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BOTSWANA ENERGY CRISIS AND ITS IMPACT ON NATIONAL SECURITY

STUDENT NAME: SOLOMON TEBOGO MAMADI

SUPERVISOR: PROF. E BOTLHALE

A RESEARCH PAPER SUBMITTED IN PARTIAL FULFILLMENT OF MASTERS IN DEFENCE AND STRATEGIC STUDIES

DECLARATION

I, SOLOMON TEBOGO MAMADI declared that this paper is my original work and contains no material which has been previously submitted for a degree or diploma at this University or any other University or any other Institution except where due acknowledgement is made.

Signed……Date…….

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DEDICATION

This research is dedicated to my family especially my uncle Isaac Mamadi for his unwavering support during my entire stay at the Defence College and to my fiancée who passed away before seeing this finished.

ABBREVIATIONS

BDF- Botswana Defence Force

BPC- Botswana Power Cooperation

EPD- Energy Policy Draft

IMF- International Monetary Fund

MDG- Millennium Development Goals

NDP- National Development Plan

NSP- National Security Policy

RET- Renewable Energy Technology

NSS- National Security Strategy

SADC- Southern African Development Community

SAPP- Southern African Power Pool

SSA- Sub-Sahara Africa

UNDP- United Nations Development Plan

UK- United Kingdom

USA- United States of America

WMD- Weapons of Mass Destruction

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Abstract

The broadened security agenda of the Post-Cold War considers several non-military threats to states' national security. Energy crisis is among the chain of non-traditional concerns that have the potential to threaten national security of Botswana and other states. Shortage of electricity hampers human survival and economic development. Botswana has a basic need to explore its energy concept, this being its energy sources, generation and percentage of the population that have access to electricity. At the present moment, Botswana generates electricity from coal, which supplies about 29% (on average) of the country's demand. In addition to this the country has a 90 MW back-up generators operating in Orapa and Matshelagabedi and they consist of two 45 MW GE LM 6000 turbine/generator units each. The remaining electricity supply of about 71% is imported mainly from Eskom in South Africa. Botswana consumes 850 million litres of fuel with 54% for petrol and 44 for diesel. The reliance of Botswana on the imports of electricity from foreign countries such as South Africa poses threats to its national security. There is no guarantee that South Africa will always be able to meet its own demands of electricity and those for Botswana. In the event that South Africa fails to support Botswana's demands, then the people of Botswana's lives with be thrown into jeopardy. This potential concern therefore calls for Botswana to strive in order to produce enough electricity for its consumption. So far Botswana has experienced power cuts due to load shedding, the condition tantamount to political instability. In light of this need, the study investigated the existing energy sources, energy consumption and production levels in Botswana. Furthermore, the study discussed security in general and energy impact on national security. Two case studies were examined and reviewed to demonstrate the importance of energy to those countries. This study was a desk top research which entailed reviewing of literature and analyzing various documents such as reports, books, journals and policies on energy.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The study of energy crises and its potential effect on national security is vital because its findings are useful in the sense that they inform effective securitization of nations and safeguarding of human lives. Regardless of the importance of such a study, a very limited number of researchers in Botswana and those in the other states in the Southern African Development Community (SADC) region have undertaken studies on energy crises and its impact on human security and state security in general. This study is prompted by the fact that very little in terms of research has been done on the impact of energy crises on national security. This type of study is desperately needed in Botswana because the demand for electricity at household level and in various economic and business sectors of the society has increased though supply of electricity is diminishing. Load shedding experienced in Botswana is a sign that all is not well regarding the supply of electricity. The magnitude of this challenge is huge and if it is not addressed, the country may be plunged into frictions and conflict among different stakeholders. The scarcity of resources with electricity inclusive has the potential to trigger underdevelopment, poverty and conflict among the people. Shortage of electricity has the potential to cause political instability in Botswana and elsewhere.

Energy consumption has been central to the function of human societies throughout history according to Boyle (2003). This can be traced back to the times of the industrial revolution when countries, in their developing phase pursued a path of industrialization which saw energy becoming increasingly important. According to Edison Electric Institute (2007) regarding electricity as the blood line of economy and growth in electricity use coincided with growth in GDP since the end of World War II. It is a critical commodity that Botswana needs to drive its commercial sector. Botswana as an emerging economy has grown much faster than most advanced countries during the past decade. It is evident that energy consumption in Botswana has increased over the years and is expected to keep on increasing for some decades to come as the country industrializes and the population increases. To date, there is an overwhelming over dependence on fossil fuels such as coal, oil and natural gas for the generation of energy to meet the ever-increasing demand. Like many developing countries Botswana relies heavily on fossil fuels. This has raised concerns among policymakers over likelihood of the depletion of these non-renewable resources. These new trends require utility systems stakeholders rethink old assumption and prepare a new

reality of lower growth rates in electricity consumption. In policy and practice, there is a new impetus to meet the growing demand for energy usage and to develop alternative energy sources that would meet current and future demand. These alternative energy supplies are renewal energy such as wind and solar energy which are in abundance in Botswana. These are increasingly considered as sustainable energy sources.

In light of the above stated energy supply challenges, this research essay raises a number of questions around the topic "Botswana energy crisis and its impact on national security". The study will investigate the level of Botswana energy crisis and establish its impact on national security. The study hypothesizes that energy crisis is a potential problem that can threaten national security. The terms energy and electricity in this study are used interchangeably to convey the same meaning.

1.2 Background of the study

Botswana generates its electricity primarily from coal largely because of its abundance and alleged cost effectiveness (Fagbenle, 2001). Coal has been mined as a resource for energy for decades and in fact the history of coal discovery in Botswana dates back to the early 1930s when the major coal seam was discovered through sinking of boreholes. Botswana sits on an estimated 212 billion metric tonnes of coal reserves found in several locations in the country that include Masama, Morupule, Modipane and Maphashalala (Machete,2012). Botswana also has coal methane bed reserves of 0.15-3.2 trillion cubic feet at Lesedi field. The country also has significant solar potential, with 3200 hours of sunshine per year, irradiance of 6640 Wh/m2/day. Only portion 450 MW of installed capacity is available to produce power, and additional demand is met through electricity imports, primarily from South Africa (USAID 2012). Amongst these reserves is the Morupule coalfield where Morupule coal mine is situated. Morupule contains good quality low Sulphur bituminous coal for thermal electric energy. The Morupule Power Station is a coal fired, steam turbine driven thermal plant owned and operated by the Botswana Power Corporation (BPC) (www.bpc.bw). Morupule started production of coal in 1973 as an Anglo American Corporation owned company. In addition, Botswana also has 90 MW back-up generators operation in Orapa and Matshelagabedi consisting of two 45 MW GE LM 6000 turbine generator units each. (Machete, 2012) Botswana gets most of its energy supply from the Morupule coal collieries. However, the country has experienced electricity shortages due to the malfunctioning of Morupule

B power plant. (Motlogelwa, 2011). This problem was later resolved and now in it is in operation Botswana depends on electricity imports to supplement its basic energy needs. In 2010, Botswana produced 15 percent of the country's demand while 66 percent came from South Africa's Eskom and 22 percent from Mozambique's Hydroelectric De Cabora Bassa and electricidade de Mozambique (EDM) (www.mmewr.gov.bw). According to Eskom (2012), when South Africa hosted the 2010 FIFA World Cup and started experiencing its own share of energy crisis, it reduced its power exports and with Morupule B experiencing technical problems then; Botswana was hit by energy crisis. Motlogelwa, (2011) contend that this overdependence of electric imports from foreign countries puts Botswana national security at risk. There is evidence that between 2008 and 2010, Eskom cut the supply of electricity to Botswana from 350 MW to 250 MW and this was further reduced to 150MW in 2011 and 2012. The years 2010 - 2011 have witnessed the cut down of electricity supplies from 77% (2.684 GWh) in 2010 to 66% (2.377GWh) in 2011 (Eskom, 2012) Botswana should expect more reductions in imports of electricity from the Republic of South Africa as South Africa has been experiencing challenges in the growth of GDP since 2014. The first quarter of year 2019 saw the GDP being on the negative, **Figure 1.*1***.

Figure 1.1: South African GDP growth, fall in first quarter 2019(Statistics South Africa, 2019)

The main contributors in the GDP fall were the manufacturing, energy (electricity) and construction industries. Electricity alone contributed to the declining GDP by 6.9% and this was principally due to a fall in the volume of electricity distributed, **Figure1.*2***.

