AN EVALUATION OF THE MINISTRY OF ENERGY'S COMMUNICATION STRATEGIES IN ENERGY EFFICIENCY, CONSERVATION AND ALTERNATIVE SOURCES OF ENERGY

By

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A report submitted to the University of Zambia in partial fulfilment of the requirements of the degree of Master in Communication for Development

The University of Zambia

DECLARATION

I, Ntalasha Mutale declare that this report:

(a) Represents my own work
(b) Has not previously been submitted for a degree at this or any other university; and
(c) Has not incorporated any published work or material from another report

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CERTIFICATE OF APPROVAL

This report of NTALASHA MUTALE has been approved as fulfilling the requirements for the award of the degree of Master of Communication for Development by the University of Zambia.

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ABSTRACT

As the population of Zambia is growing bigger, so does the demand for energy. Currently, Zambia is dependent on ZESCO as the main producer of electricity for the Zambian people. Despite the government liberalising the energy sector in 1997, very few private players have come on board. ZESCO has had the challenge of satisfying the current demand which stands at 2,750 MW as it is only able to generate 1,200MW. This has been compounded by a lot of factors; the major one being low water levels in dams.

The short to medium term solution to this is energy efficiency and conservation. Energy efficiency is achieved through the application of technology, such as insulation upgrades, compact fluorescent bulbs (CFLs), high efficiency furnaces, and so forth. And energy conservation is achieved through behavioural changes, such as turning off lights when not needed, using household appliances differently, carpooling, and so forth. And this can be achieved through communication and understanding the cause. As an Energy driver, the Ministry also has an obligation to not only inform, but to influence behaviour; have programmes that can influence load shapes, energy use characteristics and lead in innovation.

The main objective of the research was therefore to evaluate the communication strategies of the Ministry of Energy in order for the organisation to effectively communicate energy saving initiatives and use of alternative sources. The Study was undertaken in Kabwata area of Lusaka using 175 self-administered questionnaires and in-depth interviews from energy experts.

The research findings indicated that respondents are aware of the communication strategies the Ministry of Energy uses. However, there was a variation in responses when respondents were asked to determine the effectiveness of the communication strategies used. Majority of the respondents said there was a language barrier for those that were uneducated, and the audience was not properly segmented to design specific messages for specific groups.

It is therefore recommended that the Ministry of Energy segments the audiences and prepare different messages for different types of people in different areas. That is by demography; sex, age, language, location and so forth.

DEDICATION

To my father, Mr. Emmanuel Mutale who has been my role model, my mentor and life coach who instilled in me virtues of perseverance and commitment. And to my two children, Mukuka and Mutema Yulu who have unconditional love for me.

To my ever praying mother Pastor Catherine Chanda Mutale, who has always been my pillar and has relentlessly encouraged me to strive for excellence.

ACKNOWLEDGEMENTS

I give thanks to my Lord Jesus for seeing me through this period of my research; favouring me divinely each step of the way and showing me direction.

My deepest gratitude goes to my supervisor Dr. Elijah Mutambanshiku Mwewa Bwalya whose expertise, guidance and support made it possible for me to complete this project.

I am deeply indebted to my lecturers in the Mass Communication department for their invaluable help in preparing for this thesis.

My sincerest thanks go to Mr. Fedelis Muzymba who is the lecturer for research for being the nicest man I have ever known amongst university lecturers and for his kind endless help, generous advice and support during the study.

It is my privilege to thank my husband Afeti Yulu for his constant encouragement throughout the study period.

Furthermore, I humbly thank all people concerned who I have not aforementioned, for cooperating with me in this regard.

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LIST OF ABBREVIATIONS

AA	Action Agenda.
BEE	Bureau of Energy Efficiency
CFLs	Compact Fluoresceht Lamps.
EE	Energy Efficiency.
EES	Energy Extension Services.
KWH	Kilowatt Hour.
MOE	Ministry of Energy.
MW	Mega Watts.
UN	United Nations.
US	United States.
USAID	United States Agency for International Development.
IDC	Industrial Development Corporation.
IEA	International Energy Agency.
IP	Investment Prospectus.
IPPs	Independent Power Producers.
REIPP	Renewable Energy Independent Power Producer Programme.
RCS	Residential Conservation Service.
SARI	South African Renewables Initiative.
SRS	Simple Random Sampling.
SMEs	Small Medium Enterprises.
SPSS	Statistical Package for the Social Sciences.
SE4ALL	Sustainable Energy for All Initiative.
TANESCO	Tanzania Electricity Supply Corporation.
TIAP	Tax Incentive Assistance Project.

CHAPTER ONE

BACKGROUND INFORMATION

1.1. Introduction

In this chapter, the researcher has provided an overview of the current energy situation in Zambia with a focus on electricity provision. A brief highlight on energy efficiency and energy conservation has been given. The researcher has also presented the background information about the Ministry of Energy in order to give a clear understanding of its operations. Furthermore, the researcher has provided the statement of the problem and the rationale of the study before itemising the research objectives and the research questions for the study.

1.2. Energy in Zambia

As much as the Ministry of Energy has been trying to sustain the provision of its services, there have been huge gaps that need to be filled especially in the provision of electricity. Zambia among other countries in the Southern African region, was hit terribly with an electricity crisis in the past one and a half years (Department of Energy, 2015, p. 11).

ZESCO Annual Report (2015, p.3) indicates that "about 99% of Zambia's electricity comes from hydro." Most of the electricity that is generated for the country comes from the three major hydropower stations; Kariba, Victoria Falls and Kafue Gorge. For over 30 years, Zambia produced enough energy to act as a regional power exporter, whilst also fuelling the phenomenal growth of the nation's copper sector – the bedrock of the nation's economy (Kalaki, 2016, p. 3).

Figure 1. The Kariba dam during the drought

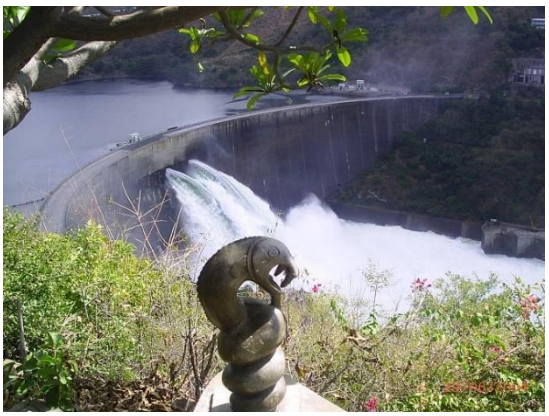

Figure 2. The Kariba dam opening spill gates

Figure 3. Kafue Gorge dam and reservoir

However, in May 2015, a severe drought across Southern Africa led to Zambia's national power company, ZESCO, starting a programme called "load management" or better still "load shedding" – in an effort to preserve dwindling water supplies awaiting the next rainy season. Meanwhile, the number of Zambians that have been putting in applications to be connected to power has kept growing on a daily basis, making demand outstripping supply. This has been compounded by the many manufacturing industries that are being created and still need electricity. New mines are also coming on board demanding for more electricity, not forgetting commercial farmers for irrigation. The upcoming Kalumbila Mine in North-western Province needs about 300 MW: that is a lot of power to electrify at least three provinces (Nswana, 2014, p.4). Since May 2015, much of the country has been left in the dark, often for up to eight hours at a time. According to Mukanga (2015, p.15), "The Kariba dam which generates 360 Megawatts has in the past one year been losing about 11 centimetres of water per day." The dam gained about 477.65m as at 16th March 2016, which is still not enough to generate power at full capacity.

Figure 4. Using electricity for irrigation

Figure 5. Using electricity for Oil refinery

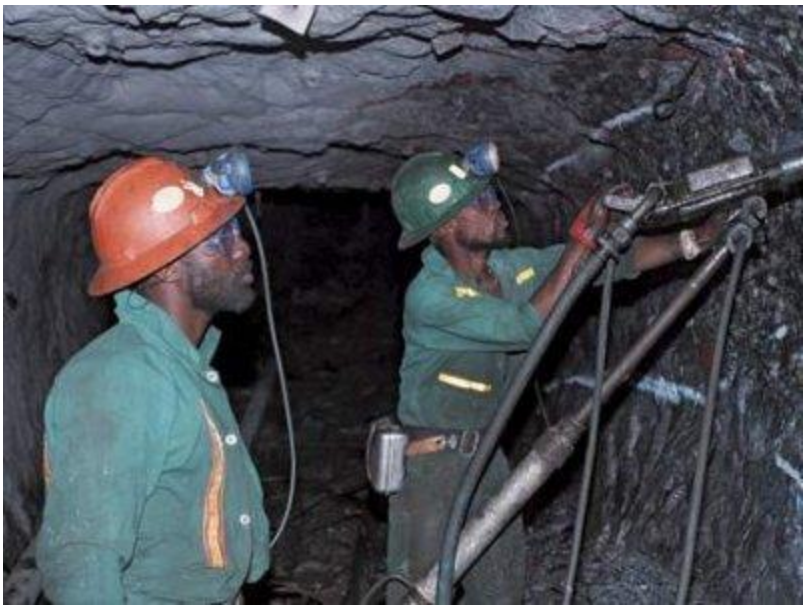

Figure 6. Using electricity for mineral extraction

Furthermore, Lack of clean, safe energy locks many rural families into a cycle of fuel poverty and limits their potential to earn and learn with the productive day cut short when darkness falls. According to Sakubita (1990 p.4), "A rural Zambian family living without electricity access can see 7% of their income burn away on toxic kerosene, lit in dangerous homemade lanterns which put families at risk of poisoning, fires and burns."

Across rural Africa, electricity grids struggle to reach the most remote and sparsely populated rural communities. And in Zambia, as in the rest of the world, the poorest are always the worst hit by lack of energy access and sky rocketing fuel prices because as hydro-power fails, millions are forced to turn to kerosene, charcoal or firewood for their basic energy needs.

According to Frey (2009, p. 56), "the potential for a crisis if the world runs out of energy is very real but there is still time before that occurs." In the past two decades proven gas reserves have increased by 70% and proven oil reserves by 40%, (Chevalier and Geoffron, 2013, p.14). Moreover, better technology means that new oil and gas fields are being discovered all the time while enhanced recovery techniques are opening up a potentially huge array of unconventional sources, including tar sands, shale gas and ultra-deep-water. (Browne, 2009, p. 2). Ultimately, the near-unlimited supply potential of renewable energy sources should ensure that the world does not fall short of its energy needs.

1.2.1. Understanding Energy conservation and efficiency in Zambia

Energy efficiency and conservation can contribute to greater national security by reducing Zambia's demand for foreign energy resources. According to Peter and others (2007, p. 30), "energy efficiency is also achieved through the application of technology, such as insulation upgrades, compact fluorescent bulbs (CFLs), high efficiency furnaces, and so forth." Energy conservation is also achieved through behavioural changes, such as turning off lights when not needed, using household appliances differently, carpooling, and so forth. And this can be achieved through communication and understanding the cause.

Energy conservation is the act of saving energy by reducing a service, (DSST: Environment and Humanity Study, 2016, P.1). In other words, to conserve energy, one has to cut down on usage. Examples include driving a car fewer miles per week, unplugging computers or home appliances when they are not in use.

In this example, you are reducing the amount of energy you use by doing without or making use of less fuel or electricity. While energy conservation might cut down on your comfort level and make things a bit less convenient, it can help reduce electricity bills and save money at the gas pump.

Energy conservation is an effective way to lower overall energy consumption, and the same can be said for improved energy efficiency (DSST: Environment and Humanity Study, 2016, P.1). For example, if you turn off the lights when you leave a room, you are practicing energy conservation. If you replace an inefficient incandescent light bulb with a more efficient compact fluorescent bulb, you are practicing energy efficiency.

You can keep these terms straight by thinking of energy conservation as 'cutting back' and energy efficiency as using energy more 'effectively' (DSST: Environment and Humanity Study, 2016, p.2). Energy efficiency uses advances in science and technology to provide services and products that require the use of less energy, (Cowie, 2007, p.10). Examples include replacing older model appliances, such as a refrigerator or washing machine, with newer, energy-efficient models. Modern appliances use significantly less energy than older models, yet provide the same or better service.

Another example would be adding insulation to the attic and walls of a home. This added insulation allows the homeowner to reduce heating and cooling energy while maintaining a comfortable temperature within the home. Energy efficiency in the home can also be improved by replacing drifty windows with new, energy-efficient windows (Peter et al., 2007, p.156).

Energy conservation refers to reducing energy consumption through using less of an energy service. Energy conservation differs from efficient energy use, which refers to using less energy for a constant service. For example, driving less is an example of energy conservation. Driving the same amount with a higher mileage vehicle is an example of energy efficiency. Energy conservation and efficiency are both energy reduction techniques.

Even though energy conservation reduces energy services, it can result in increased environmental quality, national security, personal financial security and higher savings. It is at the top of the sustainable energy hierarchy. It also lowers energy costs by preventing future resource depletion.

1.2.2. Necessity to promote Energy Efficiency in Zambia

Apart from trying to solve the shortfall in electric energy, this is all the more reason why the Ministry of Energy, having the best interest for the country at large, need to go an extra mile to demonstrate its usefulness to Zambia. The Ministry of Energy has a moral obligation to be a good environmental steward by discouraging wasteful use of the limited electric energy resource (Sioshansi and Fereidoon, 2013, p.100).

As an Energy driver, the Ministry also has an obligation not only to inform, but to influence behaviour, have programmes that can influence load shapes, energy use characteristics and lead in innovation. ZESCO Demand Side Management Quarterly Report (2015, p.20) states that "in its quest to be leaders in innovation and environmental responsibility, the Ministry has found that though Energy Efficiency investment reduces sales by reducing the kWh (the amount of electricity) utilised by a customer, it still drives rates and performance higher particularly where there's an energy deficit especially at peak hour." The benefit is in the fact that the offset in energy resulting in lower average customer bills due to reduction in energy usage is still bought or utilised by another client who would have otherwise been on the load shedding timetable. That brings even more benefits and satisfaction to the Energy sector as well as to the customer who would have had discontinuous service and thus making business sense in Energy Efficiency (EE)."

Energy Efficiency can be viewed as a resource for meeting the growing needs for energy by reducing customer demand (Harvey, 2010, p.27). The cost of effectiveness of Energy Efficiency and conservation can be evaluated using the same consideration used for new supply resources and so should be taken on more aggressively. Energy Efficiency is the least way to control costs over the long term to reduce waste by building Energy Efficiency resources in the short term.

For the Ministry of Energy, it has the following advantages:

- Deferring capacity investments (to allow develop future energy sources in a planned and less hurried manner.
- Increase system reliability (as there is capacity, lesser load shedding, enhancing continuity of supply factors which are key performance indicators)
- Demonstrate Environmental Stewardship (less energy less waste, a plus for Environment)
- Reduce regulatory risks (meeting customer needs as required by the Regulator)

In addition, for the customer:

- Reduces energy bills (reasonable percentage reductions can be realised)
- Creating business opportunities around energy efficient products and services including construction of new buildings or houses with Energy Efficiency focus)
- Energy Efficiency keeps money with the people in the community thus supporting job creation and other local economic development as funds can be directed to those areas instead of paying unnecessarily high bills
- Increases customer satisfaction.
- Power Utility becomes a more trusted source of information on how to save energy.

Kaluminana (2004, p.24) states that "Experience from other parts of the world has shown that Energy Efficiency has to be approached from all angles in a "Systems Perspective" rather than restricting it to the traditional ways of handling it where only the tech-savvy such as technicians and engineers are left with the sole responsibility of managing it." Rather, it has to take a concerted effort from all disciplines with everyone involved and playing a part to use electricity efficiently. With every Zambian as an Energy Efficiency ambassador, the country can achieve more; especially that Energy Efficiency is also closely linked to behaviour and attitudes of energy users. Every citizen should be encouraged to be pro-active so as to help the nation manage the electricity

use. This will save money for other needs especially in the light of increasing electricity costs, as Zambia gradually migrates into more and more cost-reflective billing for electricity in the country.

