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WAKING UP TO THE POWER CRISIS: The Importance of Securitising Energy in Botswana

by

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CERTIFICATION

This research paper has been examined and approved as meeting the requirement for the partial fulfillment of Masters of Arts in Defence and Strategic Studies.

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DISCLAIMER

While utmost care has been taken in preparation of this research to provide reliable information, the author shall not be liable for any decision or action taken based on and or arising from such information.

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LIST OF ABBREVIATIONS

AfDB	African Development Bank
ANC	African National Congress
BEMP	Botswana Energy Master Plan
BOCCIM	Botswana Confederation of Commerce Industry and Manpower
BPC	Botswana Power Corporation
CEO	Chief Executive Officer
CS	Copenhagen School
DME	Department of Minerals and Energy
DoE	Department of Energy
DTC	Diamond Trading Company
EDF	Electricte de France
EISEP	Eskom Integrated Strategic Electricity Plan
ESA	Electricity Supply Act
ESIA	Environmental and Social Impact Assessment
FAO	Food Agriculture Organisation
GDP	Gross Domestic Product
GHG	Green House Gases
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
MAPP	Multi-country Agricultural Productivity Programme
MGD	Millennium Development Goals
MMEWR	Ministry of Mineral Energy and Water Resources
NDP	National Development Plan
NEPAD	New Partnerships for Africa's Development

SADC	Southern African Development Community
SAPP	Southern African Power Pool
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations Human Rights Council
UNIDO	United Nations Industrial Development Organisation
USA	United States of America
WHO	World Health Organisation

ABSTRACT

Despite the vast research conducted on energy security, how can a country with a sound economy and an abundance of energy resources like Botswana end up sitting in the dark? Botswana experienced a depressing electricity power crisis at the wake of 2008 that left the nation with a sense of panic and guessing what the future holds. The purpose of this research is to identify flaws that may be in the country's security management approach and generate knowledge on the role energy plays in the national security. Forum (2006) informs us that energy security is an umbrella term that covers many concerns linking energy, economic growth and political power. Haluzan (2013) further highlighted that without energy there is no economy, and without economy there is no progress of society in general. Using the example of the Botswana power crisis situation, this paper demonstrates that energy, especially electricity, plays a pivotal role to the security of any nation. This paper therefore argues that even with a stable political environment and a robust economic growth, if energy is not securitised, the national security of any country can be compromised. The paper further highlights that historical experiences and the securitization of energy policy play an important role to the welfare of the nation and not only economic interests.

Table of Contents

CHAPTER ONE

INTRODUCTION

Botswana experienced a depressing electricity power crisis at the wake of 2008 that left the nation with a sense of panic and guessing what the future holds. The unbearable development did not only attract concern from the ordinary Batswana but the international community as well. Roman Grynberg made a very befitting statement that triggered the need for this research when he said;

> "Sometimes the cheapest short term commercial answer proves very economically expensive in the long term and delaying the building of important infrastructure just retards the country in the longer term. How did a nation like Botswana, which has 2/3 of Africa's coal, with an enormous inferred resource of some 212 billion tonnes end up sitting in the dark?" (Cjdalzeil, 2013).

As per studies conducted in the past, the dire situation is a result of a number of factors but of importance is the poor economic situation at independence. The country survived through subsidies and thus could not embark upon unilateral action for her survival. As a result, Botswana established a security management approach targeted at providing basic social amenities excluding energy. The energy security policies were highly influenced by the South African apartheid regime policy of producing electricity in abundance and provide it cheap to neighboring states (Cjdalzeil, 2013).

The democratic government in South Africa embarked on providing electricity to all citizens resulting in power deficit situation that led to what Muluzi (2012) called Botswana's crunch time. Against this background, this paper shall examine the events that may have contributed to the power crisis. Emphasis will be on evaluating the impact the power crises had on the economic growth and the general welfare of the nation. This research venture seeks to provide a comprehensive history and diagnosis of events that led to the power crisis with a view to provide a new perspective on how to address and mitigate such crisis in future. The energy security that this paper is concerned with is that of the delivery of electricity services and not the supply of imported oil, gas and other forms of energy. The focus of this paper is on electricity security since it involves many concerns linking energy, the environment, equity and economic development (Kiratu, 2011).