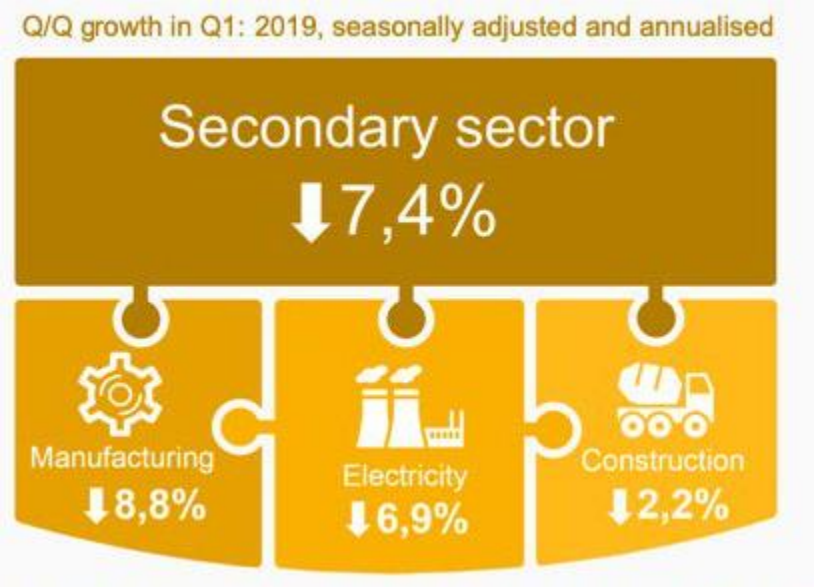

Figure1.2: Contributing factors in negative GDP growth, first quarter of 2019(Statistics South Africa, 2019)

As other countries in the Southern Africa region are experiencing energy shortages, Botswana's proportion of imported electricity has also gone down thereby placing pressure on local production (UNDP, 2012). Energy Affairs Department (2007) states that several countries in the Southern Africa Development Community (SADC) region, some of which are Botswana's neighbours such as Namibia, Zambia and Zimbabwe are experiencing demand levels that exceed the production level of electricity. According to Ministry of Finance and Development Planning (2010), Botswana is one of the nation's experiencing serious electricity shortages and also Swaziland and Lesotho are in this category.

Central Statistics Office (2007) state that Botswana like many other developing nations has experienced its fair share of challenges in its pursuit for economic growth and development. The rapid increase in households that require electricity, service points such as hospitals, schools, industrial points such as mines and others, have seen the increased demand for energy, especially electricity, reaching new heights. The increase in the number of vehicles due to rising standards of living and buying power has also meant that the desire for fuel continues to grow (Energy Affairs Department, 2007). The demand for energy generally has been increasing at a more rapid rate than

the supply. Botswana was hit by serious energy crisis that even though the situation is improving, there is still no guarantee for future stabilization (Khonani, 2015).

The energy crisis situation that Botswana finds itself in is the point where the issues of security arise. Even though there are policies which the government has developed such as the Botswana Energy Policy Draft (EPD) and National Development Plan, the shortage of electricity continues to haunt the nation. The absence or short supply of energy can have negative impact on the economy as well as human life in the country. This research paper, therefore, seeks to understand the correlation between the energy crisis of Botswana and the country's national security. (Khonani, 2015).

Visalatchi and Sandeep, (2017) state that electricity is one of the most important blessings that science has given to mankind. Without electricity, education, health care and other critical services decline. In Kenya, for example, only 25% of health facilities have a reliable energy supply and experience regular blackouts. The World Bank estimates that 2-3% of Gross Domestic Product (GDP) is wiped out in Africa every year because of unreliable energy supply. In Botswana, electric consumption (KWh per capita) is reported to have been at 1749 in 2014 (World Bank, 2014), with an import rate of 4585 BWP, and GDP annual growth rate at 4.2 percent; this implies that the country has a huge dilemma in providing energy to its people and powering its growing economy. Shortage of electricity in Botswana has a negative impact on economic growth, as it weakens business functions. At times, the country faces energy challenges which compel it to go an extra mile in finding suppliers of the required energy from external-foreign sources for its electricity, oil and other forms of energy-generating resources (UNDP, 2012).

1.3 Statement of the problem

There is concern over the shortage of electricity supplies in Botswana. The country is experiencing increasing demand of electricity in different sectors of the economy and at household levels. Contrary to high demand of electricity, the cutting down of electricity supplies due to load shedding prompted by shortage of electric power is witnessed. Load shedding inhibits the general development of the country and survival of the people. Most sectors of the economy and communities at large rely on electricity supplies to support their functions. Without electricity, people and their economic activities cannot survive well. The ideal is people and their businesses

must access the right quantity of electricity at the right time. However, the reality is the opposite; electricity supplies are insufficient and the consequence of the shortage of electricity is human suffering. Therefore, energy crisis affects community development. Failure to solve energy crisis leads to decreased production levels, underdevelopment, poverty and human suffering. Botswana has the potential to experience these challenges due to shortages of electricity supply experienced. This problem needs to be handled with urgency if the security of the country is to be safeguarded against possible conflict caused by suffering masses.

1.4 Research questions

The key research question is how does the energy crisis affect Botswana's national security? The sub-research questions are:

1. To what extent does Botswana experience energy crisis?
2. What are the consequences of Botswana's energy crisis on the nation's security?
3. How can Botswana combat the looming energy crisis?

1.5 Objectives

The main objective of the study is to explore how energy crisis affects Botswana's national security. The sub-objectives are:

1. To explore the extent to which Botswana experiences energy crisis
2. To find out the consequences of Botswana's energy crisis on the nation's security
3. To establish ways by which Botswana can combat the looming energy crisis

1.6 Significance of the study

Research has increasingly become important in the 21st century with studies at the helm of finding solutions to the different problems that face humankind today. Different studies are being carried out in different areas but there are still a number of areas that are still to be tapped into so as to establish gaps. There are a number of studies that look into the energy crisis in developing nations such as Botswana and at the same time there are studies that have focused primarily on threats to national security. This study is, however significant in the sense that it combines energy crisis in

Botswana and national security, areas which have not been thoroughly researched. Prior to the end of the Cold War, energy was largely regarded as a non-security issue despite it taking center stage in driving economies and sustaining human life. This study moves away from the traditional understanding of national security threats as military threats and brings a human and economic security phase into the fray in line with Buzan (1991) observation that the security agenda needs broadening and widening if national security institutions are to be compliant and effective.

The study is therefore critical as it fills a gap that has otherwise been unexplored for a long time particularly in Botswana. This study will therefore be critical to both security experts as it opens a new debate on security away from the narrow military understanding of threats. Experts on human issues and economic matters can also use the study to appreciate how energy as one of the areas that they rely on has become critical to the national security of the country. This study, therefore, without doubt will add to the limited if not absence the understanding of energy and national security topics which are vital for other researchers and scholars in the fields of strategic and security studies.

1.7 Securitization theory

This study will use securitization theory as a foundation upon which it is anchored. Mabanga (2014) posits that state actors among other politicians securitize issues that are perceived as threats to the survival of referent objects such as states and humans. Securitization theory will be discussed in detail in chapter two of the study.

1.8 Definition of key concepts

1.8.1 Energy crisis: The term energy crisis can be used to refer to challenges that states, people and economies experience due to shortage of electricity, sources of fuel such as petrol, diesel and other oil products as well as wood and solar energy (Wright et al, 2006).

1.8.2 National security: National security refers to protecting of humans and institutions against harm to their lives. Governments internationally, have the responsibility to protect citizens against threats. Enemy military attacks and a wide range of non-military concerns are national security issues. These concerns or security challenges according to Mabanga (2014) are threats which have

the capacity to cause damage to property; pain and injury as well as loss of human life. The definition of national security has shifted from the traditional-realist view which understood security of the state as threatened by adversarial militaries only to a broadened definition which includes human security, food security, energy security and all other issues that need securitization.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents literature on Botswana's energy crisis and its impact on national security. Firstly, the chapter will review literature on the security concept and energy crisis as a national security threat in the international world and the region. Moreover, the review of literature will be done on energy crisis and national security in Botswana. Literature will also be reviewed on securitization theory which is the foundation upon which this study is anchored.

2.2 Energy crisis as security threat to the world

On an International stage, the relationship between energy and national security is far clearer. Considering the nuclear fuel cycle, uranium is mined, enriched and then "missioned" in a reactor to produce heat, steam and then electricity. Each step has risks. Nuclear plants also produce radioactive waste that must be safely disposed of for tens of thousands of years or reprocessed into more nuclear fuel (McCoy, 2010). This nuclear story and the reliance on uranium have sparked debates across different circles as commentators argue that although viable, the pursuit of nuclear on its own is a security threat (Conca, 2013). According to Grynberg (2014) the explosion of reactors in Fukushima in Japan in 2014 gave the world a warning on how dangerous the pursuit of nuclear technology can be. The implication is nuclear reactors that are intended to produce electricity can also be a threat to human lives and property if they are not well managed. Failure to manage nuclear reactors properly can lead to loss of millions of human lives (Ibid). Conca (2013) posits that despite the challenges that are associated with the use of uranium, countries that are rich in this resource do not limit its use to the generation of electricity power only; but they go further to use uranium to develop nuclear weapons.