Malama and Makashini (2014, p.15) state that "particular focus is on domestic households since this category draws a reasonably huge amount of power and is widely spread with less sophisticated loads. In line with the already practiced "switch and save" applying more energy efficiency practices to households can help save a bit more."

1.3. Background information of the Ministry of Energy

The Ministry of Energy and Water Development was established under the government of the Republic of Zambia and has been in existence since independence in 1964. In 2012 it was merged with the Ministry of Mines to form The Ministry of Mines, Energy and Water Development extending its operations to the department of Geological survey and department of Mine safety. However, in 2015, the Ministry was split making the Ministry of Mines standing on its own once again. The Ministry of Energy is responsible for the development and management of energy and water resources in a sustainable manner for the benefit of the people of Zambia. It is in charge of extending and ensuring a continuous supply of energy services to every division of the Zambian economy in an energy sufficient and environmentally friendly manner (http://.www.moewebiste.co.zm, viewed on 15/02/2017).

The Ministry's portfolio functions are outlined as follows:

- Electricity
- Energy policy
- Energy and resources management and development
- Oil pipeline
- Petroleum storage and pricing
- Water policy and
- Water resources Management and development

The Ministry of Energy has the responsibility to improve the distribution of electricity across the country, especially to communities and towns in rural Zambia. The Ministry seeks to encourage the participation of the private sector in the development of energy infrastructure and secure future energy supply.

The primary focus of the Ministry is the provision of oil and electricity. This is because electricity and oil drive the economy of Zambia (Department of Energy Zambia, 2012, p.20).

The Ministry has three main statutory bodies:

- Energy Regulation Board
- ZESCO
- Rural Electrification

1.3.1 Operational Units

According to the Ministry of Energy website, there are four departments under which the Ministry functions:

- Energy

The Department of Energy is a key player in facilitating the development of the implementation of energy policy and programmes. The department was established in 1982 by a cabinet decision and commenced its operations in 1983.

- Water Resources Development

Following the enactment of the water Resources Management Act No. 21 of 2011 where the department of water Affairs delegated its water resources management functions to the water Resources Management Authority, it became necessary to restructure the water function in the ministry. It has since then been carrying out water infrastructure development programme related to dams and groundwater explorations as well as international waters.

- Panning and Information

This department is mandated to coordinate, plan, monitor and evaluate energy and water sectors to achieve all objectives of the sector. It is also in charge of an integrated information management system to ensure informed decision making.

- Human Resources and Administration

This is responsible for managing and developing human resources to improve performance.

1.3.2. Funding

The Ministry of Energy receives its funding from the government through the Ministry of Finance for its operations.

1.3.3. Core Functions

- The Ministry of Energy has the responsibility to improve the distribution of electricity and oil across the country, especially to communities and towns in rural Zambia.
- The Ministry encourages the participation of the private sector in the development of energy infrastructure and secure future energy supply.
- It ensures the provision of adequate, safe and clean water to all the Zambian people.

1.3.4. Vision Statement

A proactive Ministry in securing sustainable, safe and reliable water and energy resources.

1.3.5. Mission Statement

To effectively and efficiently promote and regulate the development of energy and water resources in a sustainable manner for the benefit of the people of Zambia.

1.3.6. Goal Statement

To achieve increased and reliable access to water resource and various forms of clean energy by 2016.

1.3.7. Value Statement

The Ministry of Energy and water Development is committed to the following core values in delivering its services to the clients:

- Integrity
- Transparency
- Respect
- Commitment
- Pro-activeness

1.4. Statement of the Problem

Zambia has three major Power Stations; The Victoria Falls Hydro Power Station first commissioned in 1938 with only 8 MW. Later in 1968, about 60 Mega Watts was added to the grid and 40 Mega Watts in 1972. The country's population was at 1.4 million by then. The total demand for electricity in 1938 was 250 Mega Watts and demand in 1972 was less than 900 Mega Watts whilst the supply was 1,038 Mega Watts. The Kafue Gorge Hydro Power Station was commissioned in 1972 with the capacity of 330 Mega Watts. The population was 4.3 million. The Kariba North Bank Hydropower Station was built and commissioned in 1976 with the capacity of 600 Mega Watts. Zambia's population was then 4.9 million. There was, therefore, an excess of the commodity during those years as the population was small.

Despite the population rapidly growing in Zambia, the energy sector never saw much investment compared to the Agriculture and Mining sectors. Over 40 years after ZESCO was born (which was 1970), there were still only three major power stations in existence whilst the demand for electricity kept increasing. Eventually, by 2005, the demand outstripped supply. In 2006, ZESCO started building small hydro power stations, most of which are still under construction. However, the completed ones were still generating power from water and were hence affected by the drought.

The following table shows the 2016 generation capacity and the deficit:

HYDRO POWER STATION	**INSTALLED CAPACITY**	**AVAILABLE**	**DEFICIT**
Kafue Gorge	990	680	310
Kariba North Bank	1080	380	700
Victoria Falls	108	103	5
Itezhi Itezhi	120	54	66

According to ZESCO Generation Report (2015, p. 12), about 99% of electricity supply in Zambia comes from hydro. As a result of the climate change, the rainfall pattern became unpredictable. In 2015 and 2016, Zambia experienced a drought that dried the dams; especially the Kariba. The Kariba dam waters fell down to critical levels such that Zesco could not generate power at full

capacity and hence started load shedding to prevent the equipment from damage and to preserve the limited water available for power generation (ZESCO Hydrology Report, 2015, p. 2).

With development on the increase because of more economic growth in the country, it is expected that there will be an increase in electrical energy demand across all categories, that is, Industrial, Commercial and Domestic (Chama, 2013, p. 32). This means more pressure on the already outstripped current sources of electrical energy provided by ZESCO Limited. ZESCO Generation Report (2014, p.16) indicates that "bringing on board more generation from new power stations is a high capital intensive undertaking and usually takes very long periods of time to construct (at least 5 – 10 years) not to mention various risks involved." This presents a very big challenge in finding a solution to meet the fast growing needs of the customers.

Whilst Zambia waits for the water levels to improve, it is necessary that short to long term strategies are engaged so that the limited commodity can be shared. This is energy efficiency and conservation and alternative sources of energy to reduce reliance on hydro.

Given the circumstances, the best and cheapest options the Ministry of Energy has in the short term lie in applying Energy Efficiency proven best practices. According to Pon (2012, p.78) "Energy Efficiency with regards to electricity entails using electricity more sparingly without wasting and using it only when really needed". By doing this, ZESCO will conserve electricity and end up with reserves or a bit more capacity to supply more customers and spread the usage of electrical energy wide.

Since there was lesser demand for electrical energy in the past, the historical approach to customer service was based on the utility's obligation to serve. The prevailing attitude was that a utility had to serve the customer but that service ended at the meter. What customers did was their own business. However, in today's age, times have changed; customers or end user behaviour directly impacts on how a utility like ZESCO must operate and that significantly affects what its costs of operation will be. "Energy Efficiency" as a smart business entails that working on the other side of the meter is not only good for customers, but it is good for the company as well as mother Earth (good energy stewardship!).

It is therefore, necessary that communication strategies are put in place to educate customers and the public on energy efficiency and conservation. There is a dearth of scholarly literature about business and households' lifestyles and their impact on energy consumption in most developing countries including Zambia.

Furthermore, there has been no study in Zambia that has been carried out to determine how to educate and inform people about what they are doing to alleviate load shedding and also to inform the customers about the medium to long term solutions of cushioning the power shortages in the country, which in this case is energy efficiency and conservation. Hence it is necessary to evaluate the communication strategies which the Ministry of Energy is using and find out whether they are effective or not.

Hence this research sought to find out the source, the channels and message strategies used by the Ministry of Energy and ZESCO to communicate to the public. It further identified the strengths and weaknesses of this communication strategy and make recommendations.

1.5. Justification (Rationale)

With the energy crisis Zambia is currently facing which has contributed to the crippling of the economy, energy efficiency and renewable energy sources are the short to medium term solutions for Zambia to reduce loss of business. It is timely that energy efficiency solutions are communicated to communities, businesses, the media and various stakeholders so that all citizens can be part of the big energy solution.

The study is relevant to the community and to all individuals as the subject at hand is very real. This is in the sense that energy has been affecting each individual personally as it does not only drive the economy, but day to day lives, from manufacturing industries to cooking in a home. As the most basic of approaches, each well informed citizen can advise and give reasonable guidance to other customers on choices that can help conserve electricity usage. There is room of course for leaving the more involving and technical guidance to more specialised experts like electricians, technicians and engineers; but everyone can talk about energy saving lights, use of low wattage appliances and the like. Together with the already practiced “switch and save” applying more energy efficiency practices to households can help save a bit more to sustain the country. And this can only be achieved through proper information flow, to influence behaviour change.

The research will also have practical benefits in that the results can be utilised by the Ministry of Energy and ZESCO and other stakeholders to enhance communication in the accountability process in Zambia and other regions.

1.6. Research Objectives

1.6.1. General Objective

To evaluate the communication strategies of the Ministry of Energy in order for the organisation to effectively communicate energy saving initiatives and use of alternative sources.

1.6.2. Specific Objectives

- To examine communication strategies used by the Ministry of Energy to reach out to customers.
- To analyse the message strategies by the Ministry of Energy in the communication process.
- To analyse the language and channel strategies used in communicating with the customer to assess the impact.

1.7. Research Questions

1.7.1. General Question

What communication strategies does the Ministry of Energy use in order to effectively communicate energy saving initiatives and use of alternative sources to the public?

1.7.2. Specific Questions

- What communication strategies are used by the Ministry of Energy to reach out to customers?
- What message strategies are used by the Ministry of Energy in the communication process?
- What languages and channels used by the Ministry of Energy through to communicate with the customers and assess the impact of the messages?

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

In this chapter, the researcher has reviewed literature on energy efficiency, conservation and alternative sources of energy in modern society. This was done to provide a proper understanding of communication strategies used around the world. The researcher used the review of literature to highlight challenges on information dissemination to the public, and various efforts that have been made enforcing energy efficiency & conservation by different countries. This chapter is also important because it showcases the gaps in the communication strategies and hence this research would fill up these gaps.

2.2. Global Perspective

The security of global energy supplies continues to be problematic. Today, oil and gas reserves are in the hands of a small group of nations, several of which are considered politically unstable or have testy relationships with large consuming countries. Eighty per cent of the world's proven oil reserves are located in just three regions: Africa; Russia and the Caspian Basin; and the Persian Gulf. And more than half of the world's remaining proven gas reserves exist in just three countries: Russia, Iran, and Qatar (Cusatis and Thomas, 2005, p.12). Furthermore, electricity has been the main driver of economies. Worldwide, countries have been endeavouring to use alternative sources of energy to ensure that people have access to safe and reliable electricity to improve the quality of life for all. This goes side by side with countries having cost reflective electricity tariffs to make revenue and at the same time encourage investment.

Concerns over energy security prompt policymakers to seek independence from foreign sources of energy. For example, in Europe, new coal-fired power stations are back on the political agenda, partly because Russia is no longer seen as a reliable supplier of gas (Anderson and Newell, 2002, p.123). In the US, home-grown bio-fuels have been promoted by successive administrations as an alternative to Middle Eastern oil imports, despite being more expensive. These reactions are a natural consequence (US Department of Energy, 2016, p.10).

The imperative to improve energy efficiency is stronger than ever. DeCanio (1993, p.50) states that "the willingness of leaders around the world to tackle this problem has been reaffirmed through Heads of State meetings such as the G8 Summits at Gleneagles in 2005, Saint Petersburg in 2006, and Heiligendamm in 2007." Then, the December 2007 UN Climate Change Conference in Bali reiterated the urgency of countries' need to cut their greenhouse gas emissions in a significant way.

Numerous barriers are responsible for this persistent energy efficiency gap. Market barriers take many forms, including low priority of energy issues, difficulties in accessing capital, the presence of information asymmetries, and principal-agent problems (or split incentives) (Gruber and Brand, 1991, p. 20). Financial barriers are also decisive in inhibiting progress towards more energy efficient buildings. Such barriers encapsulate a wide range of obstacles, including the initial cost barrier, risk exposure, discount factor issues, and the inadequacy of traditional financing mechanisms for energy efficiency projects.

Energy efficiency (EE) improves energy security, fosters economic gains, and helps to reduce human-induced carbon dioxide emissions. Policies designed to increase energy efficiency have already delivered significant benefits. Worldwide energy consumption would be 56% higher today than it would have otherwise been without the various EE policies that have been implemented since 1973 (International Energy Agency, 2007, p.16).

2.2.1. Communication Strategies used in the United States of America to promote Energy Efficiency, Conservation and Alternative sources of Energy

According to McKenzie-Mohr (2008, p.8) "Reducing energy use is near the top of the agenda at every level of government; President Obama, Congress, federal agencies, state and local government, as well as community organisations across the nation considered a variety of policies and communication programmes to encourage and help American families become more energy-efficient in their homes and travels.' The USA has been using communication strategies to reach out to people such as enhancing customer awareness of energy efficiency through training and less formal methods. The country provides mandatory and voluntary training opportunities on smart energy practices so that customers can practice energy efficiency during emergency periods and year-round (Abrahamse, 2005, p.271).

To be truly effective, however, a national strategy must take into account the energy efficiency and conservation actions. Americans have already taken the actions they intend to take (perhaps with some support), the reasons that motivate energy conservation, and the barriers that currently prevent Americans from saving more energy actions on global warming and their own quality of life (Hansen and Lund, 2002, p.12).

Energy conservation behaviours, however, are quite variable. More than 90 percent of Americans report that they regularly turn off unneeded lights, yet only about 20 percent say they always or often take public transportation, car pool, walk, or bicycle instead of driving a solvable problem, if everyone contributes in some way to the solution (Aeker, 1996, p.16).

Furthermore, USA runs public service announcements about energy efficiency on televisions in cafeterias and other public use areas; send periodic email messages about turning off lights and computers and implementing other efficiency practices; post signs or billboards near light switches or communal printers (Maibach et al., 2008, p. 488).

The United States is currently the second largest single consumer of energy, following China. The U.S. Department of Energy categorizes national energy use in four broad sectors: transportation, residential, commercial, and industrial. Energy usage in transportation and residential sectors, about half of U.S. energy consumption, is largely controlled by individual consumers. Commercial and industrial energy expenditures are determined by business entities and other facility managers. Hansen and Lund (2002, p.17), indicate that "National energy policy has a significant effect on energy usage across all four sectors. Increasing energy efficiency (EE) has long been part of the US's strategy to reduce dependence on foreign energy sources."

The US is a net importer of energy. In 2005 the US produced 73 million TJ and consumed 106 million TJ, (IEA, 2003, p.6). This means that it imported 33 TJ which was the deficit. As a net importer, the country is dependent on external energy sources and sensitive to external events, such as oil crises.

The IEA (2007, p.18) indicates that "The US primary sources of energy are coal, petroleum and natural gas. In 2005, 84% of its energy consumed came from these three sources." Most coal is consumed in the electric utility sector and is used to generate electricity for building uses, as well

as industrial sectors. Petroleum is mostly consumed in the transport sector, while relatively equal amounts of natural gas are consumed in the building and industrial sectors, and a smaller amount is consumed by electric utilities for end-use sectors. Residential and commercial buildings use more than two-thirds of all electricity generated in the country.

