
MS9662021031633	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,77 PHILIP	ANNIE CHIPOKOLO
MS9662021037673	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,94 CHIPOKOLO	BEN CHEMBE
MS9662021026607	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,188 /B CHIPEI	DENNIS LUPUPA
MS9662021026866	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,365 LUPUPA	PETER BANDA
MS9662020123956	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,68 65/8/	CHARITY MULILO
MS9662021031741	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,245 MULILO	BREADISTER CHIKULA MTUNGA
MS9662021029081	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,131 MTUNGA	BEATRICE MUMBA
MS9662021014200	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,72 / MUMBA	BONIFACE MASONGO
			METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,39 39 1 (	CHOLWE TEMBO
				NEW BOMA,POLICE,1786 B/ CHOLWE	



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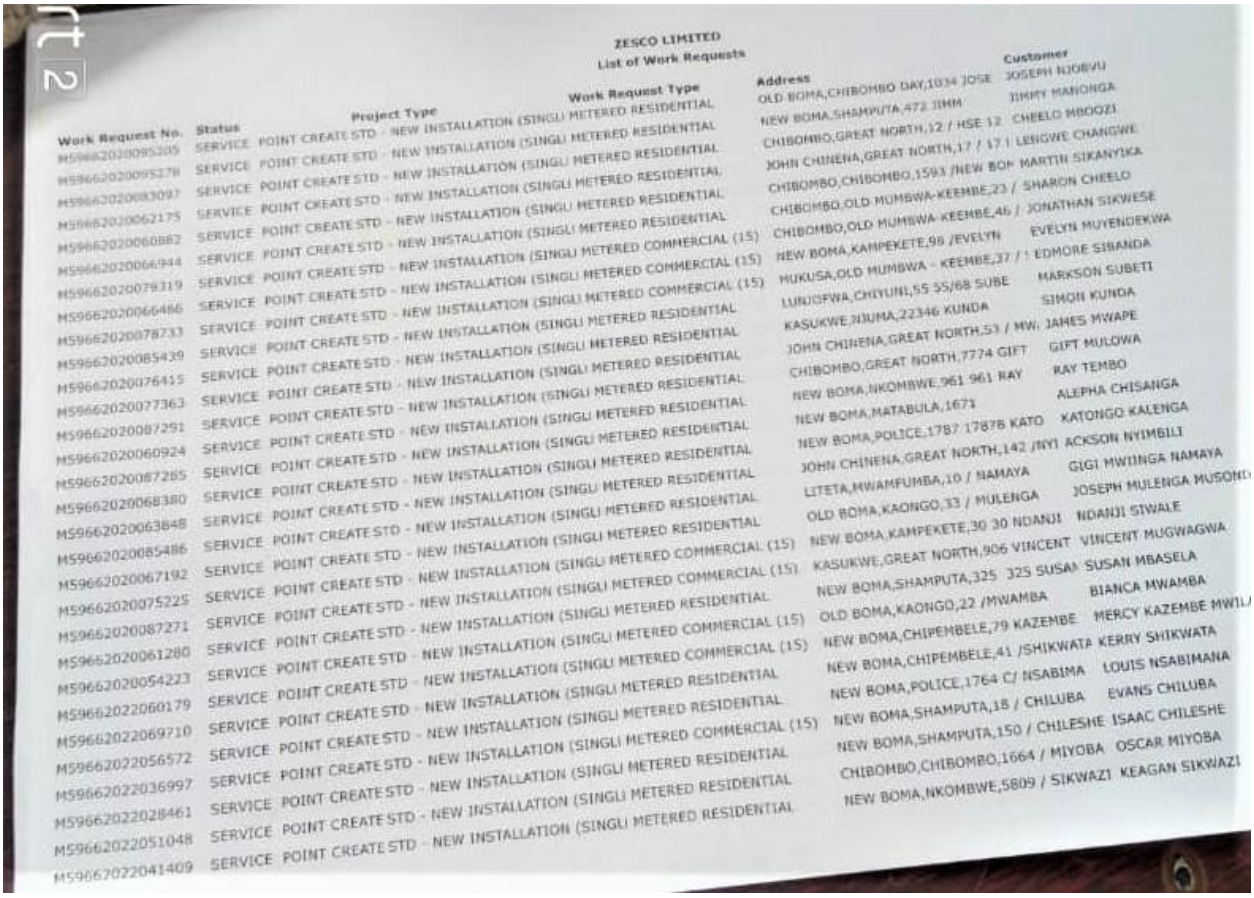
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662022031832	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	HUMPHREY CHISALE
MS9662022059703	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,97 / CHISHALA	SYDINE CHISHALA
MS9662022028449	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,63 / ZAWA	BARBRA ZAWA
MS9662022032067	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,383 / MASENGA	DORIS MASENGA
MS9662022040183	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,297	ALLAN MALYOTI
MS9662022066104	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,1371 / MUMBA	BEAUTY MUMBA
MS9662022059718	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,1704 / K	JAMES KAMANGA KUFA
MS9662021111299	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,9 9 HARRI	HARRISON MWALA
MS9662022019033	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,23 23/	BILLY CHAMBWA
MS9662021117372	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,17 / MWAPE	CHARLES MWAPE
MS9662022011240	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,10 /B MWEEMBA	JONAH MWEEMBA
MS9662021108712	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,53 / CHOMBELA	SUSAN CHOMBELA
MS9662021117526	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,22 / CHAMBA	FOSTINA CHAMBA
MS9662021116255	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,6 KASWENDI	BEATRICE KASWENDE
MS9662021114457	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,89 / SIDEMBO	WRESTLE SIDEMBO
MS9662021107389	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,81 / KALENG	VICTOR KALENGA
MS9662021102723	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,4972 FLAT 1	EVELYN MUYENDEKWA
MS9662021091108	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,32 /B MULOPA	BRYSON MULOPA
MS9662021080874	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,23 23/MERI	MERINDA MUNGALABA
MS9662021102311	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,17 / MPANGE	MARTIN MPANGE KOWA
MS9662021093812	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,25 / ZIMBA	JACOB ZIMBA
MS9662021101801	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,224 / KABINDA	PAUL KABINDA
MS9662021093823	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,50 / SUZE	CLEMENT SUZE
MS9662021099337	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,265 / KALAWELI	DEBORA KALAWELA
MS9662021099380	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,MALOMBE,85 / MONDE	JOHN MONDE
MS9662021075180	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LUNDOFWA,CHIYUNI,29 29/14 ZUL	FRANK ZULU
MS9662021097762	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,4 FLAT	KEEMBE PIGGERY
MS9662021097714	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,33 / KAPESHI	JACKSON KAPESHI
MS9662021082973	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,40 / DANKENI	JONA DANKENI AMON
MS9662021090394	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,25 / PHIRI	BENSON PHIRI



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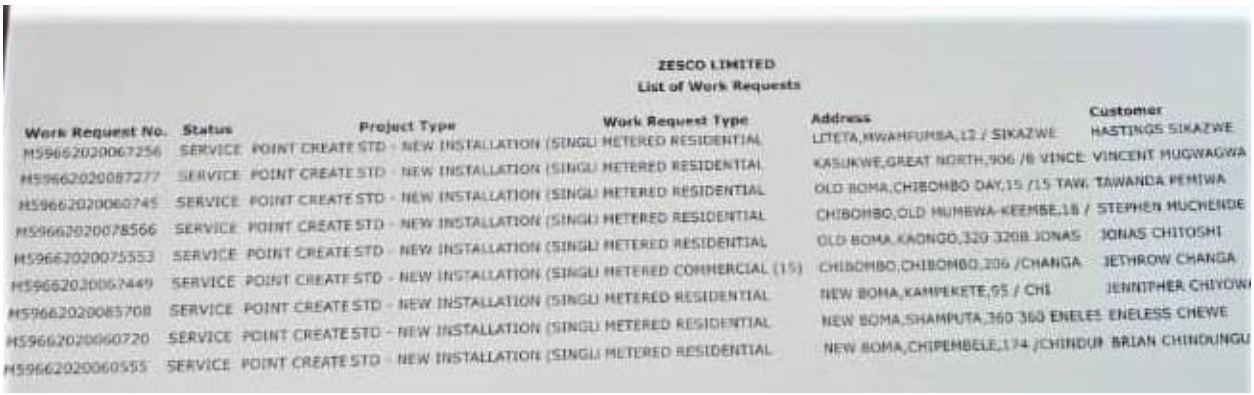
MS9662020095205	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1034 JOSE	JOSEPH NJOBVU
MS9662020095278	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,472 JIMM	JIMMY MANONGA
MS9662020083097	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,12 / HSE 12	CHEELO MBOOZI
MS9662020062175	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,17 / 17 I	LENGWE CHANGWE
MS9662020060882	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,1593 /NEW BOI	MARTIN SIKANYIKA
MS9662020066944	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	CHIBOMBO,OLD MUMBWA-KEEMBE,23 /	SHARON CHEELO
MS9662020079319	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	CHIBOMBO,OLD MUMBWA-KEEMBE,46 /	JONATHAN SIKWESE
MS9662020066486	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	NEW BOMA,KAMPEKETE,98 /EVELYN	EVELYN MUYENDEKWA
MS9662020078733	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	MUKUSA,OLD MUMBWA - KEEMBE,37 / 1	EDMORE SIBANDA
MS9662020085439	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LUNJOFWA,CHIYUNI,55 35/68 SUBE	MARKSON SUBETI
MS9662020076415	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KASUKWE,NJUMA,22346 KUNDA	SIMON KUNDA
MS9662020077363	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,53 / MW	JAMES MWAPE
MS9662020087291	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,7774 GIFT	GIFT MULOWA
MS9662020060924	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,NKOMBWE,961 961 RAY	RAY TEMBO
MS9662020087285	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,MATABULA,1671	ALEPHA CHISANGA
MS9662020068380	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,POLICE,1787 17878 KATO	KATONGO KALENGA
MS9662020063848	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,142 /NYI	ACKSON NYIMBILI
MS9662020085486	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,10 / NAMAYA	GIGI MWIINGA NAMAYA
MS9662020067192	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	OLD BOMA,KAONGO,33 / MULENGA	JOSEPH MULENGA MUSONI
MS9662020075225	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	NEW BOMA,KAMPEKETE,30 30 NDANJI	NDANJI SIWALE
MS9662020087271	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KASUKWE,GREAT NORTH,906 VINCENT	VINCENT MUGWAGWA
MS9662020061280	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	NEW BOMA,SHAMPUTA,325 325 SUSAI	SUSAN MBASELA
MS9662020054223	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	OLD BOMA,KAONGO,22 /MWAMBA	BIANCA MWAMBA
MS9662022060179	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,79 KAZEMBE	MERCY KAZEMBE MWILA
MS9662022069710	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,41 /SHIKWATA	KERRY SHIKWATA
MS9662022056572	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	NEW BOMA,POLICE,1764 C/ NSABIMA	LOUIS NSABIMANA
MS9662022036997	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,18 / CHILUBA	EVANS CHILUBA
MS9662022028461	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,150 / CHILESHE	ISAAC CHILESHE
MS9662022051048	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,1664 / MIYOBA	OSCAR MIYOBA
MS9667022041409	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,NKOMBWE,5809 / SIKWAZI	KEAGAN SIKWAZI