Still on the international scene, the Gulf War is another reminder of how energy; oil in this case, can be a national security threat (McCoy, 2010). The pursuit of oil to power the economies of super houses such as the United States of America have resulted in numerous wars that compromise the national security of other countries particularly those in the developing world. In Libya, Iran and other oil reach nations, the consequences of wars that came as a result of the pursuit for oil are still visible (Wayne & Broaden , 2008). These countries have suffered significant loses

and this has been fuelled by the pursuit of energy resources by the developed nations (Wayne & Broaden , 2008). In general, as Muzibur (2009) observed, the pursuit for energy resources has brought with it a big compromise to national security especially in developing countries that are rich in energy sources such as coal, oil and uranium.

Literature has revealed that lack of access to adequate energy has the potential to hamper the economies of the world thereby threatening the survival of humans and the development of society (Grynberg, 2014). Energy is a national security threat to powerful nations such as the United Kingdom (UK) (Conca, 2013). According to Kurzel (2018), UK's dependency on energy import is a threat to the country's national security. This view is also held by Grynberg (2014) who states that one of the biggest threats to the UK is energy security. The UK's Office of National Statistics reveals that the country is more dependent on energy imports than ever before. This is caused by the decline in gas production and also the reduction levels of the North Sea oil (Kurzel, 2018). In its history, the UK's reliance on imported energy has returned to the level last witnessed in the 1970s (Conca, 2013).

The UK's vulnerability is shown by the temporary shutdown of the Forties pipeline in 2017 due to a crack that developed (Kurzel, 2018). The outcome of the shutdown is that the UK may be compelled to go to the international markets to import oil and this will increase the country's total import of the resource to a massive 70 per cent (Ibid). In the future, the UK will be forced by the lack of energy circumstances to import oil from Russia and the Middle East; nations which are not UK's friends (Grynberg, 2014). Currently, the Russia Federation is beginning to flex its diplomatic and international muscles strongly (Ibid). There is the possibility that Vladimir Putin of Russia will chock the oil energy supplies in the future negotiations so as to make the situation difficult for Britain (Kurzel, 2018). Nevertheless, unlike other nations particularly those in the developing world, Britain has an advantage due to the fact that it is a powerful state which has several viable energy sources that include fossil fuels and renewable energy resources (Ibid).

Be that as it may, Conca (2013) has stated that UK should reduce its dependency on overseas imports of energy resources by embracing alternatives such as the Biogas Anaerobic Digesters constructed by the country's entrepreneur Philip Day in Penrich. The UK government according to Kurzel (2018) need to come up with a clear plan of action in order to control its energy supplies;

to implement reforms so as to allow the commercial adoption and extraction of shale gas and also to further its development of nuclear energy and renewable sources of electricity.

2.3 Sub-Sahara Africa and the Southern African Power Pool

Though sub-Sahara Africa is rich in potential electric power generation capacity, it is severely short of electricity. The Southern Africa Development community (SADC) region has abundance but underdeveloped energy potential, inadequate electricity transmission and poor distribution networks (Vanhoukelom & Scott, 2016). SADC is increasingly confronted with shortages of energy as a result of the region's failure to expand and empower the existing generation capacity in order to keep up with the demand. This is the situation in the SADC region despite the fact that an affordable and stable electricity supply underpins socio-economic development (Ibid). Affordable electricity supply enables investment, increased industrialization and infrastructure development (Pachauri, 2014). An increase in cross-border trade in electricity presents an opportunity for cost-effective way to improve access to affordable and reliable supply of electricity (Ibid).

After realizing the threats to socio-economic development caused by unaffordable and unreliable supply of electricity, SADC has preferred to promote regional energy security and trade between member countries (Ofetotse & Essah, 2012). The Southern African Power Pool (SAPP) was developed in in 1995 at a SADC summit in order to ensure regional energy security achievable through cooperation of SADC member states (Ibid). Regional power pooling is the practice of interconnecting energy grids of existing power producers through interchange agreements that govern energy, trade and cooperation as well as physical means across borders (Calderon, 2008).

In Sub-Sahara Africa (SSA), the SAPP is the oldest established power pool **Figure 2.*1***. As regional organization, the SAPP has one purpose; a clear and focused agenda as it works on policy problems that are of a concern to some regional member states (Vanhoukelom & Scott, 2016). Though SAPP is of great significance for broad regional socio-economic development, the regional electricity cooperation's achievements are hampered by varied negative factors within each of the SADC member states (Ibid). For instance, South Africa's electricity supply parastatal, Eskom which is the biggest supplier of electricity in the country and the region is confronted with several challenges (All Africa, 2015). At home, Eskom has a challenge to meet the demand of the

increased number of consumers of electricity in the post-apartheid democracy of the Republic of South Africa (Vanhoukelom & Scott, 2016).

The implication is Eskom is compelled to reduce the level of exports of electric power within the region. The electricity crisis in South Africa has caused significant shortfall in the available energy supply in neighbouring countries which rely Eskom supplies (All Africa, 2015). Countries such as Zimbabwe, Malawi, Lesotho and Botswana among others have so far experienced blackouts and power cuts (African Union, 2014). This has been the case despite the fact SAPP requires member states to carry out a reserve capacity margin of electricity of approximately 10 per cent (Vanhoukelom & Scott, 2016). Due to insufficient investment for additional electric generation capacity and increased demand of energy, the surpluses were depleted and this resulted in electricity shortages and insecurity in the SADC region (Ibid).

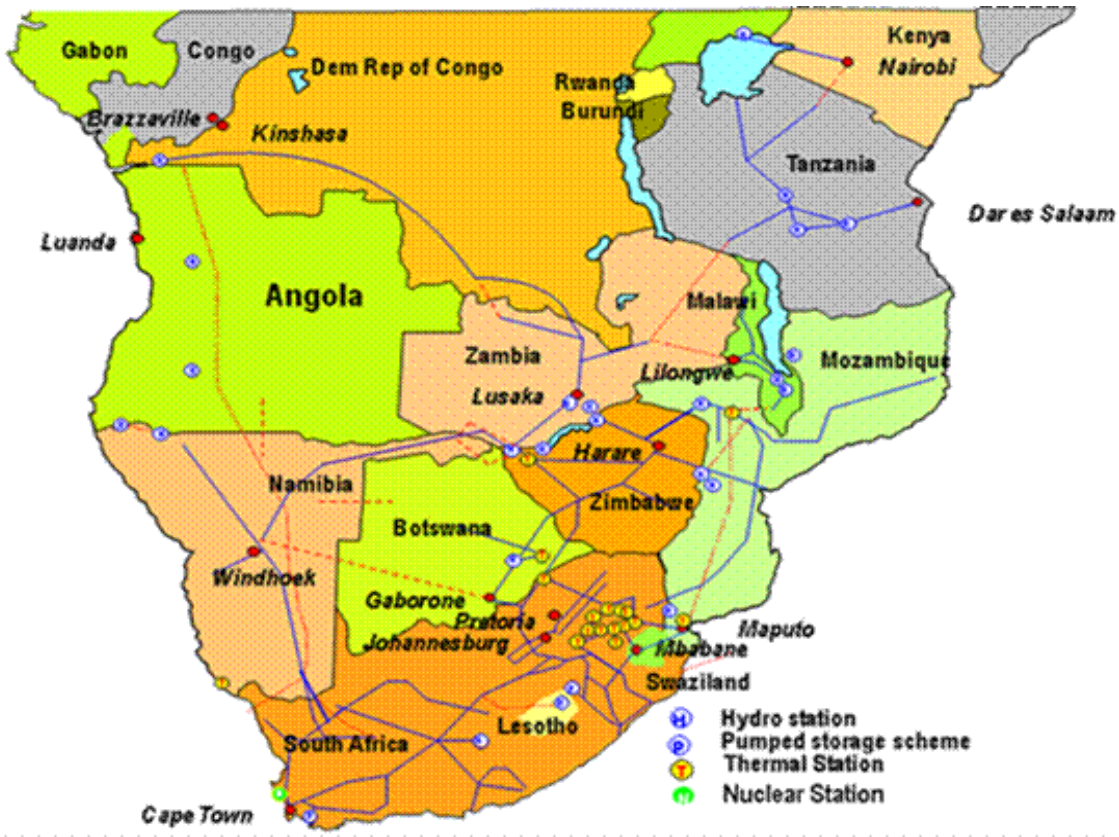

Figure 2.1: Member states in the SADC region and the sources of electricity each of the members have. Among those that are non-members include Kenya, Gabon, Rwanda, Burundi and Congo though they are part of the SAPP in the sub-Sahara Africa *(http://www.sapp.co.zw)*.