These sectors accounted for 39% of US energy use in 2006. Both economic and population growth are leading to a greater number of homes, as well as homes that are larger and better equipped (Andreasen, 1995, p.75). This in turn, further increases residential energy consumption. During the 1970s and much of the 1980s, the residential sector saved proportionately more energy than any other sector. Per household energy use was cut by over a third within that time frame.

Continuing efficiency improvements have been offset by increases in the number of households, the amount of living space per capita, and the spread of more energy intensive equipment. Bandura (2006, p.45) indicates that a recent study shows that per capita energy uses in 15 International Energy Agency (IEA) countries, including the US, has increased by 4% since 1990. This has mainly been driven by appliances energy demand, which grew by more than 70% in the US between 1990 and 2004. The USA is considering holding annual energy fairs prior to seasonal emergency periods to provide additional information for customers about how to manage energy use in the work place, homes, schools and places of business (Parkhill, 2013, p.11).

Information and capacity-building programmes

Communication on energy conservation include Residential Conservation Service (RCS) and the Energy Extension Service (EES) (Clinton et al., 1986, p.9). For example, the RCS required local electric or gas utilities to provide on-site home energy audits on request. By the end of 1983, 40 states had implemented such programmes. However, they experienced low participation rates, caused by ineffective utility marketing, limited local potential for cost-effective conservation, and the lack of a national priority regarding residential conservation activities (Clinton et al., 1986, p.3). Communication is also spread through Specific information measures such as on-site workshops, auditor training or targeted information campaigns were estimated to be more useful than general information (Berry, 1997, p.31).

According to Brown and others (2002, p.14) “a more recent policy measure of this kind is the Tax Incentive Assistance Project (TIAP), which is sponsored by a coalition of public interest non-profit

groups, government agencies, and other energy efficiency-related organisations." The project is designed to provide information to consumers and businesses to assist them in accessing federal tax incentives available under the Energy Policies.

In conclusion, the USA has been using communication strategies to reach out to people such as enhancing customer awareness of energy efficiency through training and less formal methods. The USA provides mandatory and voluntary training opportunities on smart energy practices so that customers can practice energy efficiency during emergency periods and year-round. In addition to training, they run public service announcements about energy efficiency on televisions in cafeterias and other public use areas; send periodic email messages about turning off lights and computers and implementing other efficiency practices; post signs or billboards near light switches or communal printers; and consider holding annual energy fairs prior to seasonal emergency periods to provide additional information for customers about how to manage energy use in the work place, homes, schools and places of business.

2.2.2. Communication Strategies used by France to promote Energy Efficiency, Conservation and Alternative sources of Energy

The energy dependence of France has made its energy conservation awareness acute. Effective energy use and energy security considerations have been quite important and that is why France has been raising awareness among pupils, festival-goers, municipal agents, consumers and tourists, as well as train people who work with energy on how to be efficient in usage. Aebischer (2002, p.9) states that "following the second oil price shock of 1979, France became increasingly conscious of energy efficiency, and initiated measures targeting the residential and building sectors; these efforts took off once again in the mid-1990s when France became concerned with mitigating climate change and prioritised renewable energy policies and EE in its national action plans."

According to Saele (2005, p.12), France's dependence on energy imports being a strong cause for concern, energy policy has been focused on the supply side (nuclear and oil) in order to meet the increasing demand for fuels and electricity. Up to the first oil price shock in 1973, energy efficiency policy was not an explicit goal. Following this, the rational use of energy became an important policy second to diversification (nuclear energy, hydro, natural gas), in a bid to secure

energy provision, reduce price risks and foreign dependency. Sorrell (2005, p.19) indicates that "during the first half of the 1980s, with the second oil price shock and the objective to reduce energy costs, energy conservation policy was brought to the fore, particularly in the sectors of buildings and industry." The goal was to reduce the future energy demand of new buildings and to moderate the energy consumption of existing ones and inducing habits of economic energy use, particularly by room temperature management.

IEA (2008, p.11) indicate that "Information for the general public up to the mid-1980s information campaigns on energy efficiency issues targeted both professional stakeholders and the general public." After this and up to the year 2000 it was more focused on professionals. With the national debate on energy in 2003 the target audience was once again enlarged. An important part of the Climate Change Programme involved the 'Faisonsvite, çachauffe' (Act fast, it's getting warm!) information campaign, (Ehrhardt-Martinez, 2011, p.15). The campaign was launched in 2004.

Currently, communicating with individual citizens is seen as a relevant means of improving residential sector energy efficiency, since there are often those requiring proper information regarding improvement measures. France like many countries has largely utilised media such as television, radio and internet. France is also known for using helpline, email, magazines and energy saving competitions to communicate energy efficiency and conservation (Sorrell, 2005, p.22). According to Agence de l'enviroment et de iamaitrise de l' energise (2004, p.14) 155 local information centres employing 275 advisers were created in France between 2001 and 2003 for energy efficiency.

In conclusion, the communication strategies used by this country to consolidate local energy policy includes: raising awareness among pupils, festival-goers, municipal agents and consumers. Training of technical staff in charge of event organisation and those in charge of fuel poverty and improved thermal performance knowledge among building professionals. France is also known for communicating through television, radio and internet. France also uses helpline, email, magazines and energy saving competitions.

2.2.3. Communication Strategies used in India to promote Energy Efficiency, Conservation and Alternative sources of Energy

According to Sarkar (2016, p. 15), India is the world's third largest consumer of energy. It is widely acknowledged that the role of energy efficiency (EE) in reducing India's carbon dioxide emissions and improving energy security is critical. Achieving the overarching goal of increasing EE in South Asia would be enabled by a well-planned, professionally executed public communication strategy and outreach programme with clear audience segmentation.

As the first step towards implementing a strategic communication programme, the World Bank commissioned an analysis of EE-related. Communications in India targeted towards various stakeholders and energy consumers. This communication analysis, including mapping of key stakeholders in the Indian EE communications landscape, is part of the World Bank's implemented programme titled 'scaling up the demand side energy efficiency business line in South Asia', and will inform a communications strategy that aims to increase awareness and foster an enabling policy and business environment for EE in India (Worley and others, 2016, p.3).

According to Worley and Nair (2010, p.8), the primary energy demand in India has grown from about 450 million tons of oil equivalent (toe) in 2000 to about 770 million toe in 2012. This is expected to increase to about 1250 (estimated by International Energy Agency) to 1500 (estimated in the Integrated Energy Policy Report) million toe in 2030. This increase is driven by a number of factors, the most important of which are increasing incomes and economic growth which lead to greater demand for energy services such as lighting, cooking, space cooling, mobility, industrial production and office automation.

The Government of India has undertaken a two pronged approach to cater to the energy demand of its citizens while ensuring minimum growth in carbon emissions, so that the global emissions do not lead to an irreversible damage to the earth system (Shekar, 2017, p.10). On one hand, in the generation side, the Government is promoting greater use of renewable in the energy mix mainly through solar and wind and at the same time shifting towards supercritical technologies for coal based power plants. On the other side, efforts are being made to communicate to citizens on how to use energy efficiently in homes, schools, workplaces and industries. India has been

communicating energy efficiency through messaging system to cell phones and also videos on you-tube, (Majumdar, 2009, p.43).

The Ministry of Power, through Bureau of Energy Efficiency (BEE), has initiated a number of energy efficiency initiatives in the areas of household lighting, commercial buildings, standards and labeling of appliances, demand side management in agriculture/municipalities, Small Media Enterprises (SMEs) and large industries. The target of energy savings against these schemes during the XI plan period was kept at 10,000 MW of avoided generation capacity. These initiatives have resulted in an avoided capacity generation of 10836 MW during the XI plan period (Worley and Nair, 2010, p.9).

One way India has communicated EE is through the school awareness programmes. Considering the need to make the next generation more aware regarding efficient use of energy resources, it is necessary to introduce children during their school education. In this regard, promotion of energy efficiency in schools is being promoted through the establishment of Energy Clubs. According to Majumdar (2009, p.40) bureau of Energy Efficiency is implementing the Students Capacity Building Programme under Energy Conservation awareness scheme for XII five-year plan and intends to prepare the text/material on Energy Efficiency and Conservation for its proposed incorporation in the existing science syllabi and science text books of NCERT for classes 6th to 10th (Worley and Nair (2010, p.9).

Furthermore, the National Energy Conservation Awards are presented to industry and other establishments and prizes to the winners of the annual Painting Competition on Energy Conservation for school children every year by the Ministry of Power with the objective of promoting energy conservation among all sectors of economy.

The annual energy conservation awards recognize innovation and achievements in energy conservation by the industries, buildings, zonal railways, state designated agencies; manufacturers of BEE star labeled appliances, electricity distribution companies, municipalities and raise awareness that energy conservation plays a big part in India's response to reducing global warming through energy savings. The awards are also a recognition of their demonstrated commitment to energy conservation and efficiency. The scheme has motivated industry and other establishment to adopt energy efficiency measures.

Industrial efficiency in industry is done through Energy Audits and operating practices; Transport is Fuel efficiency such as driving habits, car-pooling. Domestic is electricity saving tips at Homes and Commercial is Energy Efficiency in buildings (Sarkar, 2016, p. 16).

In conclusion, India has been communicating energy efficiency through messaging system to cell phones and also videos on You-tube. India holds workshops with the community and agencies to discuss energy efficiency. The country has developed adverts in the print media and television. India has communicated EE is through the school awareness programmes and energy clubs established.

2.3. Regional Perspective

Neufeld (2009, p.5) states that "further research on planning and water and energy resources, climate change and the role of renewable energy resources in integrated development is urgently required in developing countries."

Energy in Africa is a scarcer commodity than in the developed world. Across the continent only 10% of individuals have access to the electrical grid, and of those, 75% come from the richest two quintiles in overall income (Akpan and Akpan, 2012, p.9). Less than 2% of the rural populations of Malawi, Ethiopia, Niger, and Chad have access to electrical power. Electrical provisioning in Africa has generally only reached wealthy, urban middle class, and commercial sectors, bypassing the region's large rural populations and urban poor.

According to the forum of Energy Ministers of Africa (2011, p.18), most agriculture still relies primarily on humans and animals for energy input. The electrical industry in Africa faces the economic paradox that raising prices will prohibit access to their services, but that they cannot afford to roll out additional infrastructure to drive prices down and increase access without additional capital.

Overall rates of access to energy in Africa have been held constant since the 1980s, while the rest of the developing world has seen electrical grid distribution increase by 20%. Sub-Saharan Africa is the only region in the world where per-capita access rates are falling. According to recent trends, over 60% of Sub-Saharan Africans will still lack access to electricity by 2020.

Abanda (2012, p.16), says "Africa has an average electrification rate of 24%, while the rate in the rest of the developing world lies closer to 40%." Even in the areas covered by the electrical grid, power is often unreliable: Frequent power outages cause damage to sales, equipment, and discourage international investment. In Tanzania for example, most of the Power Stations have shut down due to over reliance on hydroelectricity. According to the periodical African Business Report (2011, p.7), "Poor transport links and irregular power supplies have stunted the growth of domestic companies and discouraged foreign firms from setting up manufacturing plants in the continent.

Although Africa lacks a sufficient transport system, new developments in industry and manufacturing have resulted in tremendous population growth, increased urbanization, high energy consumption, over-cultivation of lands, and significant industrial advancements engendered by globalisation (Schweppe et al., 1981, p.10**)**.

The African continent features many sustainable energy resources, of which only a small percentage have been harnessed. 5-7% of the continent's hydroelectric potential has been tapped, and only 0.6% of its geothermal (Price et al., 2009, p.7). The African Energy Policy Research Network calculates that biomass from agricultural waste alone could meet the present electrical needs of 16 south eastern countries with bagasse-based cogeneration. Heba and others (2015, p.111), state that "the sugar industry in Mauritius already provides 25% of the country's energy from by product cogeneration, with the potential for up to 13 times that amount with a widespread rollout cogeneration technology and process optimisation."

2.3.1. Communication Strategies used in South Africa to promote Energy Efficiency, Conservation and Alternative sources of Energy

The Government of South Africa has set up the South African Renewables Initiative (SARI) to develop a financing arrangement that would enable a critical mass of renewable to be developed in South Africa, through a combination of international loans and grants, as well as domestic funding. This has been a highly successful programme now known as the Renewable Energy Independent Power Producer Programme (REIPPP) with four rounds of allocations already completed (Bekker et al., 2008, p.123). In Round 1, 19 projects were allocated, in Round 2, 28 projects were allocated, in Round 3, 17 projects were allocated and in Round 4, 26 projects were

allocated. Over 6,100MW has been allocated with a total of R194 billion (US$16 billion) being invested in this programme (Macdonald-Smith, 2014, p.119). This investment figure represents full funding from private entities and banks - there are no government subsidies for this programme.

In other words, this is an initiative by South Africa to develop renewables energies for the country. The Government of South Africa through various independent Power Producers has set four phases of project implementation as Round 1, Round 2, Round 3 and 4. These projects will produce a total of 6,100 MW from renewable energies at a total of US$16 billion.

In addition, South Africa alone obtains the sixth largest coal reserves on the planet, after China, the US, India, Russia and Australia. Specific renewable resources in South Africa include solar, wind, hydropower, wave energy, and bio-energy (Price, 2009, p.78).

South Africa uses many communication strategies to reach the public on energy efficiency and conservation. One of them is the Power Alert system through television which tells people that the system is under constraint and advises them to switch off appliances that use a lot of electricity in homes, schools and business places, until there is stability (Marowa, 2012, p. 12).

According to Spalding-Fetcher and others (2002, pp.109), other communication strategies include: community, company and government energy management fora; electronic media including website, social media network, cell phones, radio, television, direct communication through telephones, and e-mail/ newsletters with relevant stakeholders and organisations on specific issues.

South Africa also uses the print media such as newspapers (including community newspapers), magazines, flyers, posters and educational material. Advertising is done through posters / flyers / schools educational material (cartoons, and animations clips, etc.), TV, radio (including community radio stations) and billboards (Murombo, 2008, p. 20). Others are Video Clips for dissemination to all stakeholders, engaging in face-to-face dialogues with all the key stakeholders, interaction with civil society through workshops, schools, learners' week and roundtable discussions, seminars and workshops.

In conclusion South Africa has employed many communication strategies including utilizing television for programmes that will inform the public when the demand for electricity is high so

that they can reduce consumption. The country also uses community newspapers, radio, posters, cell phones and the internet for communicating. The Government of South Africa has engaged energy management fora to encourage energy efficiency and the use of renewable energies. The country also uses video clips, cartoons, animations, cell phones, email, newsletters and workshops.

2.3.2. Communication Strategies used in Tanzania to promote Energy Efficiency, Conservation and Alternative sources of Energy

Kiwele (2007, p.14) states that "Tanzania has a national energy efficiency target to reduce transmission and distribution losses to 15% from 19% (in 2011), energy consumption by 20% from industries and households, and petroleum consumption by 15% from 2015, endorsed in the Strategic Plan 2011/12 - 2015/16 of the Ministry of Energy and Minerals." Currently, the Ministry of Energy and Minerals is the only institution working on energy efficiency in Tanzania, it implements the energy efficiency targets in collaboration with the utility company, Tanzania Electricity Supply Corporation (TANESCO). Tanzania is working towards embarking on a communication strategy through television and Radio to encourage the consumers to install power system correction systems that will help them improve power factor problems and, at the same time, contribute to improve TANESCO's transmission and distribution losses, (Kiwele, 2007.p.15).

In Tanzania, the goal is to conserve biodiversity. For example, in the country, the United States Agency for International Development (USAID) supports local actions in the Pangani, Bagamoyo, and Mkuranga districts that promote sustainable coastal and marine resources management through co-management for The Tanzanian near-shore fishery areas, small-scale enterprise development, marine culture, and coastal tourism (Boylan, 2002, p.22).