Background to the study

The devastating power situation the SADC region, especially Botswana, experienced in the wake of 2008 can be viewed as a wakeup call to developing countries to revisit their security management approach. In an article titled "Memories of the Apartheid Raids" posted on Mmegi Online on the 14/06/2005 (12:43hrs) by Phillimon Molaodi, 12 people including women and children were killed on the 14 June 1985 in Gaborone. The deaths were a result of raids carried out by the South African Defence Force troops in ANC bases in Botswana and other countries in the region. The most interesting part to this paper is that the raids were smoothly done in the dark as power being supplied to Botswana by South Africa was cut off. Energy was used as a means to compromise the security of innocent citizens of raided counties and lives were lost. This paper is of the view that the incident should have been a wakeup call for Botswana to revise its security management and consider energy as a security imperative. It is clear that countries find themselves caught up with crises that could have been avoided since there are constant warnings made prior to crisis.

In his article titled 'The Coming Energy Crisis', Alhaiii (2003) pointed out that many of the warning signs that existed before the energy crises of 1973 and 1979 exist today and that they indicate that the current situation could be even worse. This observation indeed is proving to be a reality as historical events evolved. In 2003 the United States of America (USA) experienced the most severe power outage that left every city between Detroit and Ottawa, including New York in what became known as the Northeast blackout. As a wakeup call, in October 2008 the Secretary-General of the United Nations Ban Ki-moon made the following statement at the UN Chief Executives Board session:

> 'Ensuring access to sustainable and cleaner energy is a key objective for the international community. It is clear that we will not be able to meet the Millennium Development Goals and the development needs of the poor without increasing their access to energy. And without a shift to cleaner energy supplies it will be impossible to adequately tackle climate change.' (UNIDO, 2008)

A point of interest brought out during the session was the fact that energy is directly linked with the key global challenges that the world faces; (poverty alleviation, climate change, and global, environmental and food security). To this observation, Gwénaëlle Legros (2009) contended that even though energy is arguably one of the major challenges the world faces today, touching all aspects of our lives, it is not captured in the MGDs.

During the 2008 UN Chief Executives Board session, it was clearly spelt out that provision of electricity is the greatest infrastructure challenge to Africa with the Sub-Saharan Africa region experiencing the lowest rates of energy access, capacity per capita and electricity consumption per year. As a measure to tackle this problem, the region formed the Southern African Power Pool (SAPP), East African Power Pool and the West African Power Pool with the mandates of developing the electrical energy sector. Even though these bodies have been in place for quite a considerable time, the provision of energy especially to rural areas still remains a serious challenge. The SAPP was formed in 1995 with the aim of optimising the use of available energy resources in the region and support each other during emergencies. However over a decade later this aim proved far from being met as power accessibility became a nightmare to some member states including Botswana.

In 2007, it became evident that the SADC region was running out of surplus generation capacity just as it was accurately predicted by the Southern African Power Pool (SAPP) over a decade ago (SADC Today, 2008). During the 2008/2009 SADC energy recovery strategy progress review, the SAPP Co-ordination Centre Manager, Lawrence Musaba advised member states to take into account the need to urgently address lack of regional policy in the energy sector. Despite such advises and some historical crises, the region is still facing challenges in the energy sector characterised by blackouts and load shedding in some member states. Botswana has been making efforts to address the acute demand of energy with view to meet the Vision 2016 goals, which are in line with the United Nation's Millennium Development Goals. Even though Botswana's Vision 2016 recognises energy as a pre-requisite for successful industrialisation, particularly electricity, the country has become victim of numerous power cuts and high rise of energy price.

As evidenced by the current electrical power crises situation in the SADC region, the conduct of a real common energy policy and national policies are far away in ensuring secure energy supply to meet the escalating demand. Botswana has enjoyed over four decades of democratic rule with sound economy and an abundance of energy resources giving it a strong potential for energy development. Despite all this, the country found itself hit hard by energy shocks. Botswana, just like most developing countries is faced with a serious challenge of supplying affordable, secure, clean, and readily available energy for all. To be able to meet the demand, the government is forced to generate enough power locally leaving no other immediate option but to utilise coal which is in abundance. This brings in another challenge with the use of coal

as studies have shown that coal fired power plants are the biggest source of man-made carbon dioxide emissions that contribute to climate change.