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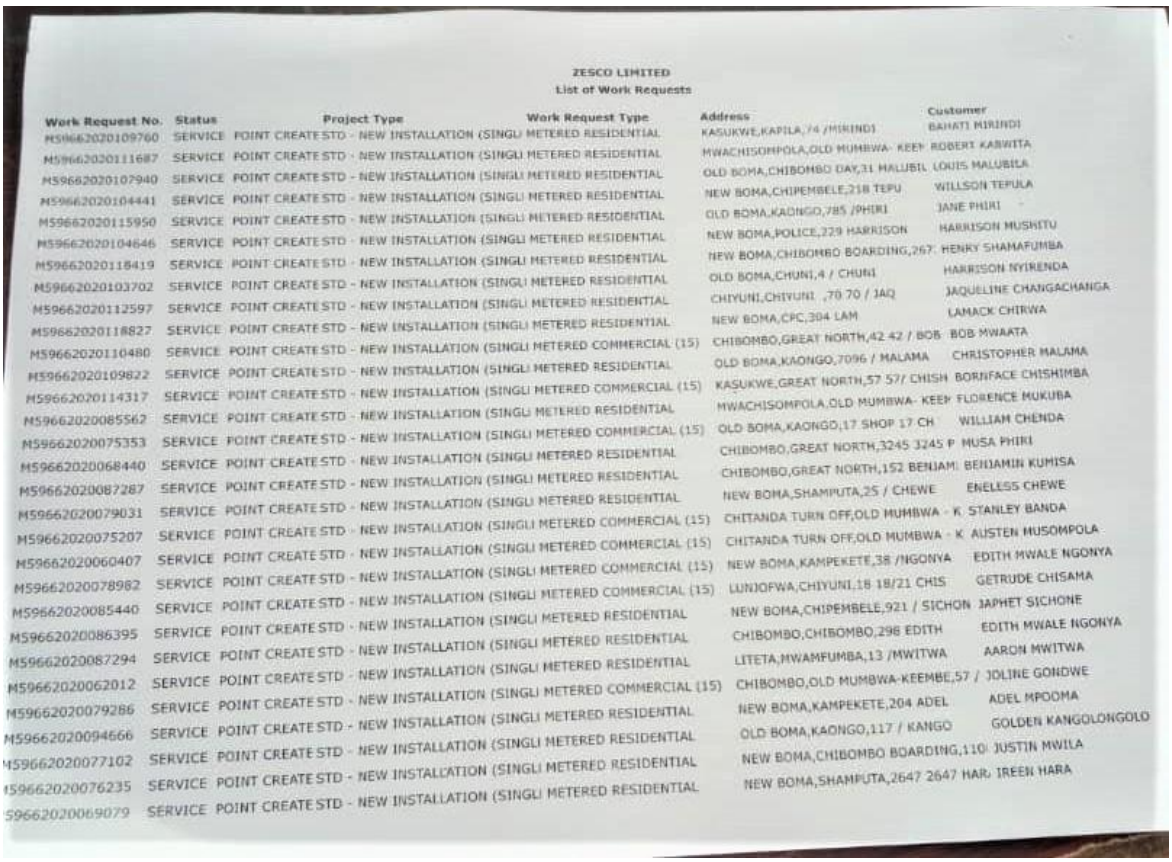
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662020067256	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,12 / SIKAZWE	HASTINGS SIKAZWE
MS9662020087277	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KASUKWE,GREAT NORTH,906 /8 VINCE	VINCENT MUGWAGWA
MS9662020060745	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,15 /15 TAW	TAWANDA PEMIWA
MS9662020078566	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,18 /	STEPHEN MUCHENDE
MS9662020075553	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,KAONGO,320 3208 JONAS	JONAS CHITOSHI
MS9662020067449	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (1S)	CHIBOMBO,CHIBOMBO,206 /CHANGA	JETHROW CHANGA
MS9662020065708	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,95 / CHI	JENNIFHER CHIYOW
MS9662020060720	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,360 360 ENELES	ENELESS CHEWE
MS9662020060555	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,174 /CHINDU	BRIAN CHINDUNGU



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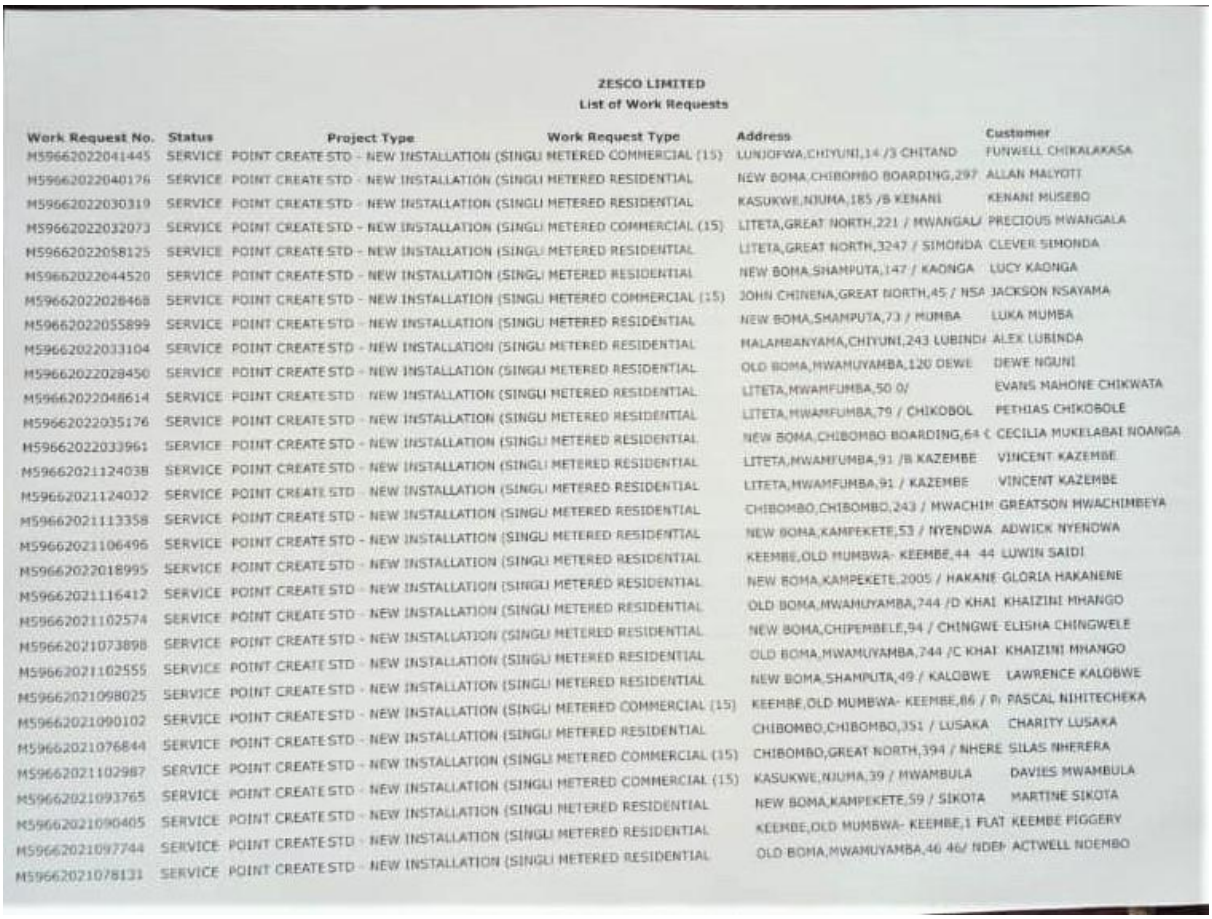
MS9662020109760	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KASUKWE,KAPILA,74 /MIKINDI	BAHATI MIKINDI
MS9662020111687	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	ROBERT KABWITA
MS9662020107940	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,31 MALUBIL	LOUIS MALUBILA
MS9662020104441	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,218 TEPU	WILLSON TEPULA
MS9662020115950	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,KAONGO,785 /PHIRI	JANE PHIRI
MS9662020104646	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,POLICE,229 HARRISON	HARRISON MUSHITU
MS9662020118419	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,267	HENRY SHAMAFUMBA
MS9662020103702	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,CHUNI,4 / CHUNI	HARRISON NYIRENDA
MS9662020112597	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,70 70 / JAQ	JAQUELINE CHANGACHANGA
MS9662020118827	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CPC,304 LAM	LAMACK CHIRWA
MS9662020110480	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,42 42 / BOB	BOB MWAATA
MS9662020109822	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,KAONGO,7096 / MALAMA	CHRISTOPHER MALAMA
MS9662020114317	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,57 57/ CHISH	BORNIFACE CHISHIMBA
MS9662020085562	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	FLORENCE MUKUBA
MS9662020075353	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	OLD BOMA,KAONGO,17 SHOP 17 CH	WILLIAM CHENDA
MS9662020068440	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,3245 3245 P	MUSA PHIRI
MS9662020087287	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,152 BENJAM	BENJAMIN KUMISA
MS9662020079031	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,25 / CHEWE	ENELESS CHEWE
MS9662020075207	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	STANLEY BANDA
MS9662020060407	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	AUSTEN MUSOMPOLA
MS9662020078982	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,38 /NGONYA	EDITH MWALE NGONYA
MS9662020085440	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,18 18/21 CHIS	GETRUDE CHISAMA
MS9662020086395	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,921 / SICHON	JAPHET SICHONE
MS9662020087294	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,298 EDITH	EDITH MWALE NGONYA
MS9662020062012	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,13 /MWITWA	AARON MWITWA
MS9662020079286	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,57 /	JOLINE GONDWE
MS9662020094666	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,204 ADEL	ADEL MPOOMA
MS9662020077102	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,KAONGO,117 / KANGO	GOLDEN KANGOLONGOLO
MS9662020076235	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,110	JUSTIN MWILA
MS9662020069079	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,2647 2647 HAR	IREEN HARA