Solar energy sector has been fast growing in recent years and solar products are now a common sight in shops and markets throughout the country (Frey, 2009, p.24). Several factors have contributed to this growth. On the supply side, ever increasing work on research and development have greatly reduced the prices of solar-PV products worldwide. The prominence of China in producing solar panels at mass scale has reduced prices even further. The Ministry of Energy and Minerals (2003, p.30), indicate that, "on the demand side, frequent power outages and a high cost for connection to the grid have made Tanzanians consider alternatives to TANESCO, like solar

energy." With only 4% of rural households having access to electricity, there seems to be specific potential for solar solutions in these areas. Awareness raising campaigns by government and NGOs (like Sida and UNDP) has helped raise knowledge and understanding of solar products among consumers (Periodical African Business Report, 2011, p.62). Tanzania also uses the "SE4ALL" website that is conceived as a portal for stakeholders to access the critical information and links, as well as for dissemination of information, reports and the gathering of comments/ suggestion through a blog or on-line contact (Karekezi and Kithyoma, 2002, p.178).

According to The Ministry of Energy and Minerals (2003, p.24), TANESCO has a communication programme which is currently being implemented under the demand side management, targeting large power consumers. This is planned to be done through energy audits; having meetings with these large consumers, advising them how to use power efficiently.

Additionally, the signals for investment in Tanzania are cost reflective tariffs which are supposed to encourage an efficient level and nature of investment. Certainty and stability of the tariff framework enables private sector investment too (Shilogile, 2007, p.7).

In conclusion, TANESCO has a communication programme which is currently being implemented under the demand side management, targeting large power consumers. This is planned to be done through energy audits; having meetings with these large consumers, advising them how to use power efficiently. The objective of the company is to persuade consumers through awareness campaigns to shift their load from the peak. Tanzania is working towards embarking on a communication strategy through television and Radio to encourage the consumers to install power system correction systems that will help them improve power factor problems and, at the same time, contribute to improve TANESCO's transmission and distribution losses.

Furthermore, Tanzania uses the "SE4ALL" website. The website is conceived as a portal for stakeholders to access the critical information and links, as well as for dissemination of information, reports and the gathering of comments/ suggestion through a blog or on-line contact form. The Government also uses social media and radio which has proven highly successful in socialisation campaigns and surveys on different topics in the country.

2.3.3. Communication Strategies used in Kenya to promote Energy Efficiency, Conservation and Alternative sources of Energy

Demand for energy in Kenya has been increasing at a rate faster than available supply, leading to a shortage of primary sources of energy as well as depletion of natural resource capital. This outcome could be somewhat ameliorated if there were adequate information on how to conserve energy and use it efficiently. Although many households have only limited energy switching and use options, they do not conserve available energy or even use it in the most efficient and sustainable way (Mutua and Kimuyu, 2015, p.3).

The government of Kenya has embarked on energy efficiency and conservation efforts to educate households on the importance of conserving energy as part of a broader goal of demand side management. Strategies such as Television, print, road shows, billboards have been used to raise awareness on energy efficiency and conservation (Mutua and Kimuyu, 2015, p.7). Kenya aims to promote energy efficiency (EE) to reduce the foreign exchange expenditure on oil imports due to high demand for electricity, some of which is generated from petroleum-based products, and to defer additional investment in power generation (Abrahamsen and Steg, 2011, p.18). In order to promote energy efficient technologies and measures, the government has been proposing to provide technical and financial support to the private sector. In addition, a programme for subsidising efficient electric bulbs to reduce consumption at the household level was begun in 2007. This programme led to significant reduction in electricity consumption. The Government has also been carrying out a countrywide retrofitting exercise of these energy efficiency bulbs and sensitising the public on the benefits. Other non-monetary measures that have been adopted include disseminating energy efficiency and conservation information, developing standards and codes of practice for cost-effective energy use, and establishing a "centre of excellence" for energy efficiency at the national level (Gillingham, 2009, p. 9). This centre is expected to guide and promote development and implementation of energy efficiency and conservation.

Kenya's communication strategies include awareness campaigns carried out through various channels prior and during project implementation; TV, print, road shows, billboards, Kenya also sensitizes customers to support the retrofitting exercise of the energy saving bulbs and also create awareness on the benefits.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

In this chapter, the researcher explains the methods that were used whilst carrying out the research and the data collection process. The researcher shows the research design, research methods, sampling techniques used and data collection tools. The chapter also explains in depth how the targeted population was divided to get the data. The method of triangulation was used; engaging both the qualitative and quantitative methods.

3.2. Research design used

In this research, the Exploratory research design was used to gather preliminary information that helped to define the topic. It was used to obtain additional information and gain background information about the general nature of the topic. The exploratory research design was also used to get more information from available literature, in depth interviews and other data collection methods.

3.3. Research methods

Both qualitative and quantitative methods were used in the research. By mixing both quantitative and qualitative data, the researcher gained in-depth understanding and corroboration, while offsetting the weaknesses inherent to using each approach by itself. One of the most advantageous characteristics of conducting mixed methods research is the possibility of triangulation that is the use of several means (methods, data sources and researchers) to examine the same phenomenon (Babbie, 2010, p.8).

Triangulation allows one to identify aspects of a phenomenon more accurately by approaching it from different vantage points using different methods and techniques. Successful triangulation requires careful analysis of the type of information provided by each method, including its strengths and weaknesses.

3.4. Study Area and Population

The Study was undertaken in Kabwata area of Lusaka. Kabwata is one of biggest constituencies in Lusaka Province with the current population estimate of 175,000 (Central Statistics Report, 2013, p.14). Kabwata is also one of the areas that has had the population growing rapidly, and the demand for energy resources rising at a fast rate. The area is a complex society characterised with different people of different ethnic backgrounds, religious beliefs, race and colour.

3.5. Sample Size

The sample size of a survey most typically refers to the number of units that were chosen from which data was gathered. According to Best and Kahn (2008, p.11), a sample is a small representative proportion of the population that is selected for observation and analysis. A sample size is the act of choosing the number of observations to include in a statistical sample. This is an important feature in which the goal is to make inferences about a population from a sample. In this study, the sample size was 174 participants. The assumption for selecting this sample size was that the sample size will lead to basic understanding of the phenomenon of investigation as they are residents of Kabwata. The number also included community leaders.

3.6. Probability Sampling Technique

A probability sampling method is any method of sampling that utilizes some form of random selection. In order to have a random selection method, you must set up some process or procedure that assures that the different units in your population have equal probabilities of being chosen (Robey, 2004, p. 25). Humans have long practiced various forms of random selection, such as picking a name out of a hat, or choosing the short straw (Creswell, 2012, p.40).

There are different probability sampling methods. Stratified Random Sampling, also sometimes called proportional or quota random sampling, involves dividing your population into homogeneous subgroups and then taking a simple random sample in each subgroup.

Simple Random Sampling: The simplest form of random sampling is called simple random sampling. A simple random sample (SRS) of size n consists of n individuals from the population chosen in such a way that every set of n individuals has an equal chance to be the sample actually selected. (Moore and McCabe 2006, p. 219).

According to Robson (1993), Multi Stage Random Sampling is a sampling strategy (e.g., gathering participants for a study) used when conducting studies involving a very large population. The entire population is divided into naturally-occurring clusters and sub-clusters, from which the researcher randomly selects the sample.

Systematic Random Sampling is the random sampling method that requires selecting samples based on a system of intervals in a numbered population and Cluster Random Sampling: Cluster sampling—occurs when the sampling unit is not an individual but a group (cluster) that occurs naturally in the population such as neighbourhoods, hospitals, schools, or classrooms (Charles and Yu, 2007, p.67)

3.6.1. Sampling Technique Used

According to Singh (2003, p. 4) Simple Random Sampling is the simplest and most common method of selecting a sample, in which the sample is selected unit by unit, with equal probability of selection for each unit at each draw. Simple random sampling is the basic sampling technique where the researcher selects a group of subjects (a sample) for study from a larger group (a population). Each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample. In order to select the required sample of 174 participants, the study used both probability and non-probability sampling techniques. The 174 participants were selected by using simple random sampling based on the available sampling frame, each household in Kabwata had an equal and non-zero chance of being included in the sample. At each selected household, the researcher purposively sought the participation of one representative, with preference to the household head or any reasonable adult in case of the absence of the household head.

3.6.2. Purposive Sampling

Purposive sampling under the Non-probability method was a technique used to categorically employ recruit household heads and also Key informants into participating in the current study. Literature provides evidence that in purposive sampling the investigator selects a particular group from the entire population to constitute the sample because this group is considered to have characteristics required for the specific purpose of investigation (Muiji,2010, p.50). In this case, selection of key informants by purposive sampling was based on the understanding that the

institutions they represented had a particular interest in Energy related matters but also in Kabwata area. As a result, such participants had rich knowledge and experiences which were vital for this study. The researcher also considered the fact that key informants should be willing to take part in the study without being pressured.

3.7. Data Collection

The data was gathered from both primary and secondary sources.

3.7.1. Primary Data

Primary data was obtained as it was tailor-made for the research project. The researcher collected data, using in-depth interviews and participant observation. The primary data also came from the questionnaires that were administered.

3.7.2. Secondary data

The secondary data came from documentary evidence such as reports, records, and population statistics annual work plans, publications, websites, newsletters and written statements.

3.8. Quantitative survey

Quantitative methods emphasise objective measurements, statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data and generalising it across groups of people or to explain a particular phenomenon (Babbie, 2010, p. 12).

Quantitative research methods are research methods dealing with numbers and anything that is measurable in a systematic way of investigation of phenomena and their relationships (Adèr and Mellenbergh et al., 2008, p.13). Quantitative survey entail analysis of data collected through questionnaires. The advantage of quantitative data is that it allows a broader study, involving a greater number of subjects and enhancing the generalisation of results. It also involves the collection and analysis of data which entails a deductive approach to the relationship between theory and research in which the accent is placed on testing theories. In this case, 174 questionnaires were distributed to a selected sample to collect data.

3.9. Qualitative research methods

3.9.1. In-depth interviews

The in - depth interview was selected because it involved the researcher asking questions and following up on the responses of the interviewee in an endeavour to extract as much information as possible from the interviewee who has expert knowledge on the topic.

This qualitative method emphasises on the words rather than quantification in the collection of data. It focuses more on the ways in which individuals interpret the communication strategies and outreach programmes of the organisation.

Another advantage to qualitative research is that the researcher gains more detailed and rich data in form of comprehensive written descriptions or visual evidence, such as photographs. This type of research looks at context and social meaning and how it affects individuals, which is advantageous particularly in the social sciences.

This method is appropriate because it is useful when the researcher involves obtaining a sense of how individuals view the situation and what their experiences have been around the research topic under consideration. In this method, the interviewer is allowed to enter the interviewees "lived everyday world" (Kvale and Brinkaman, 2009, p. 29).

The method gives the researcher an opportunity to establish a rapport with the interviewee before exploring detailed information or difficult material (MKellor, 2000). According to Mason (1998), the in-depth interview is relaxed, open and honest.

Since it seeks to understand a given research problem or topic from the perspective of the local population involved, this method is of help as the problem under consideration is contextualised to Zambia.

3.9.2. Participant observation

Participant observation was engaged to complement the in-depth interview. Participant observation thus provides a yardstick against which to measure the completeness of data gathered. In other ways, it is a model which can serve to let the researcher know what orders of information escape, when other methods are used (Becker and Geer, 1995, p. 347). Through the attachment

that was done at the Ministry of Energy, the researcher was able to interact with people in everyday working activities while collecting information. This method enabled the researcher to also observe the communication strategies that were used at the Ministry of Energy.

3.9.3. Review of documentary evidence

The researcher looked at the documentary evidence that was available. This is because it provides affirmative evidence and strengthens the reliability of results from interviews and observations. The documentary examinations included the Ministry of Energy's communication strategy and outreach policy, and other pieces of legislations and publications.

4.0. Analysis and interpretation of Data

Since the research employed a triangulation method, the techniques that were used in the data analysis and interpretation of data involved both qualitative and quantitative, of which findings were merged to form the basis for the report. A statistical analysis was performed in order to infer some properties of the sample from the study results, as well as analyse the research findings. Later, the data was keyed in a computer using Statistical Package for the Social Sciences (SPSS) to produce tables and charts, frequencies, percentages and graphs.

5.0. Ethical considerations

The research took effort in adhering to ethical standards and considerations for conducting social research. The current study involved collecting data from people and about people. Therefore, the researcher endeavoured to seek professional approval and institutional clearance at various levels such as the University where the researcher was a student, local authorities and leaders of the affected community. The objective of undertaking the process of seeking institutional approval and clearance was to maintain professional integrity in the process of carrying out this social research.

At the beginning of the study, the researcher informed participants of the study including the importance of their participation. In the same way, the researcher sought the informed consent without coercion of any sort in order to adhere to research integrity as well as respect for their dignity, as well as norms and charters of indigenous society. In the same way, other rights of participants such as privacy and confidentiality were observed.

When collecting the data, the researcher ensured that all participants were treated the same while at the same time making efforts to avoid deceiving participants. The researcher kept as anonymous and confidential participants' identities in order to respect their privacy by not writing their names.

The subjects were free to withdraw from the study at any point. In the event that the subjects sought further clarification about the study, they were encouraged to consult with a confidant or independent advocate. In relation to ensuring that respondents are shown fair treatment and justice, each individual was treated equally without judgment or prejudice.

6.0. Limitation of the study

There was not enough literature on the local perspective. There was bureaucracy and red tape when it came to accessing information from the Ministry of Energy where the attachment was done; information flow was slow.

CHAPTER FOUR

CONCEPTUAL AND THEORETICAL FRAMEWORK

4.1. Introduction

In this chapter, the researcher gives the conceptual and theoretical framework where different concepts and theories related to the field of study are evaluated. The main concepts have been defined and applied to the topic of study. Concepts that need to be understood here include: communication, participatory communication, communication strategy, Public Communication Campaign, society, Energy Efficiency & Conservation, Load shedding, Alternative Energy, and Renewable Energy. These help in putting the study into perspective. The second part provides the theoretical framework within which the study is based.

4.2. Conceptual and operational definitions

4.2.1. Communication

Communication means sharing or exchanging information, news and ideas with someone. There are various definitions of communication. Some view it as a symbolic social process action in response to something people have heard or seen. Communication has its place in human behaviours and the structures of society. It involves the transfer, exchange, transmission and dissemination of information from one source to another. “Communication,” which is etymologically related to both “communion” and “community,” comes from the Latin word “communicare”, which means “to make common” (Weekley, 1967, p. 338) or “to share,” according to DeVito (1986, p. 61) who expanded on this, writing that communication is “the process or act of transmitting a message from a sender to a receiver, through a channel and with the interference of noise”.

According to Julia Wood (2004, p.1), communication is “a systemic process in which individuals interact with and through symbols create and interpret meanings.”

This definition is broken down into its constituent parts as follows:

- Communication is a process, which means it is ongoing and always changing.

- Communication is systemic; that is, it occurs within systems of interrelated and interacting parts.
- Communication is symbolic: symbols are the basis of language, much non-verbal behaviour, and human thought. They can be arbitrary, ambiguous, abstract representations of other phenomena.

The meaning of communication is not in what people say, but in how the other person responds. How they respond reveals what was actually communicated in spite of what the communicator thought they said (Payne, 2007, p.8).

Communication is used here to mean, a process in which participants create and share information with each other with a view to reaching mutual understanding.

In the current study, communication is operationally understood as the exchange of ideas or information between two or more people on matters of concern. Therefore, the primary focus is on the manner in which the Ministry of Energy engaged in exchange of information on energy efficiency and conservation with Kabwata residents.