Most developing countries have crafted sound national as well as regional energy policy drafts that could secure their energy supply. Nevertheless, the implementation of the policies seems far from real as proven by the recent blackouts and power load shedding experienced in some regions and countries. Roberts (2008) argued that the recent and looming blackouts as well as the soaring electricity bills are a problem that developed from many years of neglect of energy security by policymakers. Cornell (2009) pointed out that without defining energy security in a more nuanced fashion, politicizing energy issues can yield confused and aggressive policy choices which hinder the achievement of energy security. At the end of colonialism most developing countries were faced with varying challenges spreading from civil wars, poor economies, illiteracy to poverty, just to mention a few.

The recent power situation experienced in Botswana should be a learning curve for other developing countries. The ongoing power outages directly impacted negatively on different sectors of the economy as well as social development issues. During a small survey conducted by The Voice newspaper on the 14 March 2014, to get a cross section survey on the power situation, there was a clear sign that energy poverty has a profound impact on the modern society. It showed that the power outages had a negative impact on everyone, ranging from big industries, large and small retail stores, to households. This proves that energy in developing countries is no longer luxury but a national interest that governments cannot continue to ignore. Without an environmentally friendly energy services that are reliable, affordable and most importantly continuous, human security is highly likely to be compromised.

Statement of the problem

It is evident from research conducted on energy security matters, especially in developing countries, that the long time neglect of energy security by policymakers has a pronounced negative effect on Sub-Saharan Africa's region in achieving the United Nation's Millennium Development Goals (MDGs). As a result, most people in developing countries do not have access to modern energy sources and thus depend on traditional biomass fuels that cause problems inherent within global socio-economic and political potential for conflicts and global environmental threats. Despite the catastrophes experienced and lessons learnt during

historic energy crises, especially power outages in different parts of the world, developing countries still face the problem of energy poverty. The recent power outages that hit the SADC region are a clear indication than energy issues have been given less attention in the security agenda. Evidence from local researchers and the media indicate that Botswana is blessed with abundance of energy recourses that can meet demand locally as well us export internationally. To this effect, it is of great concern for Botswana to find itself in a situation where the nation got exposed to a state of fear and uncertainty due to numerous blackouts that disrupted their normal way of living. The assumption here is that energy has not been considered an issue of security concern leading to this unfortunate power crisis situation and thus the call to consider the securitisation of energy in Botswana.

Research Questions

It is important to understand that energy remains the key input to all economic processes and also a source to all essentials that are indispensable for the normal functioning of modern society. This brings us to the main research question: *Should energy be considered as a national interest that deserves priority in the national security agenda?* This question implies that to developing countries, energy has always not been a national security issue leading to the current electricity power crises that have left nations in a state of fear and confusion. To try and unpack the main research question, the following three questions will help guide the structure of the paper: First, how does the process of securitisation help in informing sound policy decision to planners and politicians? Second, what role does energy play in the national security of any country? And thirdly, how does energy poverty impact on the economies and the functioning of modern society?

Structure of the Study

To realise the objectives of this paper, a background on the transition observed in the security paradigm is analysed with emphasis on how energy has been perceived by legislators and planners in the security agenda. In order to try and qualify the rationale for this research essay, the importance of energy as a national security imperative with emphasis on electricity is discussed. Threats that are likely to be linked with energy insecurity are also discussed to sensitise all stakeholders involved in the process of securitisation about their significance in policy making and implementation. Secondly, the Botswana power situation will be evaluated with the view to emphasize the impact of power outages to the modern society and thus stress the importance of securitizing energy. The paper will look into the energy sector

background with the view to try and trace the origin and oversights that arose within the sector leading to the on-going crisis. This is meant to come up with some lessons learnt for the benefit of the energy sector and the country as a whole.

Purpose

The aim of the study is to analyse and generate knowledge on: the role energy plays in the national security of developing countries; the way it affects economic and human development of modern society. It continues to sensitise on the need to ensure that in trying to address the problem of energy poverty legislators and planners should pay particular attention to the use of fossil fuels and environmental vulnerabilities. The argument here is that for energy security to be realised the interwoven challenges posed by the problem of fossil energy and the anthropogenic climate change have to be highly considered. Most importantly, the use of Botswana power crisis as a case study is geared to come up with lessons learnt that other developing countries can use to help in mapping up a way forward to the realisation of energy security.