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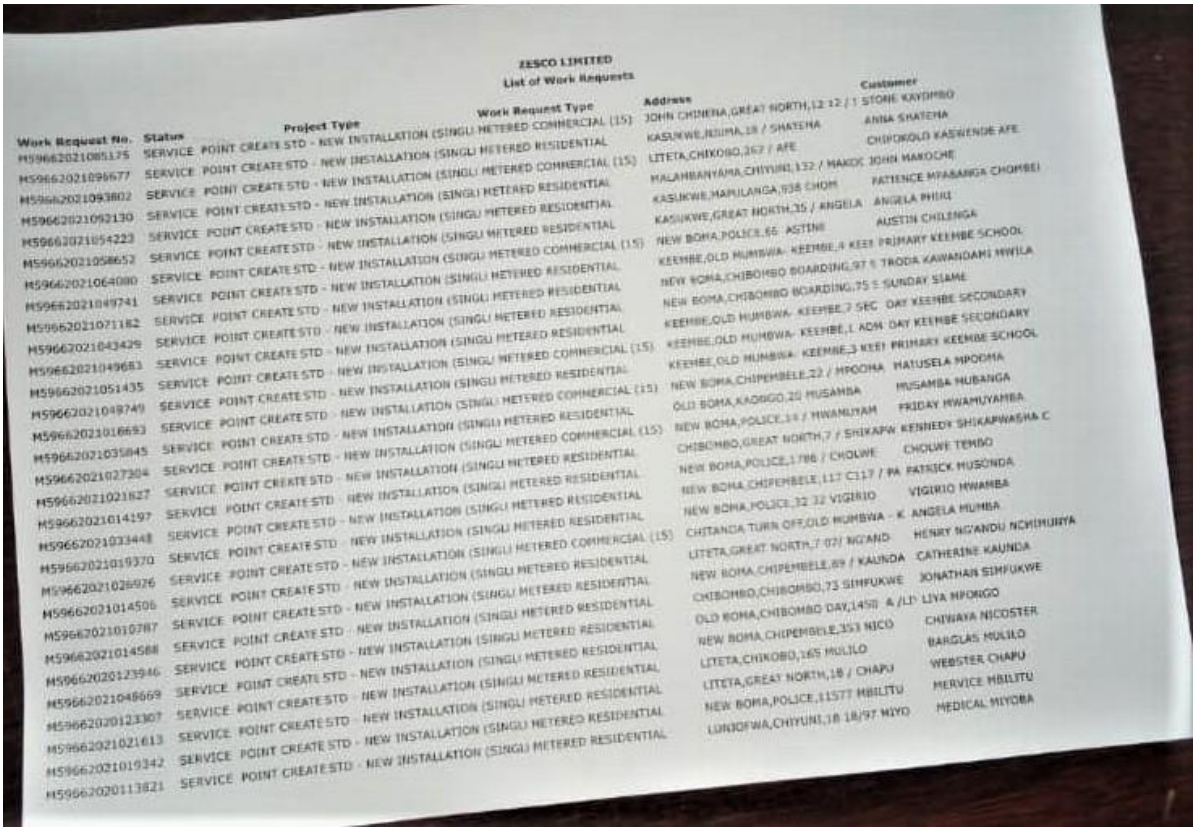
MS9662022041445	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,14 /3 CHITAND	FUNWELL CHIKALAKASA
MS9662022040176	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,297	ALLAN MALYOTT
MS9662022030319	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KASUKWE,NJUMA,185 /B KENANI	KENANI MUSEBO
MS9662022032073	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	LITETA,GREAT NORTH,221 / MWANGALA	PRECIOUS MWANGALA
MS9662022058125	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,GREAT NORTH,3247 / SIMONDA	CLEVER SIMONDA
MS9662022044520	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,147 / KAONGA	LUCY KAONGA
MS9662022028468	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,45 / NSA	JACKSON NSAYAMA
MS9662022055899	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,73 / MUMBA	LUKA MUMBA
MS9662022033104	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	MALAMBANYAMA,CHIYUNI,243 LUBINDA	ALEX LUBINDA
MS9662022028450	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,120 DEWE	DEWE NGUNI
MS9662022048614	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,50 0/	EVANS MAHONE CHIKWATA
MS9662022035176	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,79 / CHIKOBOL	PETHIAS CHIKOBOLE
MS9662022033961	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,64 C	CECILIA MUKELABAI NOANGA
MS9662021124038	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,91 /B KAZEMBE	VINCENT KAZEMBE
MS9662021124032	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	LITETA,MWAMFUMBA,91 / KAZEMBE	VINCENT KAZEMBE
MS9662021113358	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,243 / MWACHIM	GREATSON MWACHIMBEYA
MS9662021106496	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,53 / NYENDWA	ADWICK NYENDWA
MS9662022018995	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,44 44	LUWIN SAIDI
MS9662021116412	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,2005 / HAKANE	GLORIA HAKANENE
MS9662021102574	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,744 /D KHAI	KHAIZINI MHANGO
MS9662021073898	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,94 / CHINGWE	ELISHA CHINGWELE
MS9662021102555	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,744 /C KHAI	KHAIZINI MHANGO
MS9662021098025	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,49 / KALOBWE	LAWRENCE KALOBWE
MS9662021090102	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,86 / P	PASCAL NIHITECHEKA
MS9662021076844	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,351 / LUSAKA	CHARITY LUSAKA
MS9662021102987	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,394 / NHERE	SILAS NHERERA
MS9662021093765	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED COMMERCIAL (15)	KASUKWE,NJUMA,39 / MWAMBULA	DAVIES MWAMBULA
MS9662021090405	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,59 / SIKOTA	MARTINE SIKOTA
MS9662021097744	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,1 FLAT	KEEMBE PIGGERY
MS9662021078131	SERVICE	POINT CREATE STD -	NEW INSTALLATION (SINGLI METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,46 46/ NDEF	ACTWELL NDEMBO



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Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662021085175	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,12 12 / 1	STORE KAYOMBO
MS9662021096677	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,18 / SHATEMA	ANNA SHATEMA
MS9662021093802	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,267 / AFE	CHIPOKOLO KASWENDE AFE
MS9662021092130	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MALAMBANYAMA,CHIYUNI,132 / MAKOC	JOHN MAKOCHE
MS9662021054223	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,MAPULANGA,938 CHOM	PATIENCE MYABANGA CHOMBEI
MS9662021058652	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,35 / ANGELA	ANGELA PHIRI
MS9662021064080	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,65 ASTINI	AUSTIN CHILENGA
MS9662021049741	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,4 KEEI	PRIMARY KEEMBE SCHOOL
MS9662021071182	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,97 S	TRODA KAWANDAMI MWILA
MS9662021043429	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,75 S	SUNDAY SIAME
MS9662021049683	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,7 SEC	DAY KEEMBE SECONDARY
MS9662021051435	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,1 ADM	DAY KEEMBE SECONDARY
MS9662021049749	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,3 KEEI	PRIMARY KEEMBE SCHOOL
MS9662021016693	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,22 / MPOOMA	MATUSELA MPOOMA
MS9662021035845	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,20 MUSAMBA	MUSAMBA MUBANGA
MS9662021027304	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,14 / MWANUYAM	FRIDAY MWAMUYAMBA
MS9662021021827	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,7 / SHIKAPW	KENNEDY SHIKAPWASHA C
MS9662021014197	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1786 / CHOLWE	CHOLWE TEMBO
MS9662021033448	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,117 C117 / PA	PATSICK MUSONDA
MS9662021019370	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,32 32 VIGIRIO	VIGIRIO MWAMBA
MS9662021026926	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHITANDA TURN OFF,OLD MUMBWA - K	ANGELA MUMBA
MS9662021014506	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,7 07/ NG'AND	HENRY NG'ANDU NCHIMUNYA
MS9662021010787	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,89 / KAUNDA	CATHERINE KAUNDA
MS9662021014588	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,73 SIMFUKWE	JONATHAN SIMFUKWE
MS9662020123946	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1450 & /LI'	LIYA MPONGO
MS9662021048669	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,353 NICO	CHIWAYA NICOSTER
MS9662020123307	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,165 MULILO	BARGLAS MULILO
MS9662021021613	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,18 / CHAPU	WEBSTER CHAPU
MS9662021019342	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,11577 MBILITU	MERVICE MBILITU
MS9662020113821	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LUNJOFWA,CHIYUNI,18 18/97 MIYO	MEDICAL MIYOBA

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MS9662020118004	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEI	NDIHO ENTERPRISES LTD
MS9662020104462	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,258 MATA	TRUDE MATABISHI
MS9662020113213	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,284 NELLY	NELLY MWAANGA MIYANDA
MS9662020117678	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,85 85/KASO	STEPHEN KASOSOLO
MS9662020101982	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,8 /LINA	LINA SHANANG'OMBE
MS9662020102105	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,34 / BWALYA	BENANDETT BWALYA
MS9662020113609	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,37 / TAWANI	TAWANDA PEMIWA
MS9662020110803	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,20 / CHIPEMBE	ISAAC CHIPEMBELE
MS9662020103405	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,6 GIVEN	GIVEN HAGWAMUNA VOSTA
MS9662020104660	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,147 /147 KALEN	DISHON KALENGA
MS9662020109840	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,614 / NC	KENNEDY NGOMA
MS9662020098371	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,83 SHOP 83 PH	CLIFF PHIRI
MS9662020118846	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,KAPILA,226 FELIX	FELIX BANDA
MS9662020113467	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,36 /A TAWAI	TAWANDA PEMIWA
MS9662020108800	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,916 JOSE	JOSEPH ANUSA
MS9662020093138	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,101 ROY	ROY KAMBILA
MS9662020106258	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,227 PAMELA	PAMELA CHOONGO
MS9662020102862	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,251 HACH	OWEN MALILWE H
MS9662020090165	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,824 FLORENC	FLORENCE KABWE
MS9662020109347	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,29 /	MATIYA KABANGU
MS9662020090185	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,824 FLORENC	FLORENCE KABWE
MS9662020113478	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,36 /C TAWAI	TAWANDA PEMIWA
MS9662020093286	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,184 DOROTHY	DOROTHY MUMBELUNGA
MS9662020110954	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MALAMBANYAMA,CHIYUNI,12 / KATEMB	DOCTOR KATEMBA KUNDA
MS9662020104562	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,290 HENRY	HENRY MAFUKA
MS9662020109470	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KALEBUKA,CHIYUNI,34 / NGOBOLA	PETRONELLA NGOBOLA
MS9662020067302	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,560 /REAZONEY	REAZONEY MUSHUKILENI
MS9662020079010	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,15 / CHEWE	ENELESS CHEWE
MS9662020068870	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,28 28 ANNA	ANNA KATAKULA
MS9662020063872	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,145 / NY	ACKSON NYIMBILI

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MS9662020061940	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	PAUL KATENTELE
MS9662020078472	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,744 / MHANK	KHAIZINI MHANGO
MS9662020085742	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,173 CHIB/173	WILLY ZULU
MS9662020060956	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,311 311 STELLA	STELLA HAMALEKA
MS9662020078706	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,26 26 AMARD	AMARD MAKUMBULA
MS9662020096015	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,5 / 5 KASUBA	EMMANUEL KASUBA
MS9662020068191	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1154 1154 I	BOYD MUDENDA MUMBA
MS9662020061222	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1555 1555B KALU	ESTHER KALUBA
MS9662020095340	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,219 MOSES	MOSES NG'ANDWE
MS9662020094658	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,212 CLARA	CLARA CHINGUMA
MS9662020076232	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,541 CHI	BORNFACE CHISHIMBA
MS9662020060957	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,13 / CHALIMBA	ANDREW CHALIMBA
MS9662020075328	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,9510 9510 AUDI	AUDITER HAMUCHILA
MS9662020064646	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,47 /47A	HELLEN SIMANGO
MS9662020064449	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,21 /BANI	FANNELI BANDA
MS9662020060374	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	JOSEPH SHIBUYUNJI MAYBIN
MS9662020094655	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,966 CHARLES	CHARLES SAKALA
MS9662020062184	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,64 / NDOWEN	SINEYI NDOWENI
MS9662020063144	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,65 / SIA	MADON SIAME
MS9662020066847	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEP	RICHARD CHISASA
MS9662020079574	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,89 / CHITILA	BENSON CHITILA
MS9662020083104	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,14 HSE 14	KENNY KAMBEU
MS9662020061354	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,67 /CHIL	ABRAHAM CHIBUYE
MS9662020078681	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,20 / CHIMUNI	RICHARD CHIMUNIKA
MS9662020061076	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1666 /ELIYA	ELIYA MWEWA
MS9662020079384	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,71 / MUL	PAMELA MULELA
MS9662020077986	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,62 /ZULU	SAULOS ZULU
MS9662020060615	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,201 201 JACOB	JACOB SIMFUKWE SILOMBA
MS9662020065838	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,12 / SIMOOME	TRUST SIMOOMBA
MS9662020063997	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,1484 33640/	JAPHET CHITILA