4.2.2. Group communication

This is communication which occurs in small groups of people, usually not more than twenty people. The process mixes elements of both intrapersonal communication and interpersonal interactions with social clustering (Ellis,1994, p. 40).

Group communication in this study refers to the exchange of information amongst small groups that have been formed in Kabwata area as a result of having something in common. Groups formed by traders and marketers, church members, school mates, neighbourhood watches and other social meetings.

4.2.3. Mass communication and Mass Media

According to McQuail, (1972, p.13), "the term mass media indicates the entire systems within which messages are produced, selected, transmitted, received and responded to". Mass Communication refers to the media which appeals to a mass audience by using widely circulating media such as newspapers, magazines, television, and radio to inform, entertain and persuade the large widely dispersed and heterogeneous public. Mass communication is a mediated form of

communication. This differentiates mass communication from all other forms of communication. According to Janowitz (1967, p.6), “Mass communication comprises the institutions and techniques by which specialised groups employ technological devices (Radio, TV, Press, films) to disseminate symbolic content to large heterogeneous and widely dispersed audiences."

Wright (1972, p.4) defines mass communication as a special kind of communication involving distinctive operating conditions, primary among which are nature of the audience, of the communication experience, and of the communicator. Mass communication is directed toward a relatively large, heterogeneous and anonymous audience. Mass communications is characterised as public, rapid and transient.

Mass communication is applied to this study as defined above.

4.2.4. Participatory communication

Participatory communication is a term that denotes the theory and practices of communication used to involve people in the decision-making of the development process. It intends to return to the roots of its meaning, which, similarly to the term community, originate from the Latin word “communis”, meaning, “common” (Mody, 1991, p. 10).

According to White (1994, p.34), participatory communication, is a kind of communication where all the interlocutors are free and have equal access to the means to express their points of view, feelings and emotions.

In this case, participatory communication has been operationalised to measure the extent to which members of the target communities can access communication strategy and outreach messages from the organisation. When people participate, they are allowed to share ideas, opinions, values and concerns in development projects. It is important for people to share in an activity. Participation involves dialogue, renewal of cultural aspects, sharing of knowledge and meaning together. If development goals and objectives are to be achieved, participation is a necessity.

4.2.5. Communication strategies

Communication strategies are plans for communicating information related to a specific issue, event, situation, or audience. They serve as the blueprints for communicating with the public, stakeholders, or even colleagues (Serveas,1996, p.214).

A communications strategy, or plan, is a document that expresses the goals and methods of an organisation's outreach activities, including what an organisation wishes to share with the public and whom the organisation is trying to reach.

In the current study, communication strategies were understood as specific activities and mechanisms used in sharing information about the project on energy efficiency in Kabwata area. Of particular concern were the following activities or tools employed in the process of communication: concerts, songs, speeches, road shows, billboards, posters, brochures, flyers, television and radio discussion programmes and adverts, films, demonstrations, protests and letters.

4.2.6. Communication channel

A channel is the "vehicle or medium through which signals are sent" (Davito, 1986, p. 52). This

channel may convey the message visually or aurally, for example. It can be the space between two people talking, an online discussion board, or a television set, and so on. It is a medium through which a message is transmitted to its intended audience, such as print media or broadcast (electronic) media.

In this study, the channel was the means used by the Ministry of Energy and ZESCO Limited to send information to the residents of Kabwata.

4.3. Energy efficiency and Energy conservation

Energy efficiency is using technology that requires less energy to perform the same function (US Energy Information and Administration, 2016.p1).

Energy conservation is any behaviour that results in the use of less energy. Turning the lights off when leaving the room and recycling aluminium cans are examples of ways of conserving energy.

In this study, energy efficiency and conservation means energy saving behaviours such as turning machines off when they're not in use or choosing to buy fuel-efficient vehicles and energy-efficient appliances, as well as using compact fluorescent light bulbs that require less energy instead of using an incandescent bulb to produce the same amount of light.

4.4. Renewable energy

Renewable energy is energy generated from natural resources, such as sunlight, wind, rain, tides and geothermal heat which are renewable (naturally replenished) (Schroder and Smith, 2008, p.155-163) Renewable energy technologies range from solar power, wind power, hydroelectricity/micro hydro, biomass and biofuels for transportation. This energy cannot be exhausted and is constantly renewed (Mark, 2015, p.209).

Boyle (1996, p.3) defines renewable energy as any energy resource that is naturally regenerated over a short time scale and derived directly from the sun (such as thermal, photochemical, and photoelectric), indirectly from the sun (such as wind, hydropower, and photosynthetic energy stored in biomass), or from other natural movements and mechanisms of the environment (such as geothermal and tidal energy). Renewable energy does not include energy resources derived from fossil fuels, waste products from fossil sources, or waste products from inorganic sources.

Renewable energy in this study mostly emphasises solar (Energy from the sun) as it is easily accessible and easier to install. This is also because Zambia has a lot of sunlight and makes solar energy advantageous as an alternative to hydro.

4.5. Alternative energy

Alternative energy is a term used for an energy source that is different from using fossil fuels. Generally, it indicates energies that are non-traditional and have low environmental impact (Clark and Jacks, 2010, p.p. 12-14). Hence the term alternative is used to contrast with fossil fuels. By most definitions, alternative energy doesn't harm the environment, a distinction which separates it from renewable energy which may or may not have significant environmental impact.

In this study, alternative energy refers to any source of energy other than energy that is generated from water (hydropower energy), which is 99% being used in Zambia.

4.6. Load shedding

Load shedding as the name implies is the reduction of load on a sub-system or entire system to achieve a certain expectation. For instance, balancing load against demand, that is to maintain frequency within +-0.15Hz as required on the Zambian system and maintaining voltage within +-6% of the rated (ZESCO Limited Generation, 2015, p. 10).

The factors that necessitate to implement load shedding are excessive demand, limited generation capacity, or operating under too low voltage. The first one can be caused by trip out of a generator and the second one can be caused by a transformer tripping or one of the twin lines tripping.

In this study, load shedding means cutting off electricity supply to customers for more than 30 minutes when the demand can't meet the supply especially at peak time, in order to protect the equipment from damage. It also refers to the rationing of electricity when the demand is higher than supply, so that all customers can share what is available, equally, until there is increase in the generation capacity.

4.7. Public Communication Campaign

Public communication campaigns are campaigns that use the media, messaging, and an organised set of communication activities to generate specific outcomes in a large number of individuals and in a specified period of time (Salama, 2007, pp.4-5).

There are two types of Public Communication Campaigns. The first one is Individual Behaviour Change Campaigns, that try to change individuals' behaviours that lead to social problems and promote behaviours that lead to improved social well-being. The second one is Public Will Campaign that attempts to mobilize public action for policy change. A Public Will Campaign attempts to legitimise or raise the importance of a social problem in the public eye as the motivation for policy action or change (Salama,2007, p. 7).

In this study, Public Communication Campaigns include activities such as Roadshows in public places such as markets, cultural dances and drama, as well as flyers and brochures and community radio stations.

4.8. Society

This term has been derived from a Latin word 'socious' that means association or companionship. Thus society means "a larger group of individuals, who are associative with each other". Society, here, is used to refer to a group of people related by social and economic interdependence and possessing a conscious awareness of belonging together. According to **Muller (2007, p. 25), a society is a** system of relationships that exists among the individuals of the groups.

Individual is the basic component of society. The interaction of individuals with each other gives birth to group. The social groups interact with each other and develop relationships with each other, leads to a society. Within the society there are patterns and groupings on the basis of likeness and differences. Likeness, creates a chain of relations among the individuals having similarity in one or more conditions' like same profession, same residence, same caste, family and kinship, college, age and sex (Brin,1999, p.33).

Consciousness of kind is developed and the people of similar interests are joined together rustling in the formation of various groups and categories. Without any difference in cultural conditions of a society, human life would have been monotonous and probably limited in which little change is predictable. The system of "give and take" relationships creates reciprocal roles in human life. These differences lead to variety of human behaviours and social division of labour; the process of specialisation is developed. That is why a human being is dependent on society for basic needs satisfaction, that is, food, protection and education. Society is applied to this study as defined above.

4.9. Communication Theories

The following are the communication theories that apply to this research:

4.9.1. Diffusion of Innovation Theory

The American scholar Everett Rogers, a professor of rural sociology is said to be the person who introduced this diffusion theory in the context of development in his book "Diffusion of Innovations"; published in 1962, and is now in its fifth edition (2003). According to Rogers (2003, p.5), diffusion of innovation is the process by which an innovation is communicated through certain channels over time among the members of a social system. According to Ryan and Gross,

(1943, p. 79), diffusion occurs through a five-step decision making process. It occurs through a series of communication channels over a period of time among members of a similar social system.

Rogers (2003, p.80) identified these five stages as awareness, interest, evaluation, trial and adoption. But in later editions of the book, Rogers changed to knowledge, persuasion, decision, implementation, and confirmation described as follows:

- **Knowledge**: The individual is first exposed to an innovation, but lacks information about the innovation. During this stage, the individual has not yet been inspired to find out more information about the innovation (Rogers, 2003, p. 82).
- **Persuasion:** The individual is interested in the innovation and actively seeks related information and details (Rogers, 2003, p.82).
- **Decision:** The individual takes the concept of change and weighs the advantages and disadvantages of using the innovation and decides whether to adopt or reject the innovation. Due to the individualistic nature of this stage, Rogers notes that it is the most difficult stage on which to acquire empirical evidence (Rogers, 2003, p.83).
- **Implementation:** The individual employs the innovation to a varying degree depending on the situation. During this stage, the individual also determines the usefulness of the innovation and may search for further information about it (Rogers, 2003, p.83).
- **Confirmation:** The individual finalizes his/her decision to continue using the innovation. This stage is both intrapersonal (may cause cognitive dissonance) and interpersonal confirmation that the group has made the right decision (Rogers, 2003, p.84).

Adoption of a new idea, behaviour or product does not happen simultaneously in a social system; rather it is a process whereby some people are more opt to adopt the innovation than others. Researchers have found that people who adopt the innovation early have different characteristics than people who adopt the innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation.,

Rogers established five adopter categories as follows:

- **Innovators:** These are people who want to be the first to try the innovation. They are adventurous and interested in new ideas. These are willing to take risks and are often the first to develop new ideas.
- **Early adopters:** These individuals have the highest degree of opinion leadership among the adopter categories. Early adopters have a higher social status, financial liquidity, advanced education and are more socially forward than late adopters. They are also more discreet in adoption choices than innovators (Rogers, 2003, p. 248).
- **Early Majority:** They adopt an innovation after a varying degree of time that is significantly longer than the innovators and early adopters. Early majority have above average scale status, contact with early adopters and seldom hold positions of opinion leadership in a system (Rogers, 2003, p. 249)
- **Late majority**: They adopt an innovation after the average participant. These individuals approach an innovation with a high degree of scepticism and after the majority of society has adopted the innovation. Late majority are typically sceptical about an innovation, have below average social status, little financial liquidity, in contact with others in late majority and early majority and little opinion leadership (Rogers, 2003, p. 249)
- **Laggards**: They are the last to adopt an innovation. Unlike some of the previous categories, individuals in this category show little to no opinion leadership. These individuals typically have an aversion to change-agents. Laggards typically tend to be focused on "traditions", lowest social status, lowest financial liquidity, oldest among adopters and in contact with only family and close friends (Rogers, 2003, p. 250).

One major weakness of this theory is that it creates a gap in knowledge between the early adopters to innovation or technology and the late adopters or those that have access to innovation or technology and those that do not have access with other communities are elicited (Meyer,2004, p.17). It does not also take into account an individual's resources or social support to adopt the new behaviour or innovation.

This theory applies to the study in a way that ideas flow into the community according to the rate of adoption and how various people view the idea. If the idea is beneficial to the community, the rate of adoption will be high. If they understand the idea, people will agree to let go of their traditions and adopt other beneficial trends.

4.9.2. Agenda setting theory

Also known as The Agenda Setting Function of the Mass Media, it was first put forth by Maxwell McCombs and Donald Shaw in 1972 in Public Opinion Quarterly. They originally suggested that the media sets the public agenda, in the sense that they may not exactly tell you what to think, but they may tell you what to think about (McCombs and Shaw,1972, p.2).

In choosing and displaying news, editors, newsroom staff, and broadcasters play an important part in shaping political reality. Readers learn not only about a given issue, but also how much importance to attach to that issue from the amount of information in a news story and its position (McCombs and Shaw 1972, p. 2). In reflecting what candidates are saying during a campaign, the mass media may well determine the important issues—that is, the media may set the "agenda "of the campaign.

This theory is intended to apply to the news media, although in certain cases it has been applied to other areas of the media and messages which they transmit to audiences (McCombs, 2003, P.3).

The media has a big influence on setting the agenda about important issues. When people are exposed to media agenda for a sufficiently long time, they internalise that agenda and prioritise media issues (McCombs & Shaw, 1972, pp. 176-187).

The proponents of the theory claim that there is a relationship between the way mass media treats events and the way the people form ideas about such issues. The media sets the agenda and the policy makers set the agenda. The news media is the source of people's information on public affairs. The media has the capacity to create an image for the public on what they must adhere to. In this way, the public may be influenced on what they should think about. According to the agenda setting theory, media are able to structure issues and present them to the public who in turn have something to think about and act accordingly. McQuail (2000, p.12) refers to it as the power to 'structure issues'.

This theory is important to policy change campaigns. This method may help to influence policymakers to adopt certain policy alternatives. The organisation may use this theory to strengthen advocacy to support certain courses of action or policy recommendations. Agenda setting may contribute to alliance building and raising awareness on some issues.

This theory puts forth the ability of the media to influence the significance of events in the public's mind. The media set the agenda for the audience's discussion and mentally order and organise their world. The theory argues that the media may not tell the public what to think about but that the media tells the public how to think. This appears to be the case, as it can be seen that what the media sees as important, the public will also deem it so.

CHAPTER FIVE

FINDINGS OF THE RESEARCH

5.1. Introduction to the Chapter

This chapter presents the findings of the primary research of this study. The findings were derived from 175 questionnaires, using quantitative and qualitative methods respectively. The findings have been presented in form of tables and charts using SPSS and Excel.

5.2. Quantitative Survey

The sample size for the study was 175. 175 persons from 175 households in Kabwata Township who took part in the study giving a response rate of 100 percent. Heads of households were personally interviewed using a structured questionnaire.

Below is Table 1 and Figure 1 showing Sex distribution amongst the respondents.

	Frequency	Percent
Male	132	75.5
Female	43	24.5
Total	175	100

Table 1. Sex Distribution

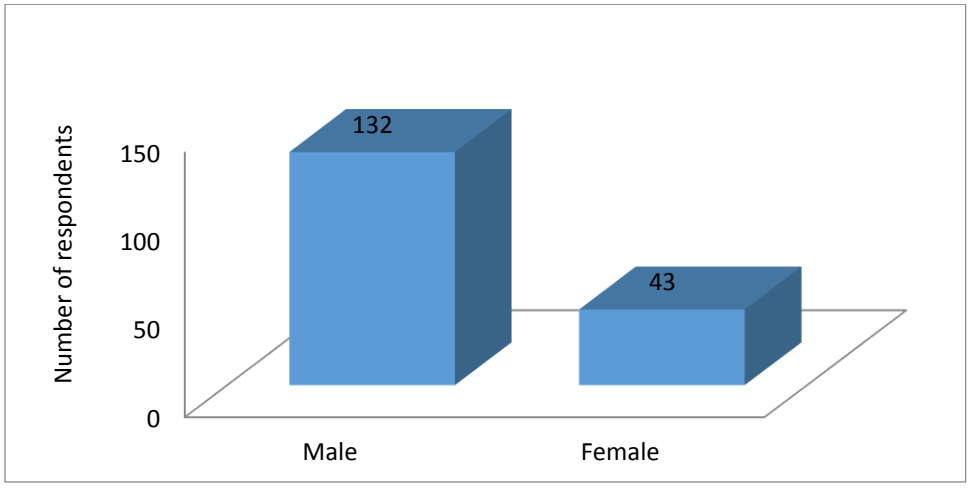

Figure 1. Sex Distribution

The table and figures above show the sex composition as a background characteristic of the sampled respondents. Of the total 175 respondents, 132 were male representing 75.5% and 43 were female representing 24.5%. The distribution shows that the sampled population had more males than females.