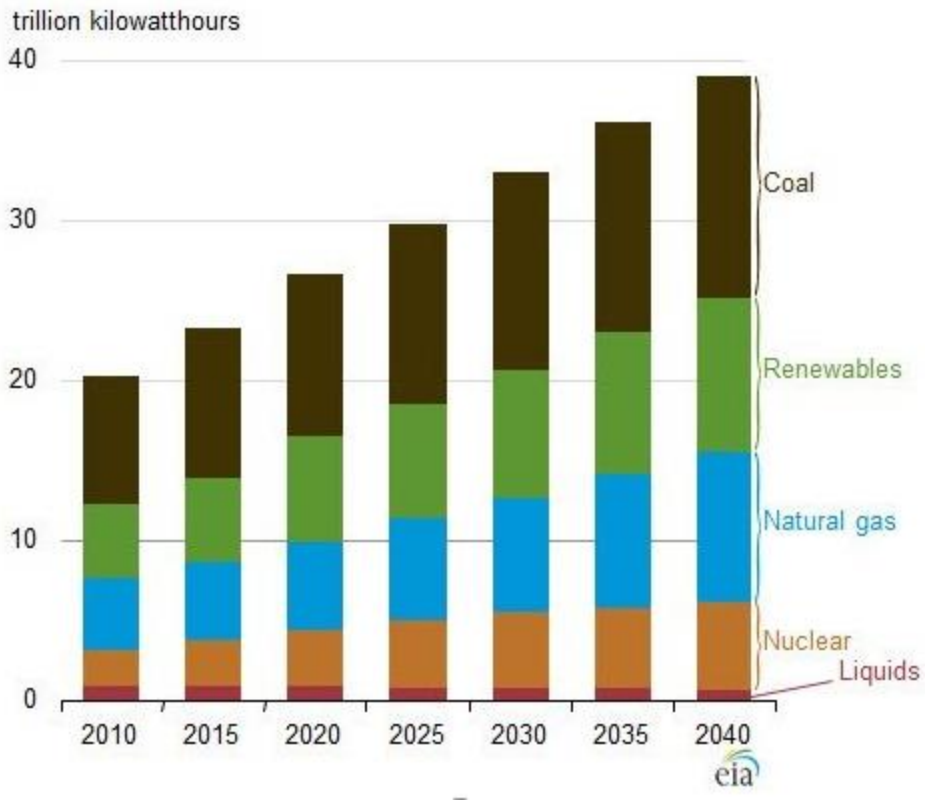

Figure 2.2: World net electricity generation by fuel, 2010-2040 (Follow, 2016).

The demand and consumption of electricity globally increases rapidly as shown in **Figure 2.*2*** which reveals levels of increase from 2010 to 2015 and also from 2020 to 2040. In 2020 until 2040 the use of natural gas, renewables and coal energy sources is expected to increase as shown. This is a result of population and economic growth experienced internationally.

2.4 Energy crisis and national security in Botswana

For the larger part of its independence, Botswana has relied on energy imports from South Africa and Mozambique (Khonani, 2015). An economy that had little industrialization did not have much energy requirements and the few households with electricity connection made it better. The changing landscape however meant more households could afford electricity and the expanding economy also came with an increase in energy demand (Ibid). The supply from South Africa became unreliable as the South Africa economy expanded (Mbokeni, 2013). This scenario therefore meant Botswana had to find alternative sources of energy but at a higher cost. In a recent contract BPC pays Mozambique power utility, Electricidade US$5million per month for 70MW

in a five-month contract running from May to September 2019. The agreement was signed by the President of Botswana Dr Mokgweetsi Eric Keabetswe Masisi during his visit to Mozambique (de Sousa, 2019). De Sousa however alleged fears that export to Botswana would affect EDM's commitment to its Mozambique customers.

The mining sector which is the mainstay of the Botswana economy accounted for over 50% of the demand for energy in the country (Mathambo, 2015). The mining sector without a doubt is the cornerstone of the economy of the country and by extension and therefore any threat to this particular sector is a problem to national security (Peter, 2013). A threat to the mining sector especially on diamonds due to energy crisis will definitely affect the revenue power of the country thereby threatening both human and economic securities (Grynberg, 2014).

The government of Botswana faces economic crises; as such, it has put in place a strategy for the diversification of the national economy. However, to realize this plan, Botswana requires adequate and reliable energy (Capital Resources, 2014). Access to affordable and reliable energy is critical to rural development and business growth. In Botswana, there is evidence that energy access nationally is about 50 per cent with the electrification of rural areas pegged at approximately 54 per cent. This is far below 60 per cent target focused by the Botswana ninth and tenth National Development Plans (NDPs) (Ibid). Botswana government's Vision 2016 aimed at 100 per cent rural access to electricity meant to support wider development goals such as access to health, education and employment opportunities for the urban, rural as well as disadvantaged populations (UNDP, 2012). However, these goals have not been fully attained due to the shortage of electricity supplies. Energy is therefore one of the new security threats to Botswana. For instance, electricity cut down due to shortages in 2014 had adverse effects on the country's socio-economic development (Vanhoukelom & Scott, 2016). Shortage of electricity nearly brought Botswana down. Some small businesses and shops were forced to close several times due to shortage of electricity (Mathambo, 2015). Limited supplies of electricity also caused the collapse of small entrepreneurial business organizations. The closure of businesses due to shortage of electricity meant loss of revenue and perishable commodities and this threatened the lives of Batswana (Capital Resources, 2014). Large businesses use conversional generating plants to meet rising demand of electricity and this adds to pollution and other environment disasters.

The South African power utility, Eskom indicated that it was no longer able to provide sufficient power to Botswana and also it reduced the supply of electricity in 2012. Eskom further indicated that it would stop supplying electricity to Botswana from the year 2013 onwards (UNDP, 2012). Like its neighbours in the Southern Africa, Botswana has long relied on expensive electricity supplies from South Africa. By 2008, approximately 70 per cent of Botswana's power needs were met through imports from Eskom (Ibid). According to Ofetotse and Essah (2012), Botswana was supposed to fill the supply gaps and to ensure reliable supply of electricity beginning 2013 when Eskom would stop energy exports to Botswana. The energy deficits to Botswana hurt diversification and growth and also it poses threats of economic contraction to an already economic crisis situation (Ibid). Botswana has already begun regular load shedding and this is expected to worsen as deficits grow unless urgent measures are considered. Shortage of electricity has so far hampered economic growth in Botswana along with several countries in sub-Sahara Africa (Pachauri, 2013). This is the situation despite the fact that investment in the power sector enhances growth by 1 per cent per year (Ibid).

Progress in reducing inequality and fighting poverty in Botswana is difficult to envisage without secure energy supplies and strong economic growth (UNDP, 2012). Shortages in electric power supplies have negative impacts on competitiveness, productivity, business confidence, investment climate and economic growth in general. Energy crises have negative impacts on Botswana's stability, economic diversification and growth as well as poverty alleviation strategies (Ofetotse & Essah, 2012).

The concept of traditional security in Botswana like in many other countries has been largely perceived as a concept that speaks to warfare and physical threats. However, new threats to human life such as climate change, human trafficking and energy crisis according to Mathambo (2015) cannot be ignored. Other non-traditional security concerns that have the potential to threaten Botswana according to Sejabosego (2015) are cybercrime, money laundering, unemployment, poverty and corruption.

2.5 Securitisation theory

Securitization theory has the widening of the security agenda as its basis. As theory, securitization of issues according to Mabanga (2013:31) findings is a phenomenon introduced by broadening,

widening and deepening of the state's security. Hough (2004) posits that securitization is a process oriented understanding of security which examines how state actors or non-actors can transform an issue or concern into a security problem, threat or matter. Mabanga (2013) states that securitization theory has elements that are classified as securitization and de-securitization.

2.5.1 Securitization of issues

The concept of securitization was introduced by Buzan, Waever and De Wilde (1998:23) as they challenged the narrow traditional conception of security which was informed by Realism. Ibid state that successful securitization must have components such as the existing threats and action that is taken as an emergency in order to address the threats. According to Mabanga (2013) securitization act is characterized by three components which are the securitizing actor (state actor), the referent object which is facing threats and needs protection and people or the public that must be persuaded so that they agree that the issue declared as a security threat is really a target of securitization.