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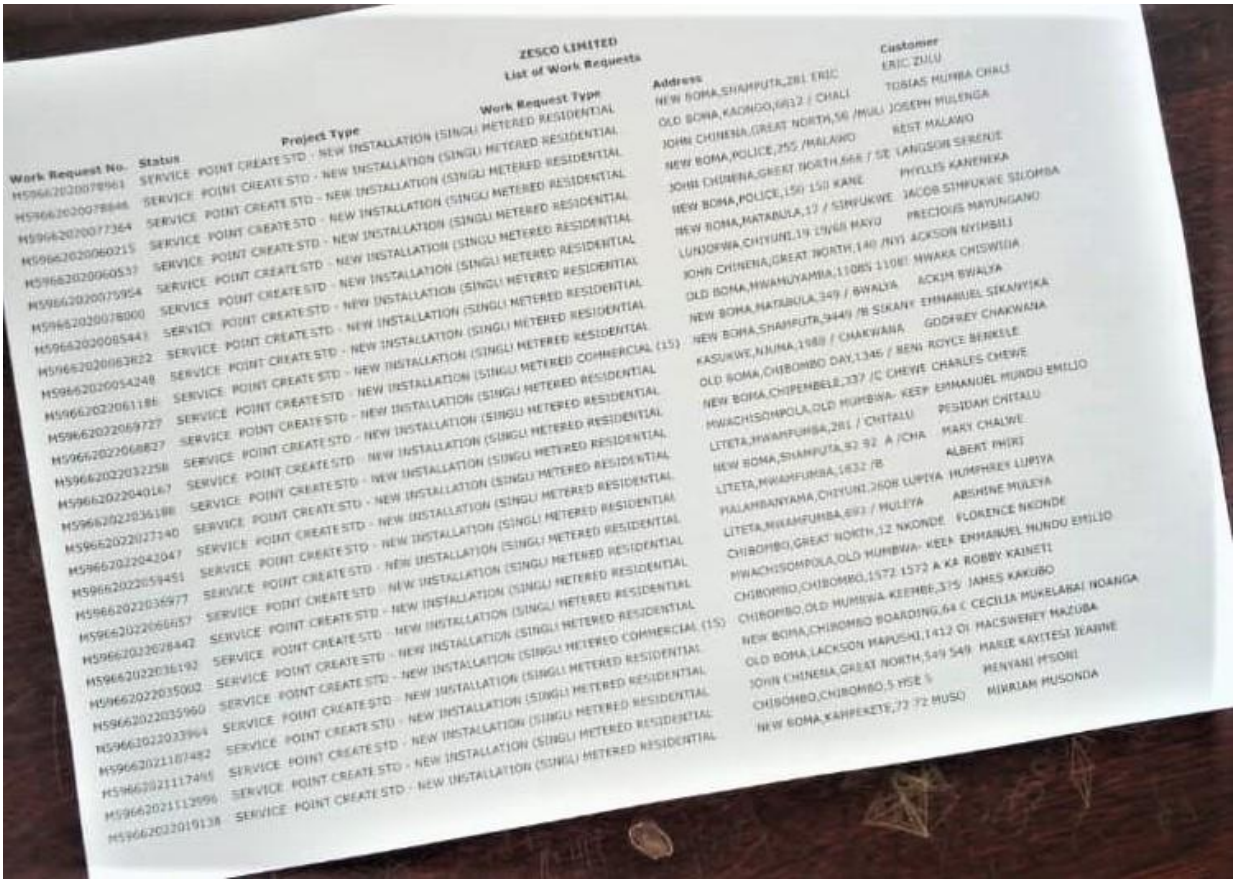
MS9662021106822	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,4996 / HANSI	MILDRED HANSI
MS9662021105397	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,211	FELIX MANG'WATO
MS9662020011726	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,918 / CHISALE	VERNON CHISALE
MS9662021098815	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,347 / CHILONG	GOSHEN CHILONGO
MS9662021096142	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,72 / CHISOKO	PRIDE CHISOKO
MS9662021098473	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,169 MULOPA	BRISSON MULOPA
MS9662021097775	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,5 FLAT	KEEMBE PIGGERY
MS9662021077838	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,KAPISA,5077 / CHIYASSA	BRIAN CHIYASSA
MS9662023102287	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,661 / KAPENGW	DARIUS KAPENGWE
MS9662021077824	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,89 MWEETWA	MARGARET MWEETWA
MS9662021081050	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,52 52/FEBBY	GIBSON SERENJE FEBBY
MS9662021077847	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,KAPISA,139 / ASAFU	ASAFU SIBUNIMBA
MS9662021057402	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,96 / CHIPUMA	PAMELA CHIPUMA
MS9662021060306	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,211 SHOP	CHARLES CHEWE
MS9662021078818	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHI	JAMES CHUNGA
MS9662021052998	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHITANDA,CHIYUNI,331 LUMB	LUMBEYA MANEX
MS9662020123191	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	PASCALINA SOMPWE
MS9662020123287	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,286 CECI	CECILIA KALUNGA
MS9662021021772	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,95 95 ESTHER	ESTHER MULENGA
MS9662021021975	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,192 MUKA	MUKANDO KINGFREY MICHELO
MS9662021027833	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,13 / KAPOPO	PRECIOUS KAPOPO
MS9662021019385	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,161 / KANGABU	ROYD KANGABALA
MS9662021024481	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1113 PHIRI	EMMANUEL PHIRI
MS9662021019383	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,23 / CHILUBA	EVANS CHILUBA
MS9662021014457	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,38 38/NTEMBWA	DALIUS NTEMBWA
MS9662020104821	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEP	HARRISON MUSOPELO
MS9662020115951	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,496 / NGULUBE	ESTHER NGULUBE
MS9662020091224	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,25 / MULANDA	TIMOTHY MULANDA
MS9662020102224	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,28 / MWALE	EDITH MWALE NGONYA
MS9662020118435	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,72 72/BRILLIA	CHINYAMA NG'ANDU BRILLIANT



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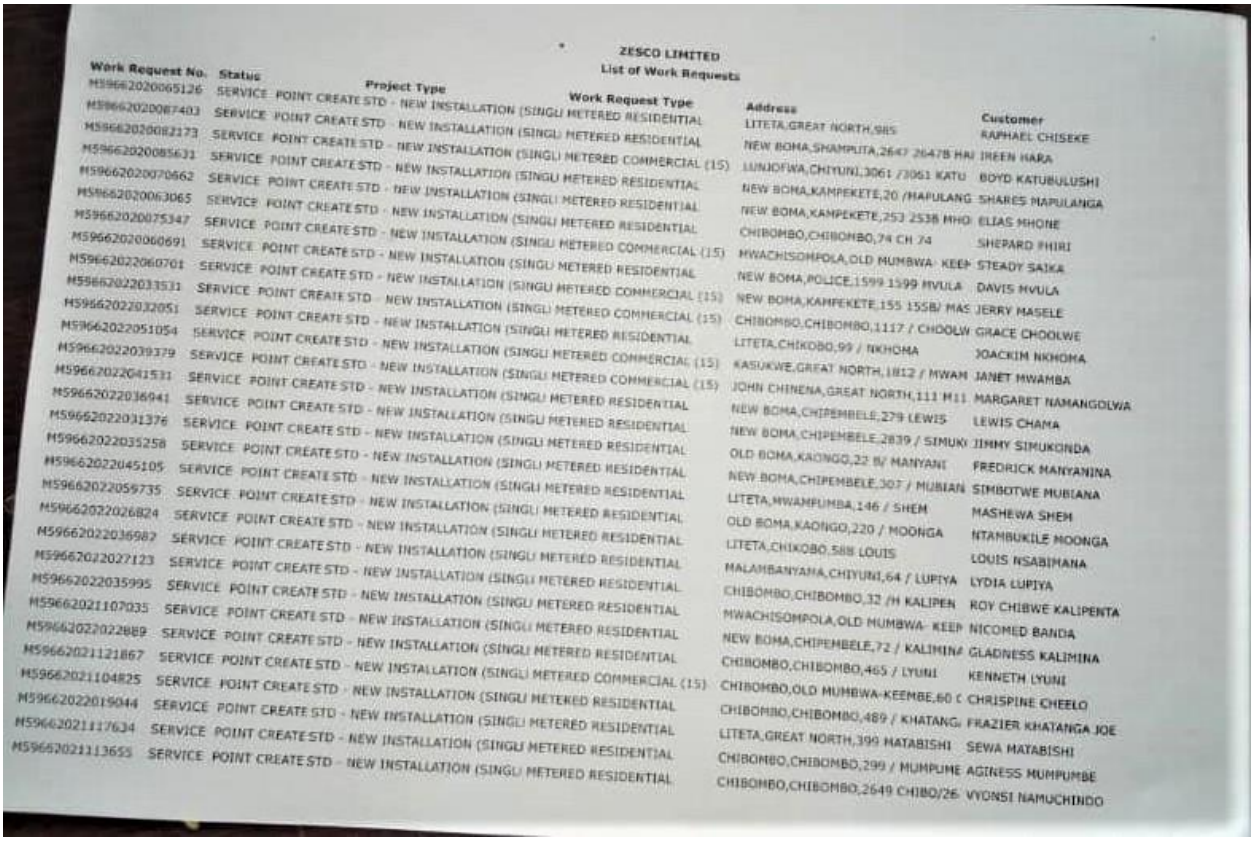
MS9662020078961	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,281 ERIC	ERIC ZULU
MS9662020078846	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,6812 / CHALI	TOBIAS MUMBA CHALI
MS9662020077364	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,56 /MULI	JOSEPH MULENGA
MS9662020066215	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,255 /MALAWO	REST MALAWO
MS9662020060537	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,666 / SE	LANGSON SERENJE
MS9662020075954	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,150 150 KANE	PHYLLIS KANENEKA
MS9662020078000	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,17 / SINYUKWE	JACOB SINYUKWE SILOMBA
MS9662020085441	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LUNJOFWA,CHIYUNI,19 19/68 MAYU	PRECIOUS MAYUNGANO
MS9662020063822	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,140 /NYI	ACKSON NYIMBILI
MS9662020054248	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,11085 1108	MWAKA CHISWISA
MS9662022061186	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,349 / 8WALYA	ACKIM 8WALYA
MS9662022069727	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,9449 /8 SIKANY	EMMANUEL SIKANYIKA
MS9662022066827	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUNA,1980 / CHAKWANA	GODFREY CHAKWANA
MS9662022032258	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1345 / BENI	ROYCE BENKELE
MS9662022040167	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,337 /C CHEWE	CHARLES CHEWE
MS9662022036188	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EMMANUEL MUNDU EMILIO
MS9662022027140	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,281 / CHITALU	PESIDAH CHITALU
MS9662022042047	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,92 92 A /CHA	MARY CHALWE
MS9662022059451	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,1632 /8	ALBERT PHIRI
MS9662022036977	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MALAMBANYAMA,CHIYUNI,2608 LUPIYA	HUMPHREY LUPIYA
MS9662022066457	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,693 / MULEYA	ABSHINE MULEYA
MS9662022028442	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,12 NKONDE	FLORENCE NKONDE
MS9662022036192	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	EMMANUEL MUNDU EMILIO
MS9662022035002	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,1572 1572 A KA	ROBBY KAINETI
MS9662022035960	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA KEEMBE,375	JAMES KAKUBO
MS9662022033964	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIBOMBO BOARDING,64 C	CECILIA MUKELABAI NOANGA
MS9662022107482	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,LACKSON MAPUSHI,1412 OI	MACSWENEY MAZUBA
MS9662022117495	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,549 549	MARIE KAYITESI JEANNE
MS9662022112996	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHISOMBO,CHIBOMBO,5 HSE 5	MENYANI MSOBI
MS9662022019138	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,72 72 MUSO	MIRRIAM MUSONDA