Below is Table 2 and Figure 2 showing the Ages of respondents

Age	Frequency	Percentage
14-19	0	0
20-24	0	0
25-29	15	8.6
30-35	76	43.4
35+	84	48.0
Total	175	100.0

Table 2. Ages of respondents

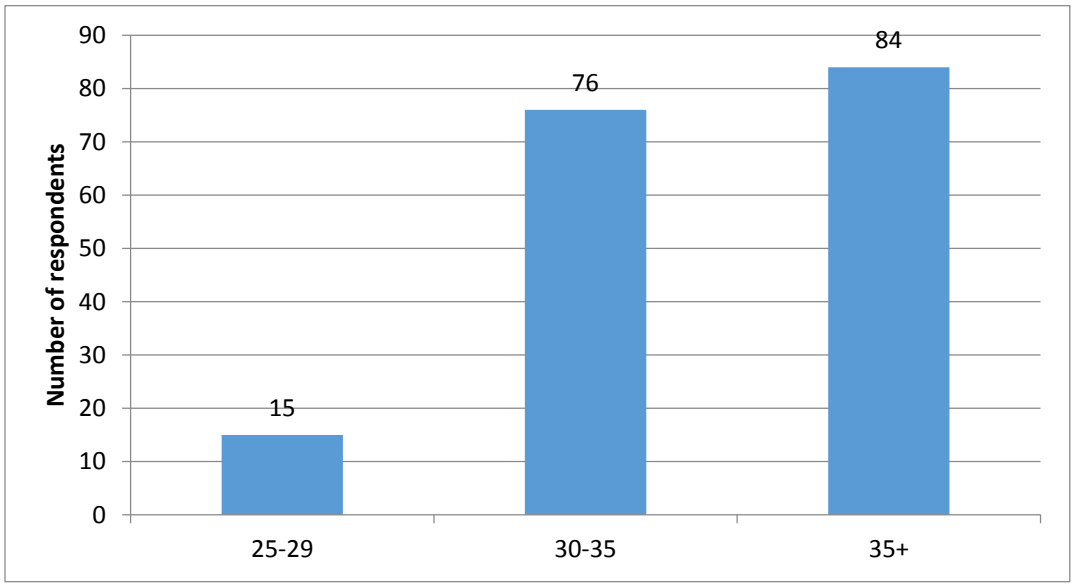

Figure 2. Ages of respondents

The table and figure above show the ages of the respondents. The ages that participated were between 25-29 years old which was 8.6%; 30-35 was 43.4 % and 35 and above was 48% of the sampled population. Those that didn't participate were 24 years and below.

Below is Table 3 and Figure 3 showing the Marital Status of the respondents.

	Frequency	Percent
single	62	35.4
separated	11	6.3
married	91	52
divorced	0	0
widowed	11	6.3
Total	175	100

Table 3. Marital Status

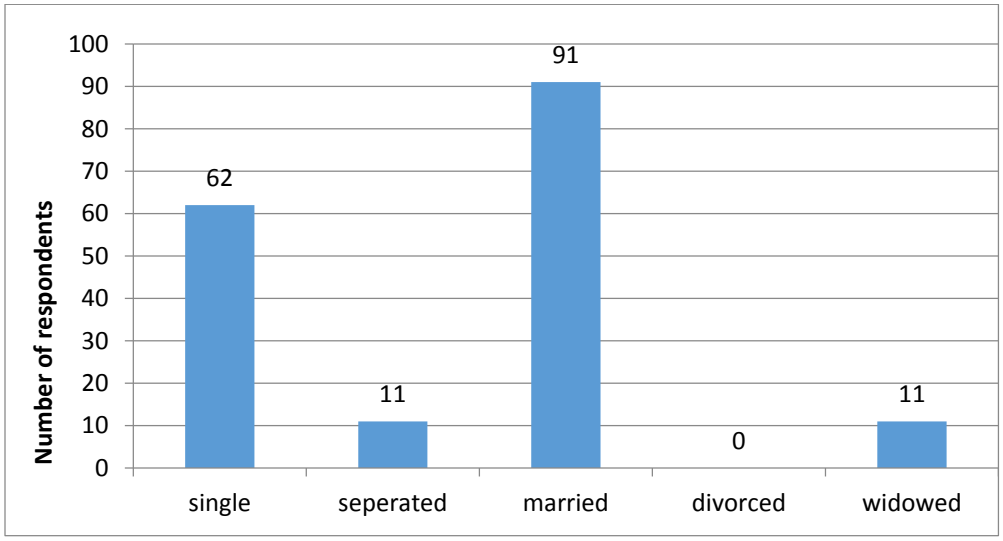

Figure 3. Marital Status

As seen from the table and figure above, it is evident that most respondents were married showing 52% of the total respondents, 35.4% were single, and then those who were widowed and separated were at 6.3% each respectively. No respondent responded having been divorced.

Below is Table 4 and Figure 4 showing the education levels of the respondents.

Column1	Frequency	Percent
primary	29	16.6
secondary	38	21.7
college/university	108	61.7
Total	175	100

Table 4. Highest Education qualification

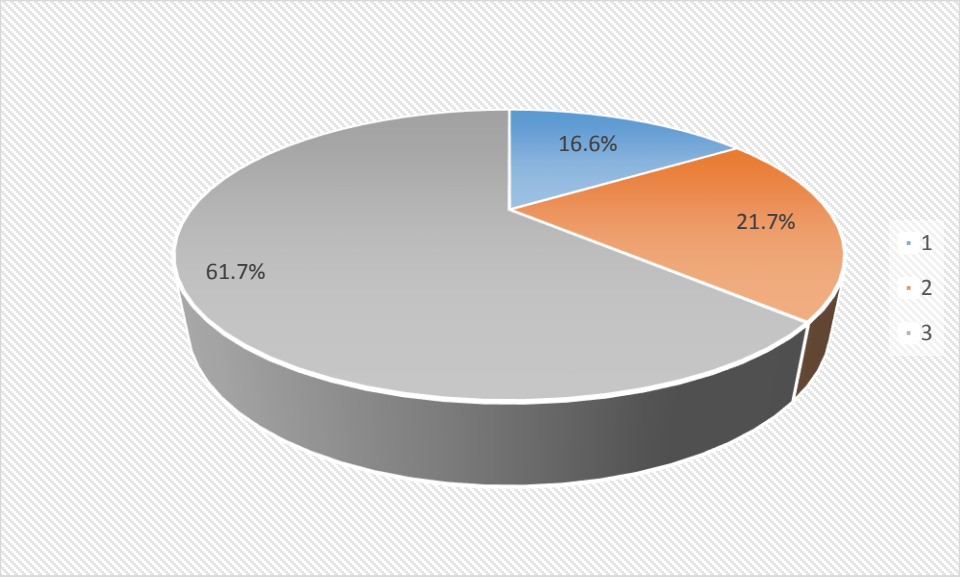

Figure 4. Highest Education Qualification.

Highest education qualification is indicated in the table above as a background characteristic of the sampled respondents. Of the total 175 respondents, 29 went as far as primary school representing 16.6%, 38 went as far as secondary school representing 21.7% and 108 went up to tertiary level of education representing 61.7%

Below is Table 5 and Figure 5 showing the awareness strategies by the respondents.

	Frequency	Percent
Yes	101	57.7
No	74	42.3
Total	175	100

Table 5. Awareness of Communication Strategies

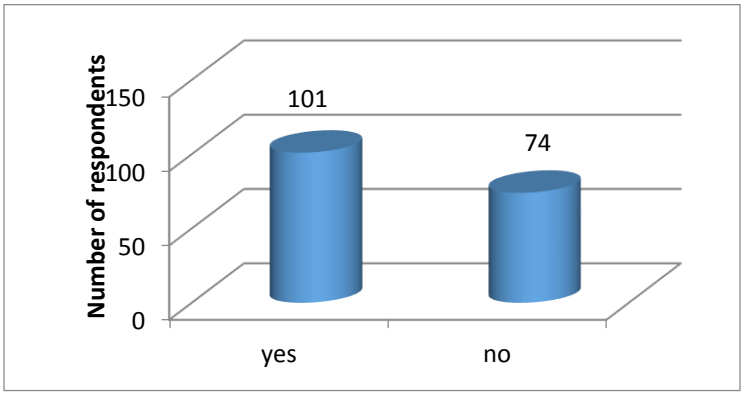

Figure 5. Awareness of Communication Strategies

The table and figure above show the awareness of communication strategies by the sampled respondents. Of the total 175 respondents, 101 were aware representing 57.7% and 74 were not aware representing 42.3%.

Below is Table 6 showing how often respondents get information from media sources.

	very often		often		rarely		never		None	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
television	44	25.3	88	50.6	9	5.2	26	14.9	9	5.2
radio	18	10.3	79	45.4	44	25.3	26	14.9	9	5.2
newspape	53	30.5	26	14.9	53	30.5	18	10.3	26	14.9
magazine	9	5.2	9	5.2	88	50.6	44	25.3	26	14.9
social mec	53	30.5	44	25.3	26	14.9	35	20.1	18	10.3
brochure	18	10.3	35	20.1	61	35.1	44	25.3	9	5.2
billboards	18	10.3	61	35.1	26	14.9	61	35.1	9	5.2
meetings	0	0.0	9	5.2	26	14.9	123	70.7	18	10.3
dialogue	18	10.3	26	14.9	35	20.1	88	50.6	9	5.2
advertisen	26	14.9	70	40.2	18	10.3	53	30.5	9	5.2
music	26	14.9	18	10.3	61	35.1	61	35.1	9	5.2
church	9	5.2	26	14.9	26	14.9	105	60.3	9	5.2

Table 6. How often respondents get information.

According to the table above, most respondents reported that social media **very often** gave them information leading with 30% of the total respondents, television **often** gave information with 50.6%, magazines mostly **rarely** gave information 50.6%, and meetings mostly **never** gave any information with 70.7%.

Below is Table 7 showing the effectiveness of the communication strategies.

	Frequency	**Percent**
very effective	18	10.3
effective	87	49.7
not sure	52	29.7
not effective	18	10.3
Total	175	100

Table 6. Effectiveness of Communication Strategies

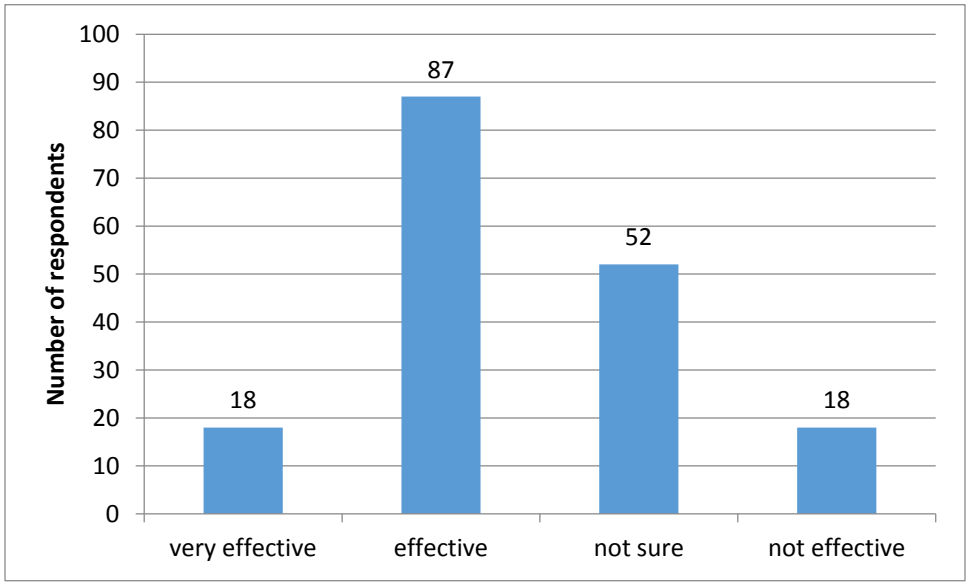

Figure 7 Effectiveness of Communication Strategies

The effectiveness of communication strategies is as shown in the figure and table above, from this it is evident that majority of the respondents found that communication strategies were effective with 49.7% responding so and 29.7% were not sure and 10.3% was very effective and another 10.3% not effective.

The following tables show different sources of information on energy efficiency/conservation. The tables show;

i) how often respondents get information from these sources,

ii) how effective are these sources are in delivering energy efficiency related messages,

iii) how suitable the language and messages used are in communicating energy efficiency-related messages. All tables show results obtained in multiple response questions from 175 respondents.

Below is Table 8 showing the effectiveness of the sources of information.

	Very Effective		Effective		Not Sure		Less Effective		Not Effective		None	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
television	88	50.6	53	30.5	0	0.0	9	5.2	18	10.3	9	5.2
radio	79	45.4	44	25.3	9	5.2	9	5.2	26	14.9	9	5.2
newspape	70	40.2	44	25.3	9	5.2	18	10.3	26	14.9	9	5.2
magazine	9	5.2	35	20.1	35	20.1	35	20.1	35	20.1	26	14.9
social mec	35	20.1	53	30.5	26	14.9	18	10.3	35	20.1	9	5.2
brochure	9	5.2	35	20.1	35	20.1	53	30.5	35	20.1	9	5.2
billboards	26	14.9	44	25.3	26	14.9	35	20.1	35	20.1	9	5.2
meetings	0	0.0	26	14.9	44	25.3	44	25.3	44	25.3	18	10.3
dialogue	44	25.3	26	14.9	18	10.3	26	14.9	53	30.5	9	5.2
advertisen	35	20.1	53	30.5	18	10.3	35	20.1	26	14.9	9	5.2
music	44	25.3	35	20.1	18	10.3	44	25.3	26	14.9	9	5.2
church	26	14.9	0	0.0	35	20.1	18	10.3	79	45.4	18	10.3

Table 8. The effectiveness of the sources of Information.

According to the table above, most respondents reported that Television as a source was very effective in delivering information with 50.6% of the respondents saying so, most respondents reported that social media and advertisements were very effective both at 30.5% each. Some respondents were not sure if meetings were effective or not with majority of respondents of 25.3 % reporting so. Brochures were less effective and dialogue was not effective.

Below is Table 9 showing the suitability of the language and channel of communication.

	very suitable		suitable		not sure		less suitable		not suitable		None	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
television	70	40.2	61	35.1	18	10.3	9	5.2	9	5.2	9	5.2
radio	88	50.6	44	25.3	18	10.3	9	5.2	9	5.2	9	5.2
newspape	61	35.1	61	35.1	26	14.9	0	0.0	9	5.2	18	10.3
magazine	26	14.9	26	14.9	70	40.2	9	5.2	35	20.1	9	5.2
social mec	44	25.3	35	20.1	35	20.1	18	10.3	35	20.1	9	5.2
brochure	35	20.1	35	20.1	44	25.3	18	10.3	35	20.1	9	5.2
billboards	35	20.1	61	35.1	18	10.3	26	14.9	26	14.9	9	5.2
meetings	44	25.3	9	5.2	61	35.1	26	14.9	26	14.9	9	5.2
dialogue	44	25.3	18	10.3	35	20.1	26	14.9	44	25.3	9	5.2
advertisen	18	10.3	35	20.1	44	25.3	35	20.1	26	14.9	18	10.3
music	44	25.3	35	20.1	44	25.3	18	10.3	26	14.9	9	5.2
church	26	14.9	26	14.9	35	20.1	9	5.2	61	35.1	18	10.3

Table 9. The Suitability of the language and channel.