The elite as Waever (1995) observed can make something into security issue or problem by defining that thing as security problem or threat. To gain control over a problem conceived as a security threat, the state uses the instrument of securitization. Thus in general, when state actors declare an issue as a problem, that problem becomes a security threat even though other observers may not view it as a security threat. Mabanga (2013) states that the state's government has authority to securitize certain issues that are seen as threats to national security. By doing as Waever (1995) observed, government has the potential to abuse power if there are no proper control measures taken in order to deal with securitization of problems.

Securitization of issues that are identified as national security threats leads to specific approaches taken to address those problems. Methods taken may include utilization of force such as hard power or military when necessary. Furthermore, Waever (1995) has cited some problem areas that can be securitized. These are non-military power threats most of which threaten human life and safety. These are human security issues such as pandemics; for instance, HIV and AIDS, energy crisis, water and environmental security among others. There are chains of issues in the environment that can be securitized as threats (Buzan, 1991). This implies that energy crisis which is one of the major concepts in this study has the potential to be a security threat to Botswana.

Therefore, as a concern to the nation, energy can be securitized since it is vulnerable to threats that seek to destabilize it.

When security is invoked in relation to given issues, the state takes what it understands as an appropriate measure for combating the problem identified as threat. With regards to dealing with issues considered as threats to national security, Muitmer (1997) posits that, the state may sometimes withhold information from citizens' access in the name of confidential national security data or state secrets that other people may not be allowed to have access to. This implies that the referent object such as state, government, humans and so on are vulnerable to threats; as such, they need to be protected.

Based on the evaluation made in the literature review, what constitute security problems is determined by political actors. Political analysts have the responsibility of explaining actors' actions and to see whether security criteria can be attained. More so, Buzan, Waever and De Wilde (1998) are of the view that analysts judge to see whether state representatives are effective in mobilizing support around the problem referred to as security threat.

2.5.2 De-securitization of issues

As the opposite of securitization, de-securitization according Waever (1995) is the means of not having issues termed security threats that require certain counter-measures for safeguarding such. Waever (1995) state that in the process of de-securitizing matters, issues that are described as security threats must be taken out of threat- defence –sequence so that they are placed into ordinary public sphere. Similar views are held by Peoples, and Vaughan-Williams (2010) who state that security is not always a good thing. Waever (1995) concurs with Peoples and Vaughan-Williams who affirm that extending the scope of security must be avoided and that focus must be put on de-securitization whereby some threats are removed from the security agenda so that other new issues perceived as threats are included.

2.6 National security

National security, according to Mabanga (2013) is understood as the first and the most important and obligatory role of the government. National security of referent objects that is humans and states among others is very complex. It involves safety and security of people and the state.

Additionally, national security deals with protecting the nation's values and interests against internal and external threats that can undermine the security of humans, state and the society at large (Cawthra, 2013). Moreover, national security considers as vital citizens' freedom from fear of attack against their person, people's sovereignty and the need to protect sources of their wealth. Therefore, national security includes preserving political, economic and social values and respect for the rule of law; human's rights, democracy and the environment (Ibid).

2.7 Botswana's national security threats

Safeguarding national interests and values of people is understood as a major issue in politics. Threats which include transnational crimes, weapons of mass destruction (WMD), pandemics and environmental degradation and so on are covered. Generally, threats are classified as traditional or military and non-traditional or non-military threats. Concerning the security of Botswana, Sejabosego (2015) cited the former President of Botswana, Lieutenant General Ian Khama whose key note address to the nation stated the need for the government to develop a national security strategy (NSS) or a national security policy (NSP). The strategy or policy as Lieutenant General Khama understood must address challenges posed by broad threats such as human trafficking, cybercrime and transnational organized crimes; money laundering, border security, diamond security and terrorism among others.(Sejabosego (2015)

President Khama also explained that the threats to Botswana's national security are economic, social, and political and some are defence related. Concerning these threats, Khama reiterated that there is need for Botswana government to put in place effective human resources as well as infrastructure that is suitable for addressing the stated threats (Rakgomo, 2016). Khama according to Sejabosigo (2015) also posited that Botswana's national security is to be addressed holistically. To achieve this, a collaboration of the country's several security agencies and other stakeholders was a need so as to ensure integrity, sovereignty, peace and prosperity. Khama pledged that the government will continue to support the Botswana Defence Force (BDF) so as to enable it defend the country from issues that threaten national values and interests.

Regarding Botswana's threats analysis and NSP, Rakgomo (2016) posits that the country needs a reliable policy which complies with the demands of the current-post-Cold War environment. The NSP should be crafted following human-centred methods rather than the realist state-centred

approaches which view nation states as referent objects. Sejabosigo (2015) states that Botswana needs to broaden its national security policy by including in traditional and non-traditional threats. Non-traditional security threats are challenges to the survival of people and state that arise out of non-military sources such as infectious diseases, food shortages, unemployment, and poverty and so on. These threats are transnational, they do not have boundary; they arise in a short period as the can be transmitted rapidly due advanced communication systems in the modern-globalized world (Buzan, 1991).

2.8 Clarification of security concept

Several researchers have attempted to define the concept of security. However, as past authors have indicated, security is multidimensional in nature and diverse in practice (Brooks, 2009). This diversity leads to difficulty in providing a single all-encompassing definition for the many applied domains of security (Ibid). Security cannot be considered singular in concept definition, as definition is dependent on applied context (Buzan, 1991). Brooks (2009) cites Powell whose primary argument is that security is a relational concept. To understand any discussion of security one must hold certain pieces of information; security to who (agent), security of what (a value or interest), security against what (threat or risk), and security to who (a provider of protection).

Brooks (2009) states that before Buzan there was a gap in literature concerning the concept of security and the approach to security and the intricacies of the issue had been largely blank. Perhaps this accounts for some of the unpreparedness when facing national or international security issues. As previously mentioned Buzan set to fill and devoted himself to the study of security as an approach to international studies.

Security according to Buzan (1991) is considered to be about the pursuit of freedom from threats and the ability of states and societies to maintain their independent identity and their functional integrity against forces of change, which they see as hostile. The bottom line of security as Brooks (2009) is survival and it reasonably includes a substantial range of concern about the condition of existence. The availability of gaps in security merits the urgency of the “security” label, which identifies threats as significant enough to warrant emergency action and exceptional measures including the use of force. Insecurity becomes part of everyday uncertainties of life and this is one of the difficulties of the concept security (Brooks, 2009).

National security, according to Mabanga (2013) is understood as the first and the most important and obligatory role of the government. Mabanga (2013) further states that National security involves safety and security of people and the state. Additionally, national security deals with protecting the nation's values and interests against internal and external threats that can undermine the security of humans, state and the society at large (Cawthra, 2013). Moreover, national security considers as vital citizens' freedom from fear of attack against their person, people's sovereignty and the need to protect sources of their wealth (Mabanga, 2013). Therefore, national security includes preserving political, economic and social values and respect for the rule of law; human's rights, democracy and the environment (Mabanga, 2013).

Exposure to terrorist attacks in many parts of the world (London, 2005; Jakarta, 2004; Russia, 2004; Spain, 2004; Bali, 2002 and New York, 2001) has raised social concern over the ability of governments to protect its citizens (Howard, 2004). For example, the 2002 Bali attacks touched all Australians, resulting in the Federal Government committing an additional $ 3.1 billion to deal with the terrorist threat. Over the last ten years there was an increase of interest in the concept of security and in particular, its relation with human rights. In, response to several terrorist attacks across the globe, a raft of new security legislations has been passed internationally. For example, in United Kingdom legislation, there is Anti-terrorism, Crime and Security Act 2001; Civil Contingencies Act 2004, Prevention of Terrorism Act and lastly Terrorism Act of 2006. In the United States of America, Federal laws such as the Executive Order 13224 (23 September 2001); Border Protection, Anti-Terrorism and Illegal Immigration Control Act 2006 were passed as Security Acts. Home land security Act 2002; Military Commission Act 2006; REAL Act 2005. USA PATRIOT Act 2001 is among a chain of security acts passed by the US government (Powel, 2012).

According to Powel, (2012), criminology discusses the relationship between security, democracy, crime control and 'security industry'. It reflects upon internal security of society and responses to internal security threats whereas international relations encompass the study of national security and armed conflicts and, on the periphery, includes the idea of human security promoted by United Nations. Bentham (1970), Smith (1978), Hobbes (1998) and Locke (2000) are some of the political theorists who discussed about the importance of security (Baldwin, 1997). Redefining security has recently become something of a cottage. Most such effort, however, is more concerned with defining policy agendas of nation-states than the concept of security itself (Ibid).