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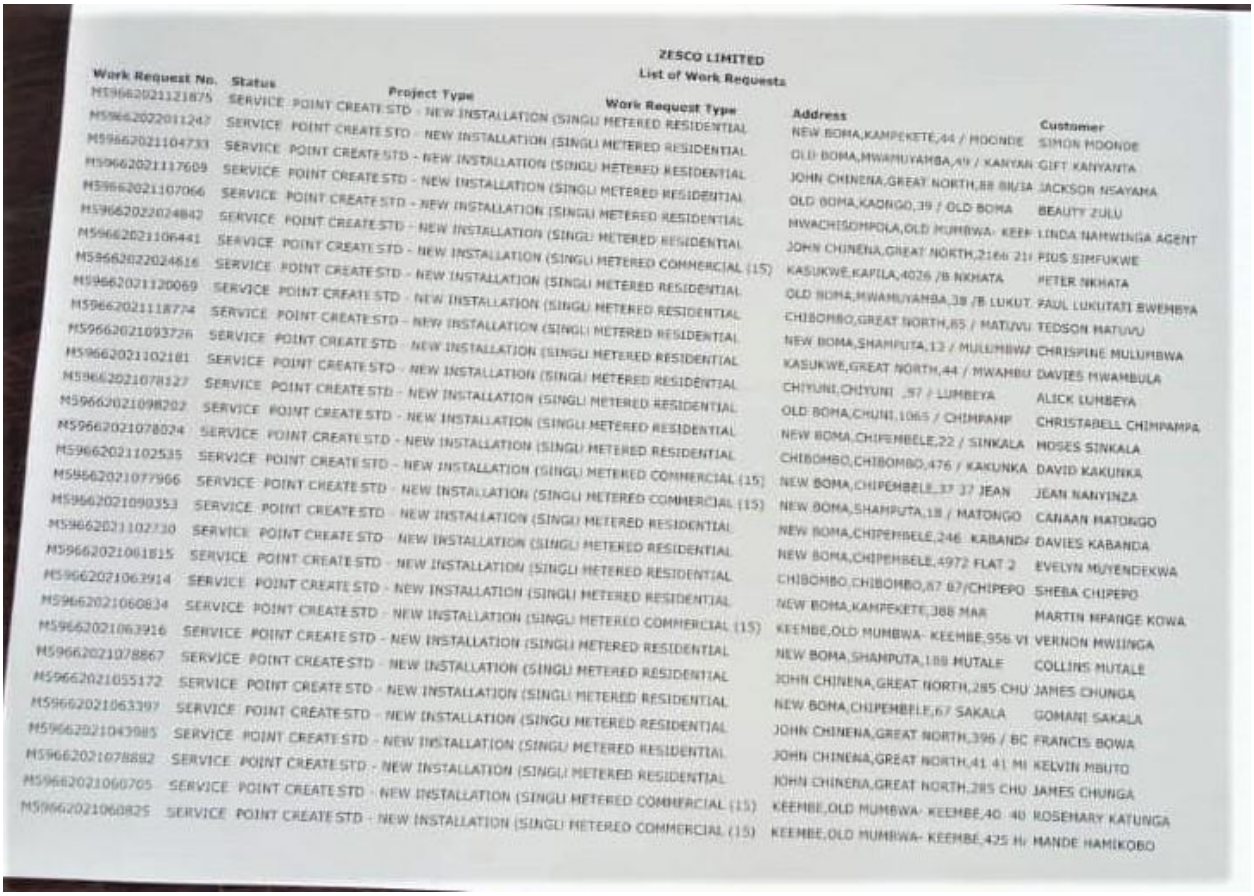
MS9662020065126	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,985	RAPHAEL CHISEKE
MS9662020087403	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,2647 2647B HA	IREEN HARA
MS9662020082173	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,3061 /3061 KATU	BOYD KATUBULUSHI
MS9662020085631	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,20 /MAPULANG	SHARES MAPULANGA
MS9662020070662	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,253 2538 MHO	ELIAS MHONE
MS9662020063065	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,74 CH 74	SHEPARD PHIRI
MS9662020075347	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	STEADY SAIKA
MS9662020060691	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,1599 1599 MVULA	DAVIS MVULA
MS9662022060701	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,155 155B/ MAS	JERRY MASELE
MS9662022033531	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,1117 / CHOOLW	GRACE CHOOLWE
MS9662022032051	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,99 / NKHOMA	JOACKIM NKHOMA
MS9662022051054	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,1812 / MWAN	JANET MWAMBA
MS9662022039379	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,111 M11	MARGARET NAMANGOLWA
MS9662022041531	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,279 LEWIS	LEWIS CHAMA
MS9662022036941	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,2839 / SIMUK	JIMMY SIMUKONDA
MS9662022031376	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,22 8/ MANYANI	FREDRICK MANYANINA
MS9662022035258	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,307 / MUBIAN	SIMBOTWE MUBIANA
MS9662022045105	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,146 / SHEM	MASHEWA SHEM
MS9662022059735	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,220 / MOONGA	NTAMBUKILE MOONGA
MS9662022026824	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,588 LOUIS	LOUIS NSABIMANA
MS9662022036982	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MALAMBANYAMA,CHIYUNI,64 / LUPIYA	LYDIA LUPIYA
MS9662022027123	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,32 /H KALIPEN	ROY CHIBWE KALIPENTA
MS9662022035995	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	NICOMED BANDA
MS9662021107035	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,72 / KALIMINA	GLADNESS KALIMINA
MS9662022022889	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,465 / LYUNI	KENNETH LYUNI
MS9662021121867	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,60 C	CHRISPINE CHEELO
MS9662021104825	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,489 / KHATANG	FRAZIER KHATANGA JOE
MS9662022019044	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,399 MATABISHI	SEWA MATABISHI
MS9662021117634	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,299 / MUMPUME	AGNESS MUMPUMBE
MS9662021113655	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,2649 CHIBO/26	VYONSI NAMUCHINDO



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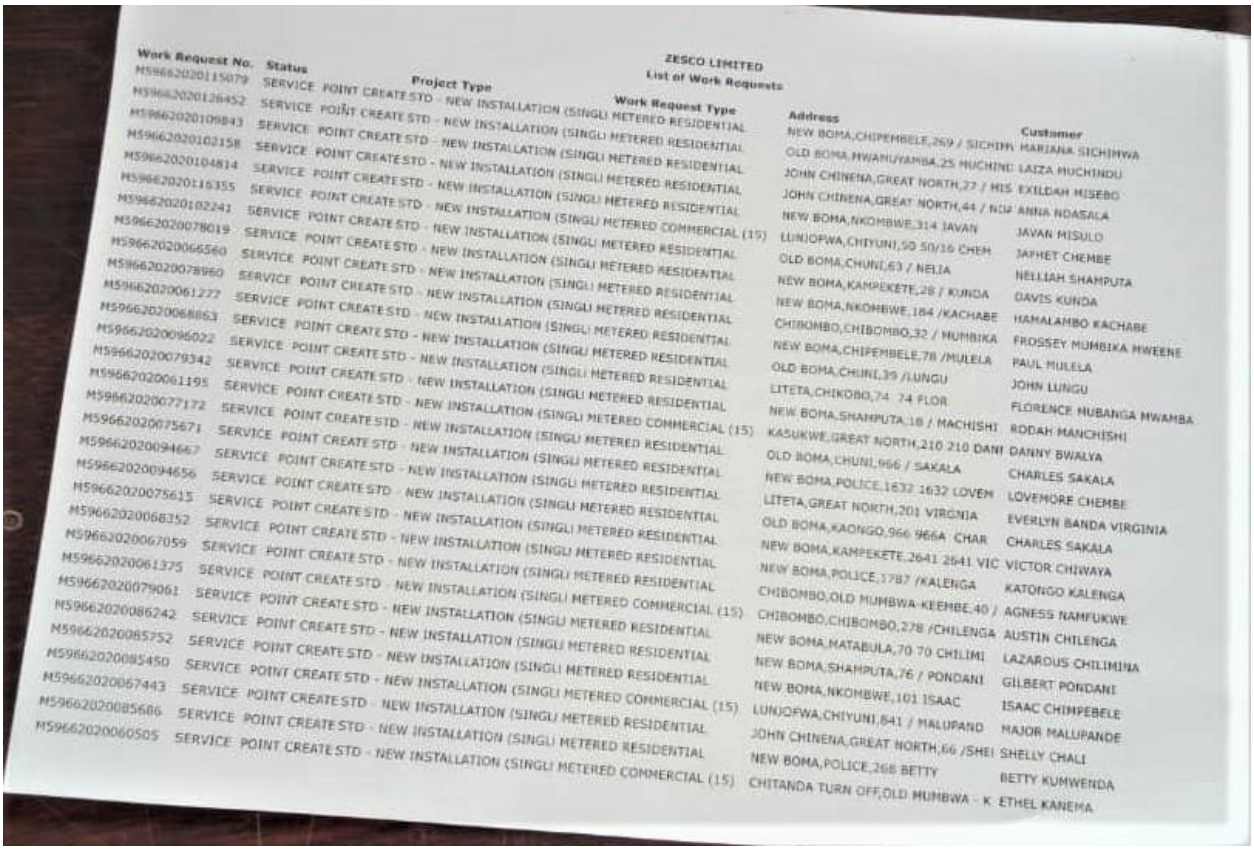
MS9662021121875	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,44 / MOONDE	SIMON MOONDE
MS9662022011247	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,49 / KANYAN	GIFT KANYANTA
MS9662021104733	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,88 SIA	JACKSON NSAYAMA
MS9662021117609	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,39 / OLD BOMA	BEAUTY ZULU
MS9662021107066	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEP	LINDA NAMWINGA AGENT
MS9662022024842	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,2166 21	PIUS SIMFUKWE
MS9662021106441	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,KAPILA,4026 /B NKHATA	PETER NKHATA
MS9662022024616	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,38 /B LUKUT	PAUL LUKUTATI SWEMBYA
MS9662021120069	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHISOMBO,GREAT NORTH,85 / MATUVU	TEDSON MATUVU
MS9662021118774	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,13 / MULUMBWA	CHRISPINE MULUMBWA
MS9662021093726	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,44 / MWAMBU	DAVIES MWAMBULA
MS9662021102181	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,97 / LUMBEYA	ALICK LUMBEYA
MS9662021078127	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,1065 / CHIMPAMP	CHRISTABELL CHIMPAMPA
MS9662021098202	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,22 / SINKALA	MOSES SINKALA
MS9662021078024	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,476 / KAKUNKA	DAVID KAKUNKA
MS9662021102535	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,37 37 JEAN	JEAN NANYINZA
MS9662021077966	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,18 / MATONGO	CANAAN MATONGO
MS9662021090353	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,246 KABANDA	DAVIES KABANDA
MS9662021102730	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,4972 FLAT 2	EVELYN MUYENDEKWA
MS9662021061815	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,87 87/CHIPEPO	SHEBA CHIPEPO
MS9662021063914	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,388 MAR	MARTIN MPANGE KOWA
MS9662021060834	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,956 VI	VERNON MWIINGA
MS9662021063916	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,188 MUTALE	COLLINS MUTALE
MS9662021078867	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHU	JAMES CHUNGA
MS9662021055172	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,67 SAKALA	GOMANI SAKALA
MS9662021063397	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,396 / BC	FRANCIS BOWA
MS9662021043985	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,41 41 MI	KELVIN MBUTO
MS9662021078882	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,285 CHU	JAMES CHUNGA
MS9662021060705	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,40 40	ROSEMARY KATUNGA
MS9662021060825	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,425 H	MANDE HAMIKOBO