Justification

In an article by Gordon Meriwhether (2014) on '*leadership crisis'*, outlined that the smooth-running of any enterprise during normal times evaporate during a crisis, throwing the leadership into a morass of uncertainty and chaos. On the other hand the crisis will cause a certain level of disruption and loss to the public in general leading to fear and confusion. As this situation unfolds, government as the key player in crisis management will be under public pressure to solve exponentially accentuated crisis problems. This in turn may lead to hasty changes in personnel and opting for unsustainable short-term solutions that come with huge costs. During the power crisis in Botswana, some of these issues came out clear as we saw changes ranging from personnel in the bureaucracy, change of companies evolved in the construction of power plants to the signing of new contracts of importing power from South Africa.

The emphasis here is that, this paper believes that securitisation of vital national interests like energy can help mitigate all the confusion experienced in a crisis and can help politicians and planners to make sound and informed policies on issues of national security. The paper is of the view that crisis can successfully be managed if its causes and impacts are understood by all. One way amongst others is through research with view to sensitise and make

contributions that can help the concerned stakeholders to effectively manage crisis in future. To this end, this paper found it necessary to evaluate the power crisis situation that befell Botswana with a view to stress the importance of expanding the national security agenda to encompass not only survival interest (military) but include vital interests like energy. It is therefore important for any nation to ensure vital national interests detrimental to human security like energy, environment, diseases etc be securitised well in time than act on reaction.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The unfortunate electricity situation, characterised by numerous power outages, that engulfed the SADC region as of 2008 can be linked to policy choices adopted post-colonial period. At independence most countries in the SADC region were engulfed with civil strives that contributed to poor quality of life and political unrest. The sovereignty and integrity of individual countries became a priority in the security agenda of the region. The approach became a problem with securitisation of energy as security was generally viewed in a traditionalist realistic approach focusing on the state focused military view of security. However, post the Cold War era, the Copenhagen School (CS) worked on the new concept of security which would be able to accommodate non - military threats. From the SADC situation it is evident that energy, which forms part the environmental sector in the security agenda, is a bottleneck to countries' overall development aspirations.

The problem of realising energy security in developing countries can be linked to a number of factors to include lack of understanding of the concept of securitisation by policymakers. The literature review will give a theoretical basis that will help guide and justify the research during the discussions. To achieve this, the paper will first introduce the new concept of securitisation that provides an encompassing framework of analysis of security studies. To stress the importance of adopting this new concept, the vulnerabilities to environmental security will be demonstrated. Since energy forms part of the environmental sector, the review will try to bring an understanding on energy security by; defining energy security and linking energy to national security. The world view towards energy security will be highlighted with emphasis on; the state of energy, trends on energy issue/crises and how non-renewables can fill in the energy gap. Finally the perspectives of South Africa and Botswana will be reviewed as their energy policies shape each other.

The New Concept of Security Studies

The concept of securitization originated as a result of tiresome debates between those who claimed that threats are objective on the one hand and those that maintained that security is subjective on the other hand. In trying to break the deadlock, the Copenhagen School (CS) suggested that security should instead be seen as a speech act where the central issue is not if threats are real or not, but the ways in which a certain issue (troop movement, migration, or environmental degradation) can be socially constructed as a threat (Munter, 2012). The goal of the theory of securitization is to provide an encompassing framework of analysis regarding security studies through the use of multi-sectoral analysis (Buzan et al., 1998, p1). Instead of focusing on the traditional state focused military view of security, this theory's aim is to provide a wider range of analysis regarding security.

The Copenhagen School (CS) describes securitization as the inter-subjective and socially constructed process by which a threat to a particular referent object is acknowledged and deemed worth protecting (Charrett, 2009). Buzan et al (1998) informs us that during the process of securitization, issues are prioritised based on the level of an existential threat and/or the need for an emergency measure. The success of the securitisation process depends on a number of variables. According to Charrett (2009), for the process to succeed there has to be a social interaction between a securitizing actor and an audience in relation to an object, the referent, and that which threatens it. On the other hand, Buzan et al (1998: 32-33) used the Austinian understanding of speech acts to explain that a successful securitization process is facilitated by internal or linguistic factors and by external or contextual factors, the social capital of the speaker and the nature of the threat.