2.9 Summary of the chapter

The chapter has presented literature review on Botswana energy crisis and its impact on national security. Gaps have emerged on how best Botswana and the rest of the Southern African states can resolve the problem of energy shortage which hampers the region's socio-economic development. The chapter reviewed literature on energy crisis as security threat to the world. Moreover, literature was reviewed on the sub-Sahara Africa and the Southern African Power Pool. Additionally, literature was also reviewed on energy crisis and national security in Botswana as well as securitization theory. Furthermore, a review of literature was done on national security in general and Botswana's national security threats in particular. Through reviewing literature, the concept security was clarified.

CHAPTER THREE: METHODOLOGY

3. 0 Introduction

This chapter presents the methodology used in the research essay. The chapter discusses research design, principles for data collection and analysis regulation, desktop research, documentary analysis and ethical considerations. The study adopted a documentary research approach. As qualitative and social research methodology, document analysis enabled the researcher to utilize secondary data which were exposed to rigorous hermeneutics and examined in order to gain a more in-depth comprehension of the topic. The research paper thus utilized the available literature to unpack and elucidate the phenomena.

3.1 Research design

The study used qualitative design, strategy or plan. According to Babbie (2004) qualitative research refers to an inquiry by which data is collected and analyzed in statements and words so as to give a descriptive and comprehensive narrative of the topic under study. Qualitative methodology is opposed to quantitative approach which collects and analyzes data in statistics or numbers (McNabb, 2002). Overall, the use of qualitative and quantitative data in understanding phenomena in a single study is known as mixed research. According to Babbie (2004) the use of several approaches or triangulation of methods enhances the credibility of findings since different methodologies complement each other. This study however utilized qualitative method because it allowed the researcher to investigate more in the social phenomenon of energy crisis and its impact on Botswana's national security.

3.2 Desktop research

In order to address the research questions effectively, the study adopted a desktop research which was qualitative in design. Desk research differs from fieldwork in the sense that with desktop, the researcher will be cited by the desk collecting information from chosen written documents in either electronic form or paper documents (Babbie, 2004). By using the desktop research, the researcher did not go to the field to study human subjects, but used several written documents to include books, journals and newspapers among others in both their physical and digital forms. The researcher accessed these documents through several data bases to which the University of Botswana subscribes to. Internet sources such as Google Scholar, Oxford and African Journals were accessed.

3.3 Document analysis

Document analysis according to Ary, Jacobs, Sorensen and Walker (2014) is a hermeneutics or art of interpreting written documents and texts. In order to gain an understanding of the phenomena under study, qualitative researchers may utilize documents or artifacts. Documents are a wide range of written, visual materials, physical, electronic and what other writers may term artifacts. Unlike fieldwork data obtainable through focus group discussions and interviews, documents are not generated by the researcher, but they exist already. It is upon the researcher's skills to make appropriate decisions in selecting documents relevant to the study undertaken (Matthews & Ross, 2010). There are personal documents such as diaries, autobiographies, letters, memoirs and official documents such as files, memoranda, reports; official websites, minutes and documents of popular culture such as films, videos, blogs and books. Moreover, social networking sites provide documents of popular culture (Ibid).

Ary et al (2014:472) posit that document analysis may focus on text based artifacts or written materials that include books, journals, novels, announcements, logs, minutes, newspapers, policy statements, birth certificates, transcripts, marriage records, letters, budgets, and e-mail messages among others. Furthermore, documents, as Babbie (2004) observed can also be in the form of non-written records such as audiotapes, photographs, computer images, videotapes, websites, musical performances, YouTube videos and televised political speeches among others.

There are three categories in which documents can be classified. Documents can be classified as public records, personal documents and physical materials as documents (Ary et al, 2014:472). Public records include web sites, federal reports of meetings and education reports among others. Personal documents are first-person narratives which include diaries, letters, scrapbooks, home videos, Facebook sites and more others. These are good information sources about a person's beliefs and views but they are not very reliable due to their subjectivity. Physical materials include objects such as equipment, photographs, paintings and other physical traces.

A document compiled by someone who has firsthand experience with the issue under study is referred to as a primary source. Secondary source refers to second hand information or description written by someone who has heard about an event from others without him or her being directly experiencing that event. Documents therefore do not always provide accurate accounts of settings or events. To counter this challenge, the researcher used different sources of data so as to corroborate the conclusion presented in documents (McNabb, 2002). Moreover, the researcher established the authenticity of the documents by attending to history of each of the documents, their completeness and original purposes. Biases, distortions and deception in documents were examined in order to produce reliable findings. The researcher also was aware of the fact that documents in general are not produced for research purposes; as such, they may be incomplete and in some cases they are unrepresentative (Ibid).

Despite the shortcomings discussed above, Matthews and Ross (2010) have observed that documents can provide the researcher with quality data due to the fact that they are good sources of information providing good descriptive data and they stable data sources which also help ground the study into its field and context. The researcher used document analysis due to the fact that it is a faster approach of gathering data compared to fieldwork research and experiments. Moreover, document analysis is cost effective compared to fieldwork research. In examining documents and records qualitatively, the researcher analysis of the content of the documents.

3.4 Data collection

The researcher collected data from several documents. Selected documents included books, journal articles, newspapers, policy documents and magazines were read and data relevant to the study was gleaned and transcribed on the computer in form of notes. Moreover, notebooks were used to collect data in its raw forms. The data collected was later organized according to the research questions of the study waiting for further hermeneutics and analysis.

3.5 Data analysis

Since the data collected was qualitative, the researcher used thematic approach in analyzing the data. According to Matthews and Ross (2010) qualitative data is analyzed according to codes and themes that emerge in the raw data collected in vast quantities by the researcher. Analysis of data for this study was done according to the research questions. Data was organized in order to answer each of the three research questions. Furthermore, during the analysis of data, literature review in the previous chapter of this study was consulted in order to make comparisons and to identify agreements, disagreements and gaps. By analyzing data, the researcher managed to produce a comprehensive narrative report on Botswana energy crisis and its impact on national security. This was achievable through analyzing data gathered from books, journals, policy documents, newspapers and magazines.

3.6 Research ethics

In every type of research, field research, experiments and document analysis, there are ethics that the researcher must consider. Though document analysis does not involve gathering data from human subjects, there are ethics to be followed by the researcher (Babbie, 2004). The researcher avoided plagiarism by citing authors and year of publications as part of acknowledgment of sources of information consulted for this study. Moreover, the researcher analyzed the documents in a way that maintained the content as provided by each of the writers of the documents.

3.7 Limitations of the study

The study is a desk-top research that uses secondary sources of data at most and hence it lacks primary data that can help enhance the credibility of its findings. Findings of this study will lack first-hand information obtainable through the use of interview and questionnaire guides.

3.8 Delimitation of the study

The study is narrowed down to investigating the energy crisis and its impact on Botswana's national security. The literature will be reviewed on other countries experiencing energy crisis internationally, continentally and regionally, Botswana is the target of the study.

3.9 Organisation of chapters of the study

The research paper will be made up of five chapters. Chapter one will introduce the topic and gives the background of the study. It also discusses the statement of the problem, objectives and research questions; significance of the study as well as theoretical framework. Moreover, chapter one defines key concepts and it provides some possible limitations of the study. Chapter two will review literature on securitization theory and also it examines published sources on energy crisis and its impact on national security. Chapter three will present the research methodology and explains the meaning of desk-top research as well as document analysis. Furthermore, chapter three will also discusses ethical considerations. Chapter four will present the findings and analysis of data. Finally, chapter five will give conclusions and recommendations.

3.10 Summary of the chapter

The chapter has presented the methodology of the study. The study utilized the qualitative approach and data was collected, organized and analyzed according to themes and codes that emerged. The researcher used documentary analysis technique. This is a desktop approach that utilized the available secondary sources of written information. The chapter discussed the prospects and challenges faced when using documentary analysis as research design and approach of collecting and analyzing data.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.0 Introduction

This chapter analyzes data and presents findings of the study on Botswana energy crisis and its impact on national security. The data analyzed was corroborated with literature review findings in a discussion thereby identifying agreements in terms of findings, disagreements and gaps. Data analysis and presentation of findings in this chapter was done in line with the demands of the research questions which are: to what extent does Botswana experience energy crisis? What are the consequences of Botswana's energy crisis? How can Botswana combat the looming energy crisis?