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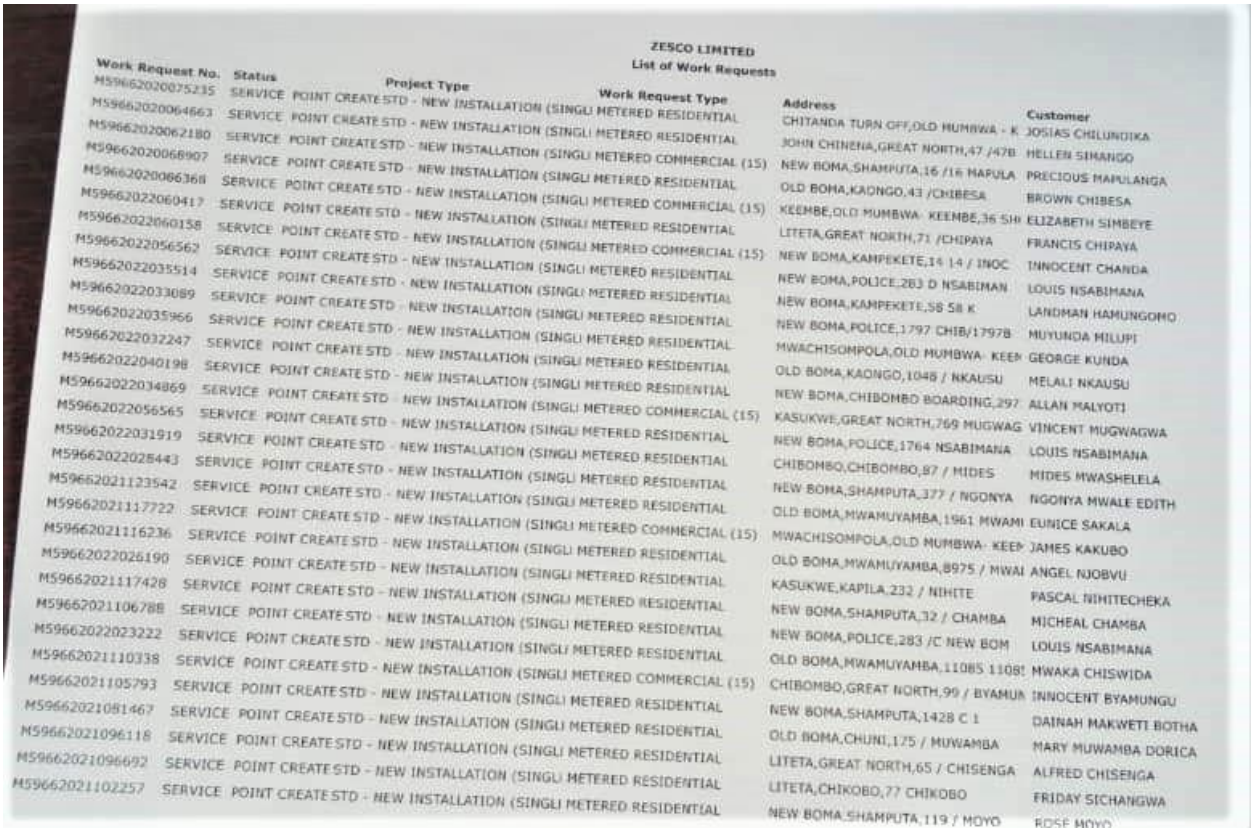
MS9662020115079	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,269 / SICHIM	MARIANA SICHIMWA
MS9662020126452	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,25 MUCHINU	LAIZA MUCHINDU
MS9662020109843	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,27 / MIS	EXILDAH MISEBO
MS9662020102158	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,44 / NDA	ANNA NDASALA
MS9662020104814	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,314 JAVAN	JAVAN MISULO
MS9662020116355	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,50 50/16 CHEM	JAPHET CHEMBE
MS9662020102241	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,63 / NELIA	NELLIAH SHAMPUTA
MS9662020078019	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,28 / KUNDA	DAVIS KUNDA
MS9662020066560	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,184 /KACHABE	HAMALAMBO KACHABE
MS9662020078960	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,32 / MUMBIKA	FROSSEY MUMBIKA MWEENE
MS9662020061277	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,78 /MULELA	PAUL MULELA
MS9662020068863	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,39 /LUNGU	JOHN LUNGU
MS9662020096022	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,74 74 FLOR	FLORENCE MUBANGA MWAMBA
MS9662020079342	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,18 / MACHISHI	RODAH MANCHISHI
MS9662020061195	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,210 210 DANI	DANNY BWALYA
MS9662020077172	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,966 / SAKALA	CHARLES SAKALA
MS9662020075671	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1632 1632 LOVEM	LOVEMORE CHEMBE
MS9662020094667	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,201 VIRGNIA	EVERLYN BANDA VIRGINIA
MS9662020094656	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,966 966A CHAR	CHARLES SAKALA
MS9662020075615	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,2641 2641 VIC	VICTOR CHIWAYA
MS9662020068352	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1787 /KALENGA	KATONGO KALENGA
MS9662020067059	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,40 /	AGNESS NAMFUKWE
MS9662020061375	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,CHIBOMBO,278 /CHILENGA	AUSTIN CHILENGA
MS9662020079061	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,MATABULA,70 70 CHILIMI	LAZARDUS CHILIMINA
MS9662020086242	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,76 / PONDANI	GILBERT PONDANI
MS9662020085752	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,101 ISAAC	ISAAC CHIMPEBELE
MS9662020085450	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,841 / MALUPAND	HAJOR MALUPANDE
MS9662020067443	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,66 /SHEI	SHELLY CHALI
MS9662020085686	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,268 BETTY	BETTY KUMWENDA
MS9662020060505	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHITANDA TURN OFF,OLD MUMBWA - K	ETHEL KANEMA



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Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662020075235	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHITANDA TURN OFF,OLD MUMBWA - K	JOSIAS CHILUNDIKA
MS9662020064663	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,47 /47B	HELLEN SIMANGO
MS9662020062180	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,SHAMPUTA,16 /16 MAPULA	PRECIOUS MAPULANGA
MS9662020068907	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,43 /CHIBESA	BROWN CHIBESA
MS9662020066368	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,36 SH	ELIZABETH SIMBEYE
MS9662022060417	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,71 /CHIPAYA	FRANCIS CHIPAYA
MS9662022060158	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,KAMPEKETE,14 14 / INOC	INNOCENT CHANDA
MS9662022056562	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,283 D NSABIMAN	LOUIS NSABIMANA
MS9662022035514	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,58 58 K	LANDMAN HAMUNGOMO
MS9662022033089	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1797 CHIB/1797B	MUYUNDA MILUPI
MS9662022035966	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEM	GEORGE KUNDA
MS9662022032247	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,1048 / NKAUSU	MELALI NKAUSU
MS9662022040198	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,297	ALLAN MALYOTI
MS9662022034869	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KASUKWE,GREAT NORTH,769 MUGWAG	VINCENT MUGWAGWA
MS9662022056565	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,1764 NSABIMANA	LOUIS NSABIMANA
MS9662022031919	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,87 / MIDES	MIDES MWASHELELA
MS9662022028443	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,377 / NGONYA	NGONYA MWALE EDITH
MS9662021123542	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,1961 MWAMI	EUNICE SAKALA
MS9662021117722	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEM	JAMES KAKUBO
MS9662021116236	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,8975 / MWAI	ANGEL NJOBVU
MS9662022026190	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,KAPILA,232 / NIHITE	PASCAL NIHITECHEKA
MS9662021117428	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,32 / CHAMBA	MICHEAL CHAMBA
MS9662021106788	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,283 /C NEW BOM	LOUIS NSABIMANA
MS9662022023222	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,11085 1108!	MWAKA CHISWIDA
MS9662021110338	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,99 / BYAMUN	INNOCENT BYAMUNGU
MS9662021105793	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,1428 C 1	DAINAH MAKWETI BOTHA
MS9662021081467	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHUNI,175 / MUWAMBA	MARY MUWAMBA DORICA
MS9662021096118	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,65 / CHISENGA	ALFRED CHISENGA
MS9662021096692	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,77 CHIKOBO	FRIDAY SICHANGWA
MS9662021102257	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,119 / MOYO	ROSE MOYO

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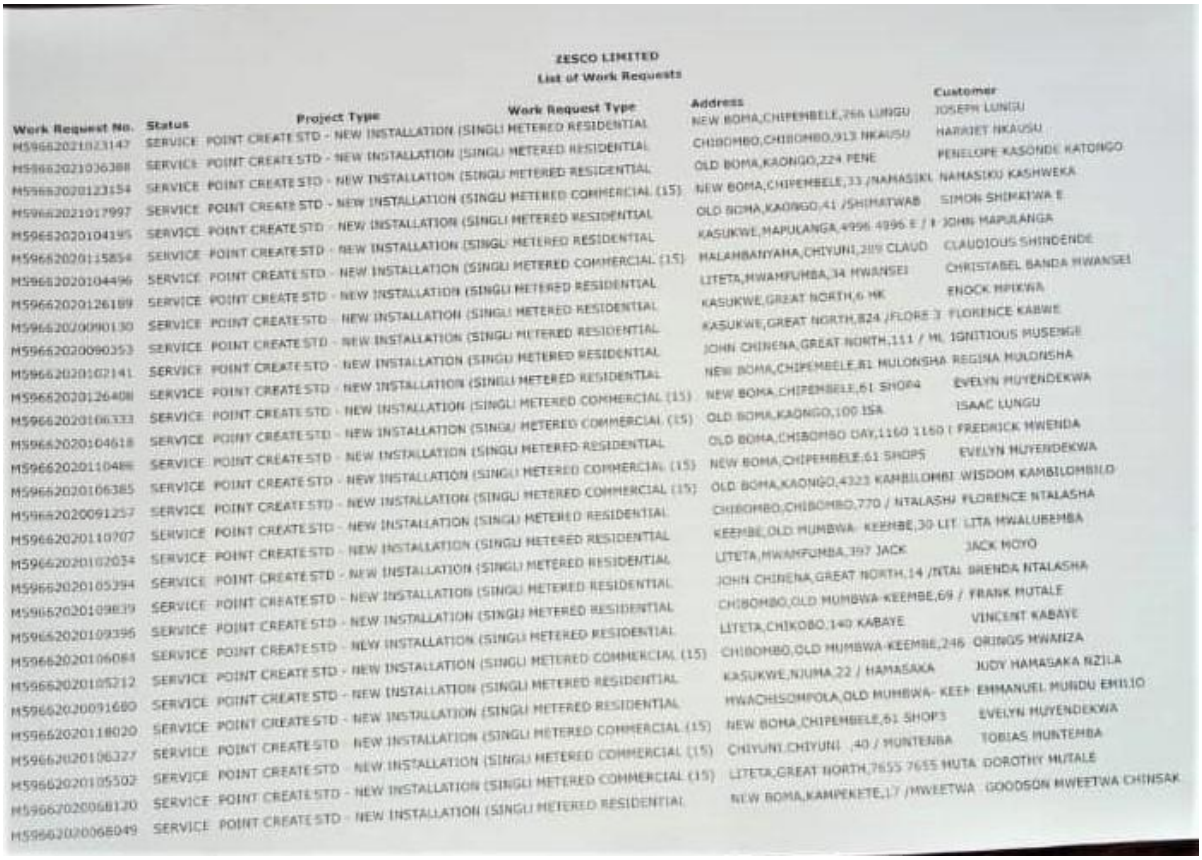
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662022035267	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,WELCOME,33 / KACHINGW	BOBBY KACHINGWE
MS9662022031289	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,23 22 & MANYA	FREDRICK MANYANINA
MS9662022059292	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,628 / MILANDU	PATRICK MILANDU SUMBSON
MS9662022039360	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,1714 31	MADON SIAME
MS9662022042075	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,5665 / KABETO	KENNEDY KABETO
MS9662022036986	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,848 / BANDA	SOFT BANDA
MS9662022010388	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,66 / MUBANGA	EUGEN MUBANGA
MS9662021116387	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,MWAMUYAMBA,1335 / SALIL	SALIWE TAGWIREYI
MS9662021108381	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,1278 / KAONGO	SANDRA MWENYA
MS9662021112807	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,POLICE,254 /B NG'ANDW	VASILIO NG'ANDWE
MS9662021117505	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,741 741	MOYO KINGSLEY
MS9662022023214	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,263	SILVIA PALALE KALINDA
MS9662021090746	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,35 KACHOMBA	CHIWALA KACHOMBA
MS9662021092090	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,42b / BUNGA	AUGUSTINE BUNGA
MS9662021085176	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,9 9/KENI	KENNEDY CHINENA
MS9662021085178	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,76 C/9	TALIZYENI NYANDWE
MS9662021085177	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	JOHN CHINENA,GREAT NORTH,13 13/KI	KENNEDY CHINENA
MS9662021075304	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,33 33/8 CHIKA	MAYBIN CHIKANA
MS9662021099187	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,WELCOME,51 / KATAMBI	LARRY KATAMBI MULOFWA
MS9662021102206	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIYUNI,CHIYUNI ,13 / KAMUSASA	BIGBOY KAMUSASA
MS9662021073996	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,67 / LAISHI	LAISHI MULILWA
MS9662021103359	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,107 /C MATONK	SHADRECK MATONGO
MS9662021056919	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	KEEMBE,OLD MUMBWA- KEEMBE,328 C1	CHARITY TEMBO
MS9662021053155	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	MWACHISOMPOLA,OLD MUMBWA- KEEM	DONALD NYELETI
MS9662021071203	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,673 / MABBENI	VICTOR MABENA
MS9662021063131	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,SOUMA,44 / MULAMATA	GIFT MULAMATA
MS9662021049770	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,13 KEI	PRIMARY KEEMBE SCHOOL
MS9662021058219	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,265 HAMB	MAMBEPA CHISENGA
MS9662021064885	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,97 MUMBOLE	KENNEDY MUNGOLE
MS9662021064594	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,504 HAM	MAMBEPA CHISENGA