According to the table above, radio was the most suitable source of information with 50.6% of the respondents reporting so, billboards, television and newspapers show that most respondents find it suitable with all at 35.1%. Some respondents were not sure if magazines were suitable sources with 40.2%. Advertisement shows less suitable with majority (20.1%) and the majority says the church was not suitable at all with 35.1%.

5.2.10. The following three questions from the questionnaire; 11,12 and 13 attempted to answer the relevance of energy efficiency messages to the public:

According to your observation, how important have the messages the Ministry of Energy and ZESCO been using to help reduce power shortages in the country?

- 100 respondents said the messages are fair but not effective.
- 50 respondents said the messages have not been packaged properly
- 25 respondents said the messages have not been clear as to what needs to be done.

To what extent have the messages used influenced attitude, belief and behaviour in your community with regards to adhering to energy saving?

- 15 respondents said the mode of communication is weak and hence messages do not influence behaviour at all.
- 85 respondents said the messages are effective for those in towns but not rural.
- 53 respondents said they have become more cautious about the electrical appliances they use in homes.
- 12 respondents said the messages are only 40% effective.
- 10 did not make any statements

What means of communication can you suggest the Ministry of Energy and ZESCO should have used to reach out to residential areas?

- 70 respondents said the participants suggested that messages should be sent via mobile phone
- 60 respondents said through door to door visitations to hear the challenges the customers face
- 2 respondents suggested stickers on toys, sweets for the younger ones and to visits school so that the pupils can inform their parents and communities

- 100 respondents suggested the use of social media
- 30 respondents suggested the use of Public Address systems in the compounds
- 4 respondents suggested Informal meetings with the communities

5.3 Qualitative survey

5.3.1 In-depth Interviews

In-depth interviews were conducted with three people from the Department of Energy and ZESCO Limited and who are experts on energy efficiency, energy conservation and renewable energy. In-depth interviews attempted to answer the following questions:

5.3.1.1. What communication strategies have you put in place for the public on energy efficiency?

ZESCO Limited

Since Zambia experienced a drought in the 2015/2016 season, ZESCO could not generate electricity at full capacity and hence started load shedding to share power to all customers. As a short - medium term strategy, ZESCO started encouraging customers and the public to save electricity so that it can be shared by practicing energy efficiency and conservation. This has been done through advertising using television, radio and newspaper, as well as roadshows and town hall meetings in residential areas.

5.3.1.2. What messages have you put in place to sensitise the public on energy efficiency?

The main messages have been encouraging people to switch from incandescent bulbs to energy saving bulbs, to ensure that they do not leave lights on during the day, to switch off lights in unoccupied rooms and to switch off devices that are not in use. Some of the messages that have been used in the campaign are, “Switch and Save” and “Swap 6 ordinary bulbs, for 6 energy saving bulbs”.

5.3.1.3. What languages has ZESCO used to communicate with the customers and how has the impact of these messages been assessed?

Mainly, the language that has been used is English. ZESCO has been assessing the impact of the messages by observing if there is a reduction in the demand for electricity in areas that have been reached out and if there are any savings made from the use of energy saving bulbs. The company also does physical checks of premises to see if the behaviours have changed. For instance, if lights are off during the day.

5.3.1.4. How do you know if the reduction of the demand has been because of your messages and not caused by other factors?

Actually, it's not always easy to know because naturally the demand for electricity is higher depending on the season of the year, but the energy saving bulbs were put to a study in selected areas that were installed for observation. Sometimes a survey is undertaken.

5.3.1.5. How effective are your surveys?

Actually it has been very difficult. The customer base has grown very high. It is now 700,000, so getting a true representation of the true picture is slow. Evaluation of our communication strategies has not been very effective; to know whether it works or does not work. The Corporate Affairs Department is also small and the process of getting funds for the survey is long. Sometimes it takes a year to conclude a research of which by that time, the environment would have changed and the findings may be distorted.

5.3.1.6. What communication channels does the Ministry of Energy use to communicate with the public in order to educate them over their energy needs and uses?

The main communication channels have been through Television, radio, newspapers, billboards, roadshows and brochures.

5.3.1.7. What have been people's reactions on the use of alternative sources of energy?

Most people consider alternative sources such as gas to be dangerous and solar to be expensive.

5.3.1.8. What policies have you put in place to ensure that energy efficiency, conservation is promoted in Zambia?

Ministry of Energy

The Government of the Republic of Zambia has banned the importation of incandescent bulbs in the country to promote the use of energy - saving bulbs. The Ministry of Energy is also ensuring that newly built structures should have solar panels on roofs to reduce demand of electricity from the National Grid. So far, the parliament building and ZESCO Head Offices get their power from solar panels on roof tops.

5.3.1.9. How are you ensuring that there is an energy mix to reduce reliance on hydro power generation?

The Ministry of Energy has been partnering with Independent Power Producers (IPPs) to get power that is generated from coal other than water and has been promoting the use of solar and gas in the production of goods and services as well as for residential use.

5.3.1.10. Renewable energy has been the new solution for clean, safe energy and most countries around the world, are adopting it. How is the Ministry of energy effecting this for Zambia?

Government with the support of other countries has come up with a number of projects that are being developed for Renewable Energy from non-hydro sources. The Renewable Energy Resource Mapping Project is aimed at developing Wind and Solar Resource Maps and assessing the potential power generating capacity from Wind Energy. The project involves installation of wind and solar measuring equipment on selected sites around the country.

The Government is developing at least 250MW of solar power plants. Through the Industrial Development Corporation (IDC) two companies were awarded the first 100 MW of 50MW. These are the Enel Green Power of Italy at a tariff of 7.84 Us cents/KWh and Neoen/First Solar consortium at a tariff of 6.02 US cents/KWh.

The Ministry is also implementing the Sustainable Energy for All Initiative (SE4All). The initiative is aimed at developing a National Action Agenda (AA) and an Investment Prospectus (IP) in order to enhance activities aligned with achieving the goals of Sustainable Energy for All (SE4All) Initiative.

The Ministry is also developing a project that is aimed at transferring knowledge and technologies on solar and small-hydro technologies under the China – Zambia South to South Project on Technology Transfer.

5.3.1.11. How much have you educated people on what renewable energy is and the benefits?

Most people don't know what renewable energy is and what the benefits are. There is need for the Ministry and ZESCO to intensify the sensitisation to get more people to understand.

5.3.1.12. Do you have any special plans for the mines who are high consumers of power in terms of energy conservation?

Not yet for the mines. But for other Maximum demand customers that are given energy audits and advise on how they can use power efficiently.

5.3.1.13. Challenges

According to the Ministry of Energy, the main challenges in the implementation of the aforementioned programmes is the insufficient funding to complement Development Partners' funding for most of the programmes as most of the activities are dependent on funding and as a consequence, most activities tend to stall. In addition, apart from the constrained budget allocation to renewable energy programmes, the disbursement of funds has also been erratic.

5.3.2. Observation

The participants who were the experts in the field justified why communication has not been effective in some areas and why they have not been able to reach out to as many people as possible. Through analysis and summarising of the participants' daily activities, the researcher was able to note that the strategies used were more reactive and unplanned than proactive. It was also observed that there were a lot of haphazard activities. Some participants were very flexible whilst others were very defensive when it came to determining how effective their communication strategies were.

5.2.3. Documentary evidence

Some of the documentation that was looked at to provide affirmative evidence were annual work plans and reports. The researcher also looked at outreach policies, newsletters and websites.

CHAPTER SIX

INTERPRETATION AND DISCUSSION OF RESEARCH FINDINGS

6.1. Introduction to the Chapter

This chapter presents analysed data which was collected from the field of research. Analysis was done according to the survey questionnaires, the structured and in-depth interviews, as well as using the observation method. The researcher interpreted data by using the known methods already used in the research and by comparing the results from the data collected. So what is presented in this chapter is an interpretation and discussion of data to provide more information to the research findings in Chapter five.

6.2. Gender representation and demographic information of the respondents

6.2.1. Age

The different age groups that participated in the answering of the questionnaires were between the ages of 25 to 60 for females and 25 to 68 years for males. Data was being collected to enable active age groups from 25-70 years of age to participate in the survey by sharing their knowledge on energy efficiency/conservation and non-hydro sources. By comparing the age group participation, the conclusion is that each active adult age group that is able to make a decision, was catered for in the research.

6.2.2. Sex

The information that was gathered carried a theme on male and female participation in the research. It is important to have a fair representation of sexes in any research in order to avoid biasness in data collection. Thus, the indication is that there was fair gender representation. More males participated in the answering the questionnaires since most households in Kabwata are male headed. The other reason is that the questionnaires were distributed during the weekend when the heads of the households were at home. Males were 75.5% and the females were 24.5%.

6.2.3. Marital Status

Another important issue in data collection was the marital status. When data was being collected the challenge was to have a broader representation of people from different backgrounds and status. As shown in table 3 in Chapter Five, most respondents were married showing 52% of the total respondents, 35.4% were single, those that were widowed were at 6.3 %. The respondents that were separated were 6.3% as well, but none responded having been divorced. Most female-headed homes were either by those who were widowed. Most of the widowed were females.

6.2.4. Levels of Education

The highest education qualification for respondents in the area was tertiary. Of the total 175 respondents, 29 went as far as primary school representing 16.6%, 38 went as far as secondary school representing 21.7% and 108 went up to tertiary level of education representing 61.7%

Most of the respondents had gone up to tertiary education, therefore, they were giving very firm and solid answers. They were able to respond to the questionnaires very swiftly and clearly. They demonstrated their good knowledge on the subject matter. This is also because Kabwata is an area that consists of middle class people and have hence been exposed to society; social-economics, politics, culture and technology through good education.

In addition, occupation was another important yardstick used in the research. In the questionnaire survey, most of the respondents were business people in different fields. The highest number of the participants were journalists, followed by business men and women. Other participants were IT engineers, Marketeers, bar tenders, economists, receptionists, clerks, accountants, carpenters, visual artists, security guards, barbers and housewives. The representation of journalists in the survey added credibility to the study. This is because journalists are well informed and knowledgeable on a lot of issues.

However, the fact that 16.6% of the respondents only went as far as primary school in their education poses a challenge to the Ministry of Energy to find communication strategies which would be user-friendly to such people. Even though Kabwata is mainly for the middle class people, it does not mean that everybody is educated. So the Ministry of Energy cannot use the same communication strategies for everybody. “One size fits all” cannot work.

6.3. Communication Strategies used by the Ministry of Energy to reach out to customer

This section aims to establish and examine the communication strategies used by the Ministry of Energy to reach out to customers and the public on energy efficiency and Conservation.

According to table in Chapter Five from the findings, when respondents were asked if they were aware of the communication strategies used by the Ministry of Energy; 101 said they were aware of the communication strategies on energy efficiency and conservation representing 57.7% and 74 respondents said they were not aware of the strategies, representing 42.3%. Most of the respondents who said they were aware claimed they had seen messages on television and listened to them on radio.

Members of staff from Ministry of Energy also supported these facts and admitted that they had put up a number of strategies to reach out to customers and some of them involved the use of television, radio and newspaper, as well as roadshows and town hall meetings in residential areas. A key informant from the Ministry of Energy also said the company engages the media through workshops to ensure they carry their messages as news to the public. As the proponents of the Agenda Setting Theory puts forth; readers learn not only about a given issue, but also how much importance to attach to that issue from the amount of information in a news story and its position (McCombs and Shaw 1972, p. 2).

This is what happens in the United States of America (USA) whereby the Department of Energy runs public service announcements about energy efficiency on televisions in cafeterias and other public use areas; send periodic email messages about turning off lights and computers and implementing other efficiency practices; post signs or billboards near light switches or communal printers (Maibach et al., 2008, p. 488). The country also uses different communication strategies to reach out to the people such as enhancing customer awareness of energy efficiency through training and less formal methods. The country provides mandatory and voluntary training opportunities on smart energy practices so that customers can practice energy efficiency during emergency periods and year-round (Abrahamsen, 2005, p.271).

According to literature, the energy dependence of France has made its energy conservation awareness acute. Effective energy use and energy security considerations have been quite important and that is why France has been raising awareness among pupils, festival-goers, municipal agents, consumers and tourists, as well as train people who work with energy on how to be efficient in usage.

Similarly, the Ministry of Energy has been conducting sensitisation campaigns in various schools to teach children on energy efficiency who in turn remind their parents, but also practice it themselves at school and at home. Decision makers of the Department of Energy disclosed that they intend to include energy efficiency in the school curriculum.

More literature has also revealed that the Government of Tanzania is working towards embarking on a communication strategy through television and Radio to encourage the consumers to install power correction systems that will help them improve power factor problems and, at the same time, contribute to improving the country's transmission and distribution losses (Kiwele, 2007.p.15).

When education was cross tabulated with awareness levels, the study revealed that education had a lot to do with awareness levels. This is indicated in the fact that 108 out of 175 respondents had gone up to tertiary level and comparably, 101 out of 175 had agreed that they were aware of the strategies. Respondents that were educated were easily exposed to information or made efforts in finding out about new issues through reading the newspapers, brochures and listening to the news.

6.4. The relevance and effectiveness of the messages by the Ministry of Energy in the communication process

When respondents were asked on how relevant and important they have considered the messages on energy efficiency,100 respondents said the messages were suitable and fair but not effective. 50 respondents said the messages had not been packaged properly and 25 respondents said the messages were not clear as to what exactly needed to be done to be energy efficient.

Respondents were also asked to state the extent the messages that have been used have influenced the attitude, belief and behaviour in communities with regards to adhering to energy saving.15 respondents said the mode of communication was weak and hence did not influence the behaviour

at all. 85 respondents said the messages are effective for those in towns but not rural and 12 respondents said the messages were suitable but not effective enough.

The main messages according to the Ministry of Energy Communication team have been: to encourage people to switch from incandescent (ordinary) bulbs to energy saving bulbs, to ensure that they do not leave lights on during the day, to switch off lights in unoccupied rooms and to switch off devices that are not in use. Some of the messages that have been used in the campaign are, “Switch and Save” and “Swap 6 ordinary bulbs, for 6 energy saving bulbs”.

After further discussion with the Ministry of Energy during the in-depth interview, the experts were asked if the reduction of the demand of electricity has been because of the messages they have put in place or may also be caused by other factors. The Ministry of Energy admitted that sometimes it’s not easy to prove that the saving of electricity is because of the messages they have been selling or other factors. They said at certain times of the year, the messages are not easily measurable. They explained further that naturally the demand for electricity is higher depending on the season of the year. The cold and rainy seasons bring about a high demand for electricity than the rest of the seasons because of the use of appliances like heater, geysers and boiling water.

6.5. Language and channels used in communicating with customers to assess the impact

Majority of respondents in the questionnaire survey indicated that the language and energy efficiency messages had been suitably used in the communication strategies for the following media tools: brochures/ posters, flyers/ leaflets, billboards, road shows, workshops/ meetings/ social media, peer education, field days, fairs/ magazines, displays/ exhibitions, advertisements/ jingles/ promotions, pictures, resource centre/ libraries, music and church. Conversely, others felt that the language and energy efficiency messages tailored to television, magazines/ newsletters, social media, and dialogue were less suitably used in the communication strategies. However, according to table 8, the majority said radio was suitably used as it transmitted messages in different languages. Therefore, it could be concluded that the greater majority of people at least knew about issues revolving around energy efficiency and the consequences of not being energy efficient.