4.1 To what extent does Botswana experience energy crisis?

Khonani (2015) posits that shortage of electricity has been experienced in Botswana from 2007 until 2016. Widespread blackouts were experienced as local energy production was not effective enough to supply the quantity of electricity needed. In 2013 for instance, the daily power limit for Botswana was 550MW and one of the local electricity generators, Morupule A was supplying only 100 MW and the rest of the power was purchased from South Africa Power Pools provided through Eskom from which Botswana imported more than half of its electricity supplies. Moreover, in the period mentioned above, the newly built Morupule B experienced technical problems particularly around 2013-2015 and three of its four generation units did not function. To a greater extent Botswana did not have sufficient electricity. Khonani (2015) further posits that Botswana was hit by severe energy crisis and that though the situation is improving; there is no guarantee for future resolution of the problem.

Keboletse (2019) argues that Botswana and the rest of the Southern Africa region experienced energy shortfalls and some countries in the SADC region do not have sufficient power supplies as evidenced by blackouts due to load shedding. The extent of the energy crisis saw the Botswana Power Corporation (BPC) and other crisis-torn regional utilities putting efforts to address spiraling energy demand due to crippling electricity shortfalls. From 2008 until 2015, there was an increase in power demand which went up by 3 per cent per annum as it continued to outpace the supply and peak power demand has increase from 578 MW in 2012 and set to increase to 902 MW by 2020, a 56% increase (Keboletse,2019).

The electricity shortfall experienced in Botswana 2007-2009 was severe and this was the time of global economic downturn when the economy of Botswana and the world at large experienced gross underperformance. Electricity shortages further worsened the performance of the economy. Conversely, Pachauri (2014) observed that stable electricity supply enhances socio-economic development and investment.

Concerning the extent of the shortage of electricity in Botswana and the region, in 2008, the International Monetary Fund (IMF) produced a report showing that 30 of the 48 countries in sub-Sahara Africa have suffered acute and severe energy crises. This forced power utility to come up with tight load shedding schedules so as to avert total blackout. During this period, the management at BPC explained that recurring power outages experienced in Botswana was a result of its effort to preserve the limited electricity supplies through load shedding.

There is evidence that besides challenges faced by local power plants such as Morupule A and B which are not able to generate sufficient electricity for Botswana, Eskom, from which Botswana purchases most of its electricity is also overwhelmed by the supply demand at home. Moreover, there are times when Eskom undergoes unexpected maintenance due to functional problems. In 2013, Botswana experienced acute shortage of electricity after its contract with Eskom expired and renewing it was problematic due to the fact that electricity demand in South Africa also was also higher than the supply. The evidence corroborates with Conca (2013) who suggests that states should reduce dependency on foreign imports of energy supplies by embracing home-grown alternatives. The shortage of electricity in Botswana saw some businesses failing to operate. Some shops were closed and people lost money and employment. Poverty levels increased due to lack of employment. Mabanga (2013) has shown that poverty is a non-military security threat. Unemployment and poverty due lack of electricity are a threat to Botswana's national security.

Regarding lack of electricity, the African Bank power engineer confirmed that the power blackouts in Botswana and the region are a result of a poorly maintained power infrastructures which are prone to collapse and not able to meet the increasing demands of electricity. BPC also explained that power shortage in Botswana is a result of increased economic growth and that previously BPC underestimated the power needs. Power demand in Botswana increases due to newly opened businesses, mines and also population increases (Mabanga, 2013).

Mabanga (2013) further argues that the level of the shortage of electricity in Botswana reached alarming levels in 2014. Increased levels of load shedding resulted in public discontentment. The problem threatened Botswana's national security in the sense that there was fear that masses could demonstrate against the government thereby making it ungovernable. Mabanga (2013) states that this could lead to civil unrest and a possible unconstitutional change of government. At that time, one member of parliament called for the resignation of the then Minister of Minerals, Energy and Water Resources, Mr. Kitso Mokaila. The magnitude of the problem was huge. To security electric energy, the government of Botswana attempted to allocate large amounts of money to the Ministry mentioned above to support BPC which was not financially stable. Moreover, similar conflict and pressure occurred in South Africa. The public in South Africa demanded that Eskom should cancel the contract to supply electricity to Botswana due to increasing demands at home. Regarding the level of the shortage of electricity in Botswana and South Africa, the Standard Reporter (2015:5) state that:

> There is growing social and political pressure in South Africa to stop exports to other countries. Energy security has emerged as the major national imperative for the government of Botswana. There is a deep concern in the government that the energy situation might lead to a crisis of confidence and political instability which the country cannot afford.

The citation shows that to a greater extent, Botswana energy crisis has negative impact on the country's national security. The construction, operation and maintenance of tools, machines and factories require a flow of a material and energy. Moreover, human security is put at risk due to the fact that several human activities require electricity. Electricity is therefore a basic need which when it is not met, people can demonstrate using several means to include political violence. Violent conflicts are not healthy for a country because they lead to civil wars and terrorism (Mbokeni, 2013). The major problem with Botswana is that its energy demand outstrips its supply (UNDP, 2012:2).

4.2 What are the consequences of Botswana's energy crisis on the nation's security?

There are debates regarding the relationship between energy and economic development. One of the theses is that affordable and reliable energy particularly electricity is an important aid to human,

economic and social development in all countries. Availability of electricity is closely linked to the attainment of the Millennium Development Goals (MDGs)[1] (Essah & Ofetotse, 2014). These MDGs link very well with the Government of Botswana's Vision 2016 which aims at 100 percent rural access to electricity to support the much broader development goals of access to education and health, as well as employment opportunities to rural and disadvantaged populations. Put simply, lack of electricity hinders the attainment of the MDGs. Human, economic and social development is hampered by shortage of electricity. Failure to access education, health and employment opportunities due to energy crisis threaten human survival. Sejabosego (2015) concurs with this view by stating that energy access problem is part of national security concerns in Botswana as it is a primary consideration for investors to set up industry that ultimately creates jobs. Williams, (2009) on the same point argues that from a military point of view, operational capability will be degraded as military operations are highly dependent on electrical energy to operate war equipment.

There are several consequences that are a result of energy crisis in Botswana. Kontle (2015) studied electricity crisis in Botswana and revealed that power cuts have negative effects on education particularly in tertiary institutions such as Botho University which offers information technology programs that are accessible through computers. For computers to operate, they need electricity. Frequent power cuts stall learning or sometimes learning is disrupted and stopped completely.

Health care institutions are also affected by power cuts. Medical schools and hospitals use electricity powered equipment. Without backup generators to reboot hospitals, patients' lives are threatened. Lack of electricity hinders people from accessing efficient healthcare needs and equipment such as brain scans, ultrasound scans, and x-ray scans cannot function without electricity (Kontle, 2015; Essah & Ofetotse, 2014). Lack of electricity can also jeopardise Botswana national security, especially as it relates to Botswana military installations and operations. Operations and installations like radars, pumping stations, air traffic controls, satellites

[1] Millennium Development Goals (MDGs) are a United Nations Declaration signed in 2000 committing heads of state and governments internationally to strive to combat disease, poverty, hunger, illiteracy, unemployment, discrimination against women and environmental degradation among others (UNDP, 2012). These problems are human security challenges which are also non-traditional threats to national security.

phones, delayed in nuclear fuel delivery, failure of water cooling systems, charging of batteries and so on.

Electricity is also needed in industries to run machines for production of goods and services. Power cuts stall production. Moreover, due to lack of electricity, industries lose a lot of money since sales are reduced due to shortage of goods and services. Some fresh foods get bad and are thrown away. Service delivery is hampered due system failures as a result of power cuts. Most services in the modern economies are computerized. For example, passports cannot be processed if the system is down. Billing systems, automated databases for government departments and transport systems need electricity (Kontle, 2015; Energy Affairs Department, 2012).

Botswana's economy and investment is negatively impacted by power cuts. There is no investor who wants to start a business in a country which lack electricity and resorts to power cuts and load shedding. Shortage of power in a country scares away investors. This causes a decline in the country's economy and unemployment and poverty will also rise consequently, unemployed poverty stricken people particularly the youth may resort to criminal activities such as terrorism as they are likely to be easily recruited by terror groups. This view is also held by All Africa (2015) which states poverty and inequality among the youth is a national security threat which must be addressed by considering viable economic policies and poverty alleviation programs aligned to Millennium Development Goals.(All Africa,2015).