ZESCO LIMITED
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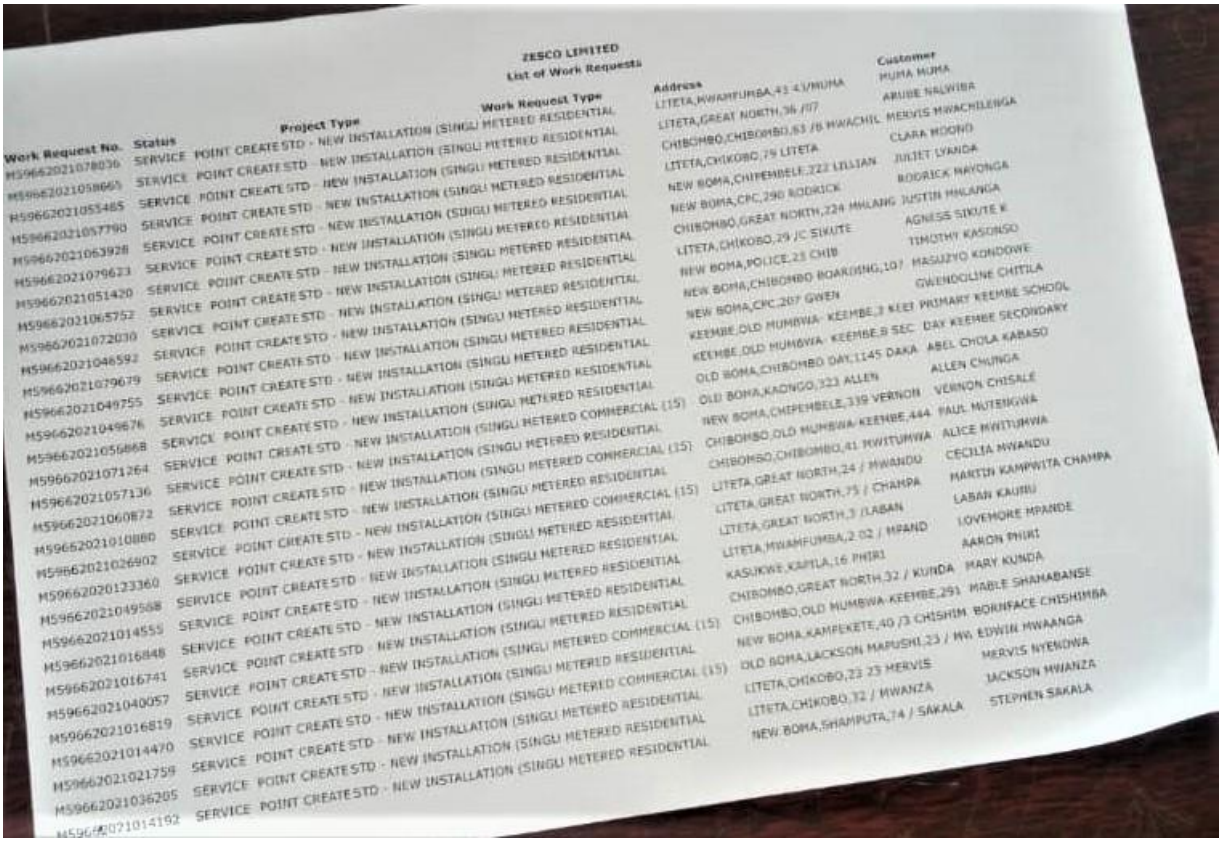
Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662021023147	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,266 LUNGU	JOSEPH LUNGU
MS9662021036388	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,913 NKAUSU	HARRIET NKAUSU
MS9662020123154	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,224 PENE	PENELOPE KASONDE KATONGO
MS9662021017997	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,33 /NAMASIKU	NAMASIKU KASHWEKA
MS9662020104195	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,41 /SHIMATWAB	SIMON SHIMATWA E
MS9662020115854	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,MAPULANGA,4996 4996 E / K	JOHN MAPULANGA
MS9662020104496	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MALAMBANYAMA,CHIYUNI,209 CLAUD	CLAUDIOUS SHINDENDE
MS9662020126189	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,34 MWANSEI	CHRISTABEL BANDA MWANSEI
MS9662020090130	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,6 MK	ENOCK MPIKWA
MS9662020090353	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,GREAT NORTH,824 /FLORE 3	FLORENCE KABWE
MS9662020102141	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,111 / MI	IGNITIOUS MUSENGE
MS9662020126408	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,81 MULONSHA	REGINA MULONSHA
MS9662020106333	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,61 SHOP4	EVELYN MUYENDEKWA
MS9662020104618	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,100 ISA	ISAAC LUNGU
MS9662020110486	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,CHIBOMBO DAY,1160 1160 I	FREDRICK MWENDA
MS9662020106385	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,61 SHOPS	EVELYN MUYENDEKWA
MS9662020091257	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,KAONGO,4323 KAMBILOMBI	WISDOM KAMBILOMBILO
MS9662020110707	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,770 / NTALASHI	FLORENCE NTALASHA
MS9662020102034	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,30 LIT	LITA HWALUBEMBA
MS9662020105394	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,397 JACK	JACK MOYO
MS9662020109839	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	JOHN CHIRENA,GREAT NORTH,14 /NTAL	BRENDA NTALASHA
MS9662020109396	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,69 /	FRANK MUTALE
MS9662020106084	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,CHIKOBO,140 KABAYE	VINCENT KABAYE
MS9662020105212	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,246	ORINGS MWANZA
MS9662020091680	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,NJUMA,22 / HAMASAKA	JUDY HAMASAKA NZILA
MS9662020118020	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEM	EMMANUEL MUNDU EMILIO
MS9662020106327	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,61 SHOP3	EVELYN MUYENDEKWA
MS9662020105502	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIYUNI,CHIYUNI ,40 / MUNTEMBA	TOBIAS MUNTEMBA
MS9662020068120	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,7655 7655 MUTA	DOROTHY MUTALE
MS9662020068049	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,17 /MWEETWA	GOODSON MWEETWA CHINSAK



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Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662021078036	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,43 43/MUMA	MUMA MUMA
MS9662021058665	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,36 /07	ARUBE NALWIBA
MS9662021055485	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,83 /8 MWACHIL	MERVIS MWACHILENGA
MS9662021057790	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,79 LITETA	CLARA MOONO
MS9662021063928	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,222 LILLIAN	JULIET LYANDA
MS9662021079623	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CPC,290 RODRICK	RODRICK MAYONGA
MS9662021051420	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,224 MWANG	JUSTIN MWANGA
MS9662021065752	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,29 /C SIKUTE	AGNESS SIKUTE K
MS9662021072030	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,POLICE,23 CHIB	TIMOTHY KASONSO
MS9662021046592	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIBOMBO BOARDING,107	MASUZYO KONDOWE
MS9662021079679	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CPC,207 GWEN	GWENDOLINE CHITILA
MS9662021049755	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,3 KEEI	PRIMARY KEEMBE SCHOOL
MS9662021049676	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,8 SEC	DAY KEEMBE SECONDARY
MS9662021065868	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	OLD BOMA,CHIBOMBO DAY,1145 DAKA	ABEL CHOLA KABASO
MS9662021071264	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,KAONGO,323 ALLEN	ALLEN CHUNGA
MS9662021057136	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	NEW BOMA,CHIPEMBELE,339 VERNON	VERNON CHISALE
MS9662021060872	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,CHIPEMBELE,444 PAUL	PAUL MUTEKIKWA
MS9662021010880	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,41	ALICE MWITUMWA
MS9662021026902	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,41 MWITUMWA	CECILIA MWANDU
MS9662020123360	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,24 / MWANDU	MARTIN KAMPWITA CHAMPA
MS9662021049588	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,GREAT NORTH,75 / CHAMPA	LABAN KAUMU
MS9662021014555	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	LITETA,GREAT NORTH,3 /LABAN	LOVEMORE MPANDE
MS9662021016848	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,MWAMFUMBA,2 02 / MPAND	AARON PHIRI
MS9662021016741	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	KASUKWE,KAPILA,16 PHIRI	MARY KUNDA
MS9662021040057	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,32 / KUNDA	MABLE SHAHABANSE
MS9662021016819	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED COMMERCIAL (15)	CHIBOMBO,OLD MUMBWA-KEEMBE,291	BONIFACE CHISHIMBA
MS9662021014470	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,40 /3 CHISHIM	EDWIN MWAANGA
MS9662021021759	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	OLD BOMA,LACKSON MAPUSHI,23 / MW	MERVIS NYENGWA
MS9662021036205	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,23 23 MERVIS	JACKSON MWANZA
MS9662021014192	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGL	METERED RESIDENTIAL	LITETA,CHIKOBO,32 / MWANZA	STEPHEN SAKALA
				NEW BOMA,SHAMPUTA,74 / SAKALA	

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Work Request No.	Status	Project Type	Work Request Type	Address	Customer
MS9662020079262	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,9 / 1	NOSTER HAMBATA
MS9662020066965	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,24 /	SELINA KAPUTI
MS9662020060170	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,100 /NO.	MIRRIAM NDALAMA
MS9662020060188	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,POLICE,1616 /SAKU	ISAAC SAKUBANSA
MS9662020067335	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,25 /MUMBIKA	GELHORN MUMBIKA
MS9662020067031	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA-KEEMBE,106	BENJAMIN MAKUMBA
MS9662020078032	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,CHIFEMBELE,24 /MULENGA	GRACE MULENGA
MS9662020060839	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,NKOMBWE,247 247 SHANG	HARRY SHANGALA
MS9662020060953	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,CHIBOMBO,77 /77 CHIBUT	FLORENCE CHIBUTA KABW
MS9662020075650	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	OLD BOMA,KAONGO,290 290 ROSINA	ROSINA MUMA
MS9662020068932	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,6116 6116 B	BODWIN MANASE KAPALU
MS9662020083089	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,15 / HSE 15	ELIDAH MWEEMBA
MS9662020060696	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,21 /21	MERITY HABWACHA
MS9662020082193	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,7 7/30 SIMWI	GERSHOM SIMWINGA
MS9662020087281	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	OLD BOMA,CHUNI,18 A	BITILESI MOYO
MS9662020085453	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,30 /44 SIMWIN	GERSHOM SIMWINGA
MS9662020076490	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	CHIBOMBO,GREAT NORTH,2 CHAMBA	MICHEAL CHAMBA
MS9662020063179	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,SHAMPUTA,7 / KAZEMBE	MERCY KAZEMBE MWILA
MS9662020085617	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,KAMPEKETE,19 / MAPULANC	SHARES MAPULANGA
MS9662020070693	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,OLD MUMBWA KEEMBE,36 /	SAMAHAN SIMUSOKWE
MS9662020060544	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	JOHN CHINENA,GREAT NORTH,91 / BOV	FRANCIS BOWA
MS9662020066579	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	MWACHISOMPOLA,OLD MUMBWA- KEEM	CRISPIN CHEELU
MS9662020078445	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,MWAMFUMBA,44 / MUSAKA	MAGRET MUSAKU
MS9662020070606	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	CHIBOMBO,GREAT NORTH,9338 9338A	GRACE BANDA
MS9662020078775	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	LITETA,CHIKOBO,100 / TEMBO	JOHN TEMBO
MS9662020078435	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	KEEMBE,OLD MUMBWA- KEEMBE,21 / M	VINCENT MPOSWA
MS9662022060392	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,MATABULA,2847 / CHILESH	INNOCENT CHILESHE
MS9662022065271	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED COMMERCIAL (15)	LUNJOFWA,CHIYUNI,483 / LUMPANGA	GEOFFREY KAMPANGALA
MS9662022042000	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	OLD BOMA,KAONGO,6263 / KAONGO	VAILET MWANAMUSULWE
MS9662022035276	SERVICE	POINT CREATE STD - NEW INSTALLATION (SINGLI	METERED RESIDENTIAL	NEW BOMA,POLICE,2 2 PASCALI	PASCALE MUSONDA