According to a key informant at Ministry of Ministry, English was mostly used to transmit the messages through their main communication channels which are: television, radio, newspapers, billboards, roadshows and brochures. The major weakness was that there wasn't a variety of local languages used even for those who are uneducated or cannot read or understand English. Therefore, the messages seemed to target mostly the educated.

According to literature, Kenya has embarked on similar communication strategies to educate households on the importance of conserving energy as part of a broader goal of demand side management. Strategies such as television, print, road shows, billboards have been used to raise awareness on energy efficiency and conservation (Mutua and Kimuyu, 2015, p.7).

6.6. Communication channels used by the Ministry of Energy to communicate with the public in order to educate them over their energy needs and uses

Tables 7 and 8 from the findings in Chapter Five show different sources of information on energy efficiency/conservation. The tables show how often respondents get information from these sources, and how effective these sources are in delivering energy efficiency related messages. All tables show results obtained in multiple response questions from 175 respondents.

According to table 7, when respondents were asked how often they get information from various sources, 30% of the total respondents reported that social media very often gave them information, 50.6% said both television and magazines often gave them information, whilst 70.7% of the respondents said meetings never gave much information because they rarely took place. This indicates that social media is now the norm of the day when it comes to obtaining information quickly, anybody with a smart phone can access information quickly and in their area of convenience. Television is mostly preferred by people living in the urban areas and own sets. Magazines indicate that people like visuals and colours which interest them to read, but are expensive to buy on a regular basis. The publications are also not very frequent. Meetings on the other hand are considered boring and attendance is never guaranteed; to take people away from their busy schedules and using their own transportation.

According to table 8, when the respondents were asked how effective they regarded different sources of information, most respondents reported that television as a source was very effective

in delivering information with 50.6% of the respondents saying so; most respondents reported that social media and advertisements were very effective both at 30.5% each. Most respondents were not sure if meetings were effective or not with majority of respondents at 25.3 % reporting so. Brochures and dialogue were considered least effective.

Furthermore, respondents suggested the best methods to send the messages to the customers and public. Out of 175, 70 respondents suggested that messages should be sent via mobile phone and 60 respondents suggested through door to door visitations to hear the challenges the customers face. 2 respondents suggested stickers on toys, sweets for the younger ones and to visit schools so that pupils can inform their parents and communities. 100 respondents suggested the use of social media. 30 respondents suggested the use of Public Address systems in the compounds and only 4 respondents suggested Informal meetings with the communities.

According to the Ministry of Energy, the main communication channels have been through television, radio, newspapers, billboards, roadshows, brochures and social media.

South Africa also uses the print media such as newspapers (including community newspapers), magazines, flyers, posters and educational material. Advertising is done through posters / flyers / schools educational materials (cartoons, and animations clips), TV, radio (including community radio stations) and billboards (Murombo, 2008, p. 20). Others are Video Clips for dissemination to all stakeholders, engaging in face-to-face dialogue with all the key stakeholders, interaction with civil society through workshops, schools, learners' week and roundtable discussions, seminars and workshops.

6.7. Promoting, implementing and communicating renewable energy in Zambia

The Ministry of Energy was consulted on how much they have educated people on what renewable energy is and the benefits and they admitted that most of the public don't not know much about the initiative and there was therefore need to intensify the sensitisation to get more people to understand.

A policy maker at the Ministry of Energy explained that the Zambian government with the support of other countries has come up with a number of projects that are being developed for Renewable Energy from non-hydro sources. The Renewable Energy Resource Mapping Project is aimed at

developing Wind and Solar Resource Maps and assessing the potential power generating capacity from Wind Energy. The project involves installation of wind and solar measuring equipment on selected sites around the country.

The Government is developing at least 250MW of solar power plants. Through the Industrial Development Corporation (IDC), two companies were awarded the first 100 MW of 50MW. These are the Enel Green Power of Italy at a tariff of 7.84 US cents/KWh and Neoen/First Solar consortium at a tariff of 6.02 US cents/KWh.

The Ministry is also implementing the Sustainable Energy for All Initiative (SE4All). The initiative is aimed at developing a National Action Agenda (AA) and an Investment Prospectus (IP) in order to enhance activities aligned with achieving the goals of Sustainable Energy for All (SE4All) Initiative.

The Ministry is also developing a project that is aimed at transferring knowledge and technologies on solar and small-hydro technologies under the China – Zambia South to South Project on Technology Transfer.

Another policy maker at the Ministry of Energy revealed that they were ensuring that there is an energy mix to reduce reliance on hydro generation of electricity. The Ministry of Energy has been partnering with Independent Power Producers (IPPs) to get power that is generated from coal other than water and has been promoting the use of solar and gas in the production of goods and services as well as for residential use.

According to literature, the Government of India has undertaken a two pronged approach to cater for the energy demand of its citizens while ensuring minimum growth in carbon emission, so that the global emissions do not lead to an irreversible damage to the earth system (Shekar, 2017, p.10).

On one hand, in the generation side, the Government is promoting greater use of renewable in the energy mix mainly through solar and wind and at the same time shifting towards supercritical technologies for coal based power plants. On the other side, the Ministry of Energy is using door-to-door campaigns to educate people on renewable energy. Members of staff explained that they have communicated through advertisement on radio, television and exhibitions on the importance

and benefits of renewable energy. An informant at the Ministry also said the teams have visited industries and farms to talk about solar and wind energy.

One of the challenges however is that some people consider energy sources such as gas to be dangerous and solar to be expensive.

6.8. Conclusion

In conclusion, from the research findings and reviewed literature, it should be stated that most respondents are aware of the communication strategies the Ministry of Energy uses to communicate energy efficiency/conservation messages and renewable messages to the public. However, there was a variation in responses when respondents were asked to determine the effectiveness of the communication strategies used. Majority of the respondents said the messages were suitable and fair but not effective, whilst others said the mode of communication was weak and hence did not influence the behaviour at all. The major weakness cited was that the there was a language barrier for those that were uneducated, and the audience was not properly segmented to design specific messages for specific groups. Furthermore, whilst the people in urban areas were aware of energy efficiency, people in rural areas had no clue.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

7.1. Introduction to the chapter

This chapter presents a summary of the entire research work, the conclusion of the research work and recommendations.

7.2. Conclusion

Most respondents confirmed their awareness on communication strategies but admitted that the messages were not very clear. Conversely, others felt that the language and energy efficiency messages tailored to certain media were not suitably used in the communication process.

From the research findings and literature reviewed, it should be stated that most respondents were aware about energy efficiency through the main stream media and television was the most popular source of information. They, however, complained about the language barrier as English was mostly used to convey the message to literate people.

Evidence from the research reveals that respondents that were educated were easily exposed to information or made efforts in finding out about new issues through reading the newspapers, brochures and listening to the news. The major weakness was that there wasn't a variety of local languages used for those who are illiterate. Therefore, the messages seemed to target mostly the educated.

Most respondents felt the mode of communication was weak and hence did not influence the behaviour at all. Other respondents said the messages were effective for those in towns but not in rural areas.

Therefore, it could be concluded that the greater majority of people at least knew about issues revolving around energy efficiency and the consequences of not being energy efficient but were not influenced by the messages at all.

7.3. Recommendations

The major intention of this research was to evaluate the Ministry of Energy's communication strategies in energy efficiency, conservation and alternative sources of energy

- Since it has been observed that the areas that consume electricity a lot are high density areas where the population is high, the Ministry of Energy need to be targeting those areas to send the messages through fora that draws their attention and interests these customers such as roadshows, drama, song, and so forth.
- Community radio stations should be utilised a lot to decentralise the media of communication. The organisations should focus on sending messages through community radio stations for respective areas rather than concentrating only on mainstream media.
- There is need to segment the audiences and prepare different messages for different types of people in different areas. That is by demography, sex, age, language, location and so forth.
- Communicating through engagement of community leaders is one way that should be considered. Community meetings can be held on a monthly basis to communicate through leaders such as Ward Development Councillors, clergy, headmen and so forth.
- The church is a "crowd puller" on its own. The Ministry could partner with churches to speak to the congregants on energy efficiency.
- Educational institutions such as primary, secondary schools and colleges could also be targeted, just like churches. Ministry personnel could also intensify the partnership with schools and speak to pupils and students just for a few minutes during assembly. This way, children will always carry the message to their parents.
- Local language use should be maximised. Messages should be translated into main local languages that people understand better. This can be through radio, community meetings or brochures. Local language programmes such as "Chintobentobe" and "Kabusha takolelwe Bowa" can be utilised to send the messages.
- Advertising through traditional media.

7.4. Further research

There is need to find out whether the energy saving bulbs and other energy sustainable systems have had a huge economic impact on family incomes and what the fear is to migrate from incandescent bulbs to energy efficient bulbs.

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Appendices

Appendix 1: Questionnaire for audience survey

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

A QUESTIONAIRE ON AN EVALUATION OF THE MINISTRY OF ENERGY'S COMMUNICATION STRATEGIES ON ENERGY EFFICIENCY, CONSERVATION AND ALTERNATIVE SOURCES OF ENERGY

(SELF-AMINISTRED QUESTIONAIRE FOR LUSAKA RESIDENTS)

Dear respondent,

Iam a Master of Communication for Development degree student at the University of Zambia Great East Road Campus conducting a research on "an evaluation of the ministry of energy's communication strategies in energy efficiency, conservation and alternative sources of energy".

Kindly be informed that you were chosen in a sample of respondents to take part in the study by providing answers to a set of questions. Please do answer the questions as honestly as possible. Be assured that the information given in the questionnaire would not be revealed to the public. Thus, it would be treated with utmost confidentiality. This is why you are required to indicate your name. In addition, this study is purely for academic purposes. It is a requirement for partial fulfilment of the award of the Master of Communication for Development degree at the University of Zambia.

Your Cooperation will be highly appreciated.

Your faithfully,

Researcher.

Appendix 2: In-Depth Interview Guide for Energy Experts

NAME …….

ORGANISATION……

SERIAL NUMBER……DATE…. /…. /……

1. What communication strategies have you put in place for the public on energy efficiency and conservation?
2. What messages have you put in place to sensitise the public on energy efficiency and conservation?
3. What languages has the Ministry of Energy (MOE) and ZESCO used to communicate with the customers and how has the impact of these messages been assessed?
4. How do you know if the reduction of the demand has been because of your messages and not caused by other factors?
5. What have been people's reactions on the use of alternative sources of energy?
6. What policies have you put in place to ensure that energy efficiency, conservation is promoted in Zambia?
7. Renewable energy has been the new solution for clean, safe energy and most countries around the world, are adopting it. How is the MOE effecting this for Zambia?
8. How much have you educated people on what renewable energy is and the benefits?
9. Do you have any special plans for the mines who are high consumers of power in terms of energy conservation?

Thank you for your time.

Appendix 3: Structured Interview Guide for Respondents in the Residential area

NAME……

WARD…….

SERIAL NUMBER……. DATE…. /……./……

1. What do you do for a living?
2. What kind of a family do you have? How many members?
3. Do you know anything about saving electricity?
4. Are you aware about energy efficiency practices by Ministry of Energy and ZESCO?
5. Do you understand what it means to use alternative sources of energy?
6. Have the messages to the public on energy efficiency been effective?
7. What is your preferred channel of communication on energy efficiency to you?
8. What are the weakness in the communication strategies?
9. What would you recommend?

QUESTIONNAIRE

INSTRUCTIONS:

Please read all questions carefully and provide answers accordingly, indicate your answer by ticking [√]. In case an explanation is needed, please use the provided space for short and clear answers.

SECTION A: BACKGROUND INFORMATION

*Kindly answer the questions by simply ticking **[√]** what applies to you.*

1. What is your sex?
   1. Male **[ ]**
   2. Female **[ ]**

2. How old were you on your last birthday?
   1. 14-19 years **[ ]**
   2. 20-24 years **[ ]**
   3. 25-29 years **[ ]**
   4. 30-35 years **[ ]**
   5. 35 years and above **[ ]**

3. What is your marital status?
   1. Single **[ ]**
   2. Separated **[ ]**
   3. Married **[ ]**
   4. Divorced **[ ]**
   5. Widowed **[ ]**

4. What is your highest educational qualification?
   1. Primary **[ ]**
   2. Secondary **[ ]**
   3. College/University **[ ]**
   4. None **[ ]**

5. What is your occupation? _____

SECTION B: KNOWLEDGE ABOUT THE COMMUNICATION STRATEGIES

6. Are you aware of the communication strategies the Ministry of Energy through ZESCO Limited uses to reach out to the public?

1. Yes **[ ]**
2. No **[ ]**

7. If yes, how effective are the communication strategies the Ministry of Energy uses to transmit energy efficiency/conservation messages to the public?

1. Very Effective **[ ]**
2. Effective **[ ]**
3. Not Sure **[ ]**
4. Less effective **[ ]**
5. Not effective **[ ]**

SECTION C: SOURCES OF INFORMATION ON ENERGY EFFICIENCY

8. How much of the following do you use to get information on energy efficiency/conservation?

	Very often	**Often**	**Rarely**	**Never**
Television				
Radio				
Newspaper				
Magazines/Newsletters				
Social media				
Brochures/Pamphlets/ Posters/Flyers/leaflets				
Billboards				
Road shows				
Theatre				
Workshops/seminars				
Meetings				
Talks/lectures				

Dialogue/discussions/ informal chats with colleagues				
School debates				
Peer education				
Field days				
Fairs/ festivals				
Displays/ exhibitions				
Advertisements/Jingles /Promotions				
Pictures (photography)				
Resource centres/libraries				
Music				
Church				

SECTION D: COMMUNICATION STRATEGIES USED BY THE MINISTRY OF ENERGY

9. How effective are the following communication tools in delivering energy efficiency related messages?

	Very Effective	**Effective**	**Not Sure**	**Less Effective**	**Not Effective**
Television					
Radio					
Newspaper					
Magazines/Newsletters					
Social media					
Brochures/Pamphlets/ Posters/Flyers/leaflets					
Billboards					
Road shows					
Theatre					

Workshops/seminars					
Meetings					
Talks/lectures					
Dialogue/discussions/ informal chats with colleagues					
School debates					
Peer education					
Field days					
Fairs/ festivals					
Displays/ exhibitions					
Advertisements/Jingles /Promotions					
Pictures (photography)					
Resource centres/libraries					
Music					
Church					

SECTION E: ANALYSIS OF THE LANGUAGE AND ENERGY EFFICIENCY/CONSERVATION MESSAGES

10. How suitable is the language and messages used in communicating energy efficiency-related messages?

	Very Suitable	**Suitable**	**Not Sure**	**Less Suitable**	**Not Suitable**
Television					
Radio					
Newspaper					
Magazines/Newsletters					
Social media					

Brochures/Pamphlets/ Posters/Flyers/leaflets					
Billboards					
Road shows					
Theatre					
Workshops/seminars					
Meetings					
Talks/lectures					
Dialogue/discussions/ informal chats with colleagues					
School debates					
Peer education					
Field days					
Fairs/ festivals					
Displays/ exhibitions					
Advertisements/Jingles /Promotions					
Pictures (photography)					
Resource centres/libraries					
Music					
Church					

SECTION F: THE RELEVANCE OF ENERGY EFFICIENCY MESSAGES TO THE PUBLIC

11. According to your observation, how important have the messages the Ministry of Energy and ZESCO been using to help reduce power shortages in the country?

_____

_____

12. To what extent have the messages used influenced attitude, belief and behaviour in your community with regard to adhering to energy saving?

_____

_____

13. What else can you suggest in terms of communication strategies which are user-friendly?

_____

_____

Thank you very much for your cooperation.