4.3 How can Botswana combat the looming energy crisis?

Ofetotse and Essah (2012) state that two-thirds of Africa's coal is in Botswana. This is one of the advantages that Botswana can utilize to limit the problem of electricity shortage. The country has the potential to generate several thermal power stations. UNDP (2012) states that despite the fact that Botswana's energy demand is higher than the supply available; the country's untapped energy sources are also high to meet demands of local and export quantities. A range of opportunities are in existence for both local and export market energy generation as a result of the 200 billion tons of coal that Botswana can export to Asian and European markets. Locally processed coal has important by-products such as fertilizers, liquid energy, gas and also coal bed-methane. Some of these by-products can reduce the direct use of coal for generating of electricity because they have the capacity to also produce electricity. Furthermore, they can be exported so that the funds

generated after sales can procure hydro-electricity from other countries in the region. Hydro-electricity is environmentally friendly compared to thermal. Botswana does not generate hydro-electricity.

On a positive note, shortage of electricity has compelled the government of Botswana to support the construction of Mmamabula power station in an area which is estimated to have 3 billion unused bituminous coal deposits. (Grynberg, 2014). The project has double 2 500 megawatt power stations, coal export unit as well as a coal-to-methane plant developed by consortium of private investors by the name CIC Energy. Using coal as hydrocarbon energy helps Botswana combat energy crisis. Morupule A and B electricity generators also help Botswana to access electricity though the supply produced does not satisfy the demand. Energy crisis in Botswana and elsewhere is a situation to do with definite difference between power supply and demand for power. Therefore, the use of various alternatives to generate electricity can help minimize the crisis (Grynberg, 2014).

Grynberg, (2014). Contends that to save money and energy, lighting controls must be used. These include slide lighting and others. Lighting controls conserve energy and reduce lighting costs (Energy Affairs Department, 2012). Similarly, UNDP (2012) states that Botswana can decide to purchase energy efficient products to replace traditional bulbs. These products are durable and they use less electricity watts. Products such as the CFL can be used for commercial and residential purposes. Grynberg, (2014) argues that Botswana government must participate in climate change activities by focusing on the reduction of greenhouse gas emissions possibly through border mechanisms. Climate change and global warming cause droughts. Normally droughts can cause shortage of water the condition which hampers the generation of hydro-electricity (Grynberg, 2014).

Botswana can also combat the looming energy crisis through the use of renewable energy sources that are inexhaustible, pollution free, environmental friendly and clean. Renewable energy resources are water energy or hydro power, generation of heat energy from the earth or geo-thermal, solar power, wind and also tidal energy (Kontle, 2015).

Machete (2012) pointed that in response to the challenges posed by the shortage of electricity, the Botswana government developed the strategy so as to address short-to-medium term and long-

term concerns in in terms of energy. These include energy security aspects, energy conservation and efficiency, prudent development of domestic energy resources and also attracting the private sector to participate in addressing electricity shortage problem. Telegraph Reporter (2015) states that the government also developed a strategy to use some natural resources for generating electricity and aspects that safeguard and promote responsible use and approach to environmental and social impacts and also wider development aspects geared towards addressing national, regional and international concerns such as climate change and global warming (Reporter,2015).

Kontle, (2015) argues that load shedding can be used as a power saving strategy. At the beginning of energy crisis in Botswana, load shedding was considered a temporary solution to the impending energy crises. Energy was cut in certain places at given times in order to reduce to load provided by the supplier. However, this strategy hampered production in the sense that employees in different business were caught unprepared and their economic activities were disrupted. Although later BPC decided to convey messages to consumers informing them on times when power cuts were expected, still business activities were disrupted by power cuts (Kontle, 2015). Comparatively, the diesel plant implemented by BPC was a better strategy than load shedding. Moreover, BPC put into operation Demand Side Management that included Compact Fluorescent Lamps (CFL), installation; tariff restructuring study and water heating control. These measures were to ensure that Botswana would have sufficient electric power supplies till Morupule B came online around 2012/2013 in accordance with the National Development Plan (NDP 10). The use of diesel plants and construction of additional power plant can help Botswana combat energy crisis.

4.4 Summary of the chapter

The chapter has established that Botswana has so far experienced load shedding and blackouts due to shortage of electricity. The chapter has also managed to shed some light on the energy crises in Botswana and impending implications it brings to the security of the country as whole. Power cuts in Botswana resulted in public discontent as both small and large business operations were affected leading to loss of revenue across businesses and general industry. The chapter showed that energy crisis is a national security threat as lack of power in industry results in downsizing and consequently job losses. The study revealed that almost half of Botswana's electricity is imported from the Republic of South Africa. The chapter therefore revealed that energy crisis has economic

consequences. The chapter showed that through the use of renewable energy resources and construction of additional power plants, the country can easily combat the energy crisis.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter draws conclusions and suggests recommendations on Botswana energy crisis and its impact on national security. The conclusions and recommendations of the study are guided by the following research objectives: to explore the extent to which Botswana experiences energy crisis, to find out the consequences of Botswana's energy crisis and to establish ways by which Botswana can combat the looming energy crisis.

5.1 Conclusions

5.1.1 to explore the extent to which Botswana experiences energy crisis

This study has concluded to a larger extent Botswana has experienced energy crisis especially in 2007-2015. There was shortage of electricity throughout the country. The problem was exacerbated by the fact that Botswana procures most of its electricity from South Africa's Eskom. The supplier, Eskom also faced overwhelming demands of electricity back home and the situation compelled it to reduce exports. Furthermore, Eskom experienced a temporary shutdown due to technical problems that required attention. The shutdown had negative impact on Botswana whose electricity needs were increased since Eskom could not supply during the maintenance period. Botswana suffered power cuts in the homes and business sectors. Cooking, warming water and lighting were some of the problems experienced in Botswana due to load shedding and blackouts. In an attempt to alleviate the energy crisis, the Botswana Power Corporation resorted to rationing of electricity through load shedding. Failure to cook due to power cuts threatened the lives of some people in Botswana. Food is basic necessity, without properly cooked food humans cannot survive well. This shows that shortage of electricity is a threat on human lives.

5.1.2 to find out the consequences of Botswana's energy crisis

The study concluded that power cuts pose negative effects on education. Some university programs that are taught through the use of computers cannot be learned in the absence of electricity. For computers to operate, they need electricity. Therefore, this study has arrived at the conclusion that power frequent cuts experienced in Botswana stalled learning and in some cases learning is disrupted or completely stopped. Shortage of electricity has also negatively impacted on health care and health provision institutions in the country. Medical schools and hospitals use electricity powered equipment; power cuts threaten patients' lives. Not all institutions may have backup generators to reboot for example, hospitals. Moreover, lack of electricity hampers patients accessing efficient healthcare needs. Medical equipment such as brain scans, ultrasound scans and x-rays scans require electricity. Sleeplessness, incompletion of tasks, use of alternative resources and inefficient learning have been found to be the more critical results of electricity shortage.

Furthermore, the study established that industries cannot function without electricity. There is need for availability of electricity to run the machines so that production of goods and services can take place. Power cuts that Botswana experienced stall production. Lack of sales is one of the problems experienced since there is no production without electricity. Power cuts also contribute to loss of money because there would be no business during blackout period. Businesses are forced to close thereby losing revenue. Additionally, service delivery is disturbed by power cuts. Processing of passports cannot be done where there are system failures due to lack of electricity. Most services in modern societies are computerized to include automated databases, billing systems and transport systems. Since lack of electricity forces some shops to close, closure of businesses increases the levels of unemployment and poverty which in turn threaten national security. Addressing poverty and employment is a need in order to meet the demands of Millennium Development Goals (MDGs).

Power cuts also have negative effects on the country's economy. The economy of the country declines in the context of power cuts. This study has concluded that shortage of electricity power in a country has the potential to scare away investors. There is no country that can develop and survive without investment in different sectors of the economy. Lack of investment affects human lives economically. This is also a threat to the country's national security. It is concluded that the shortage of electricity has changed the lives of people in Botswana irrespective of their professions.

5.1.3 to establish ways by which Botswana can combat the looming energy crisis

The study established that Botswana can combat the looming energy crisis by liberalizing the energy market so that several competitors and suppliers can take part in generating and procuring electricity to sell to the consumers. Moreover, Botswana can combat the looming energy crisis by embracing the use of renewable energy sources that depend on solar, water, wind, geothermal among others. Given the increasing global crude oil prices, many countries are making a transition to renewable energy technology to meet their energy needs. To Botswana this will mean a reduction on the dependency on energy imports by exploiting domestic energy potential. Additionally the use renewable sources can be done alongside the use of conventional energy sources that are dependent on fossil fuels such as natural gas, oil, coal and others. Botswana must also expand the existing generators of electricity and construct additional power plants to rectify energy crisis.

5.2 Recommendations

The study recommends that:

- The government of Botswana should construct additional power plants and come up with other alternatives to alleviate energy crisis.

- The government of Botswana should invest in energy efficient and alternative energy technologies.

- The government of Botswana should develop Integrated Resource Plan (IRP) and move to minimize power imports from Eskom.

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