APPENDIX 3: Research Questionnaire and Interview Guide

RESEARCH QUESTIONNAIRE

UNIVERSITY of LUSAKA

SCHOOL OF POSTGRADUATE STUDIES

INTRODUCTION

Dear Respondent,

RE: "Analysis of Connection Fee Subsidies on Rural Electrification Projects in Zambia: Case of Chibombo District",

I am a post-graduate student at the University of Lusaka pursuing a Master's Degree in Project Management. As a school requirement, I am undertaking a research study in fulfilment of the award of the Master's Degree.

The purpose of this study is to analyze the connection fee subsidy on the electrification of rural areas with respect to Chibombo district. It seeks to investigate what bearing the connection fee subsidy has had on the rate of rural electrification and the sustainability of rural electrification programs to meet the set rural electrification targets by 2030.

Therefore, this research strives to answer this question by conducting an analysis of the relationship between the connection fee subsidies and the electrification of rural areas with a focus on the Chibombo district where the Electricity Service Access Project (ESAP) offering connection fee subsidies is under implementation. Thereafter, a rural electrification sustainability framework is to be developed to influence and inform policy interventions in the electricity sub-sector with regard to the sustainability of rural electrification in Zambia.

Therefore, you have been selected to participate in this academic survey. Kindly fill in the enclosed questionnaire by answering the questions as honestly and completely as possible. Kindly rest assured that this research is purely academic and your responses and all information given will be treated with the highest confidentiality.

For any queries or challenges observed kindly do not hesitate to forward them to my email address: mflokay@gmail.com or cell phone number on 0974-348097.

Thank you in advance for your valuable support.

Yours Faithfully,

Florence Kambikambi.

If you agree to participate in this study, kindly tick the "**Agreed**" box and proceed with the questionnaire. Otherwise, tick the "**Disagreed**" box.

Agreed [ ] Disagreed [ ]

PART A – RESPONDENT'S PERSONAL INFORMATION

1. What is your gender?

   Male [ ] Female [ ] Other [ ]

2. What is your age range?

   Below 30 [ ] Between 30 and 40 [ ] Between 40 and 50 [ ] Above 50 [ ]

3. What is the major source of your income?

   Employment [ ] Business [ ] Farming [ ] Other [ ]

4. What is your highest academic qualification?
   Primary [ ] Secondary [ ] Tertiary [ ]

5. How much is your monthly income?

   Below K, 1000 [ ] Between K1, 000 and K5, 000 above K5, 000 [ ]

1. PART B – HOUSEHOLD/SMALL SCALE ENTERPRISE INFORMATION ON RURAL ELECTRIFICATION AND CONNECTION FEE SUBSIDY.

As a resident/business operator/person with some know-how on rural electrification in Chibombo district, kindly provide feedback on the following statement by indicating(X) where appropriate.

- **To review the cost elements for electricity connection in the Chibombo district;**

No.	Statement	Natural	Agree	Strongly agree	Disagree	Strongly disagree
1B	Zesco Limited has sensitized you on what comprises the connection fee for electricity					
2B	Rural electrification connection fees are high					

3B	High connection costs reduce connection demand					
4B	Lower connection fees can improve access to electricity					
5B	The current electricity cost needs to be reduced to increase the number of household connection					

- **To assess the capacity of Households/SMEs to pay for Electricity Connection**.

N0.	**Statement**	**K250-K500**	**K1000-1500**	**K2000-K2500**
6B	Which of the following cost range of connection fees is affordable to you?			
7B	What source of energy for cooking would you rather use as opposed to electricity due to cost of connection?	**Firewood**	**Charcoal**	**Biogas/LPG**
8B	What source of energy for lighting would you rather use as opposed to electricity due to cost of connection?	**Kerosene lamp**	**Candles**	**Solar lamp**

9B. In your opinion which of the following do you think makes people in rural areas fail to have access to electricity?

	Statement	**Agree**	**Strongly agree**	**Neutral**	**Disagree**	**Strongly Disagree**
9B.1	Poverty levels					
9B.2	Distance from grid connection					
9B.3	Negative attitude					
9B.4	Poor benefit sensitization					
9B.5	High connection cost					

10.B As a beneficiary of the connection fee subsidy, what do you use the electricity you have on?

	Statement	**Agree**	**Strongly agree**	**Neutral**	**Disagree**	**Strongly Disagree**
10B.1	Only lighting					
10B.2	Cooking & lighting					
10B.3	Refrigeration only					
10B.4	Refrigeration and lighting					
10B.5	Lighting,cooking,refrigeration					

- **To investigate the number of households and Small and Medium Enterprises (SMEs) connected to the national grid via the ESAP Project in Chibombo district;**

11B. Subsidized rural electricity projects are thought to have benefited a lot of households and ensured that most people are given chance to have access through lower connection fees as the project mandate. As a direct/indirect beneficially, do you think the ESAP (Electricity Access Project) is really a benefit to the rural population?

Yes [ ] No [ ] Not Sure [ ]

12B. Please rate the extent to which you agree or disagree with the statements on subsidized rural electrification offered by the ESAP project.

No.	Statement	**Agree**	**Strongly agree**	**Disagree**	**Strongly Disagree**	**Neutral**
12B.1	Improved willingness to pay for connection					
12B.2	At least 5 households you know have benefited from the connection fee subsidy					
12B.3	Atleast 1-3 Small Scale businesses have benefited from the connection fee subsidy					
12B.4	Improved social status of people in the communities					
12B.5	Improved grades for school going children being able to study at night					
12B.6	Increased business opportunities					

13B To what extent do you agree connection fee subsidy has influenced the following aspects of electricity

No.	**Statement**	**No Extent**	**Low Extent**	**Moderate**	**Great Extent**	**Very Great Extent**
13B.1	Cost of electricity connection					

13B.2	Your income level					

14B.Do you think the current provision of connection fee Subsidy is adequate?

Yes [ ] No [ ] Not Sure [ ]

15 B. Please rate to what extent you agree with the sustainability of connection fee subsidy in supporting rural electrification projects in your community.

No.	Statement	Agree	Strongly Agree	Neutral	Disagree	Strongly disagree
15B.1	Effective in increasing connections and sustainable consumption levels					
15B. 2	Effective in increasing connections but consumption levels are unsustainably low					
15B.3	Not adequate to cater for all parts of the community hence access remains low					
15B.4	Non-effective and unsustainable					

- **To develop a Sustainability framework for the critical success factors for the implementation and sustainability of rural electrification in the Chibombo district.**

16B what do you think should be done to sustainably increase the electricity connections of households and SMEs in the Chibombo District?

No.	Statements	Agree	Strongly agree	Neutral	Disagree	Strongly Disagree
16B.1	Economic sustainability via increased subsidy support and less costly connection materials to lower connection cost.					
16B.2	Social-cultural sustainability via and community participation					
16B.3	Environmental sustainability via consistent sensitization on both benefits and effects of electrification on the environment					
16B.4	Institutional sustainability via policy reforms and legislation and Mutual cooperation among the Rural electricity authority, ZESCO, and Ministry of Energy					
16B.5	People should just pay the cost					

	reflective connection fee to keep Zesco afloat					

17B.in your own opinion, do you think the current connection fee subsidy helps the sustainable performance of rural electrification programs in terms of the following measures?

No.	Statements	Good	Very good	Poor	Very poor
17B.1	Number of households and SMEs successfully connected				
17B.2	Affordable cost of connection				
17B.3	Increased consumption of electricity				
17B.4	Reduced dependency on kerosene lamps for lighting,				

This is the end of the questionnaire. Thank you for your time!

UNIVERSITY of LUSAKA

SCHOOL OF POSTGRADUATE STUDIES

INTERVIEW GUIDE

I am Florence Kambikambi, a post-graduate student at the University of Lusaka pursuing a Master's Degree in Project Management. As a school requirement, I am undertaking a research study in fulfilment of the award of the Master's Degree.

The purpose of this study is to analyse the connection fee subsidy on electrification of rural areas with respect to Chibombo district. It seeks to investigate what bearing the connection fee subsidy has had on the rate of rural electrification and the sustainability of rural electrification programs to meet the set rural electrification targets by 2030.

Therefore, this research strives to answer this question by conducting an analysis of the relationship between the connection fee subsidies and the electrification of rural areas with a focus on the Chibombo district where the Electricity Service Access Project (ESAP) offering connection fee subsidies is under implementation. Thereafter, a rural electrification sustainability framework is to be developed to influence and inform policy interventions in the electricity sub-sector with regard to the sustainability of rural electrification in Zambia.

In this regard, you have been identified as a resourceful contact on this topic; and as such, I hope to rely on your vast expertise, knowledge and experience in understanding the issue at hand by taking a few minutes of your time to have a brief discussion with you. Kindly note that this interview is purely academic and your responses and all information given will be treated with the utmost confidentiality. Voice-recording of the interview will only be done if **permission is granted** by the interviewee.

Thank you in advance for your valuable support and contribution to this research.

If you agree to participate in this study, kindly allow me to proceed with interview. Shall we?

Personal Information

1. Name: …….

2. Name of Organisation: ……..

3. Position: ……..

4. How long have you been serving in the organization: ……

5. Contact No.: ……..

Interview Questions

1. What is your understanding of the relationship between connection fee subsidies and rural electrifrication?.....
   .....
   .....
   .....
2. What makes up the current connection fees and are they cost reflective?
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   ……
   ……
   ……
3. Kindly explain your role as an individual and as an organization in rural electrification and in the implementation of the Electricity Service Access Project(ESAP)?
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   ……
   ……
4. How has the subsidy mechanism under the ESAP project contributed to increasing access to electricity in beneficiary areas?
   .....
   ……
   ……
   ……
5. What successes has rural electrification and the ESAP project recorded in relation to the 2030 universal access to electricity target?
   ……
   ……
   ……..
6. What challenges does rural electrification face in Zambia?
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   ……
   ……...

7. In your opinion, do you think subsidizing connection fees is the sustainable way of increasing rural electrification rates? If you agree or disagree please provide reasons why.

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8. With Government policy shift to remove subsidies on electricity and petroleum in the energy sector, what is your valued opinion on this policy shift particularly on electricity?

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9. In what ways do you think the removal of the subsidies on electricity would affect the rate of connection to electricity?

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   ……

10. What are the critical success factors for sustainable rural electrification in your opinion?

    ……

    ……

    ……

11. What would be your recommendations in relation to subsidies on electricity connections and the challenges identified?

    ……

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    ……

We have come to the end of the interview. Thank you for your time!