Buzan et al., (1998) went on to show that the referent object is traditionally the state, in a hidden way, the nation and subsequently the securitising actors who declare that the referent objects is under existential threat. The actors, as Buzan et al., (1998) pointed out, are typically state elites, who hold an advantaged position over defining security threats. According to the theory of securitization it is important that the speech act conveys the urgency of the problem, the risks towards the prosperity of the society and the ability to affect the outcome (Buzan et al., 1998, p73-75). A typical speech act was made by the U.S President Barack Obama's during an address on energy in 2011 when he pointed out that:

> 'We cannot keep going from shock to trance on the issue of energy security. It is time to do what we can to secure our energy future.' (http://www.intellectualtakeout.org).

According to the theory of securitisation by Buzan et al., (1998), in the above speech, the securitising actor (President Barack Obama) tries to portray that the existential threat (energy insecurity) poses a risk of an unstable energy supply to the referent object (the future generation). Since energy plays a vital role in shaping and enhancing the way of living of the modern society, the president views energy insecurity as a threat to humanity and thereby the need for securitising the issue of energy. This statement/speech act is an obligation for nations, especially developing countries, to act urgently in bringing innovation in the energy sector so as to promote conditions for human security and a better environment. Even though the process of securitisation can help legislators and planners effectively define the security agenda to meet the modern society, there will always be some complexities that cannot be overlooked.

Depending on the nature of government system adopted, there will be a danger of a securitization processes that exclude certain groups and ideas resulting in negative consequences for the individual or the global community. The environmental sector is complex due to a large range of possible referent objects. As a result, the decision making by the actor becomes complex bringing in the possibility of omitting vital referent objects like electricity in the security agenda. However, this complexity can be overcome if in the process of securitisation, the two agendas, namely the politicians and scientists are allowed to overlap and shape each other in part in the decision making process (Barry Buzan, 1998). According to Munster (2012), securitisation should be viewed as a process through which non-politicised or politicised issues are elevated to security issues that need to be dealt with urgency, and that legitimate the bypassing of public debate and democratic procedures.

This paper believes that these public debates and democratic procedures have a direct bearing on the poor and deteriorating energy situation found in most democratic developing countries. The electrical power crisis that befell Botswana is a true reflection of what Buzan et al., (1998, p23) outlined by pointing out that securitization is a more extreme version of politisation. The issue of electricity presented as an existential threat that required emergency measures to legitimize actions outside the normal political process and as such, energy has to be a security issue as its impact proved the need for it to take absolute priority over other issues. If planners and politicians in developing countries had understood, appreciated and put to good use the process of securitsation, they would have avoided the recent poor energy situation. The process can help in ensuring that vital policies are implemented and well

nurtured to meet the challenge of providing services that allow its people to achieve a decent standard of living, consistent with sustainable human development. Sustainable development provides a framework for managing human and economic development, while ensuring a proper and optimal functioning over time of the natural environment (Bass, 2006).

The Environmental Sector: A Security Concern

Energy forms part of the environmental sector and its production and utilisation has a direct link to the environment and in turn to humanity. It is therefore important to understand the vulnerabilities that may arise as a result of not considering the environmental sector as a security concern. Biswas (2011) observed that environment is a resource that has strategic significance for nation/states who build power through natural resources like water, oil, gas, and various other minerals. Many environmental and social problems are caused by the way the energy system operates. Activities like the combustion, transport and disposal of energy sources results in harmful emissions as they go through different conversion processes. These emissions in turn cause local, regional and global environmental problems, including serious, even fatal, human health hazards. According to Winkler (2006), the workings of the energy sector are also socially disruptive, (i.e the development of most energy sources results in the dislocation of people and exacerbates differentials among social groups).

Reducing the environmental and social burden is thus a major concern for the energy sector. It is therefore very important for legislators and planners in developing countries to understand how energy issues can lead to environmental vulnerabilities and in turn compromise human security. Chalecki (1998) came up with a flow chart illustrating how economic activity can cause environmental changes that may even lead to conflict. The chart clearly shows the nexus of energy utilisation and the environmental vulnerabilities:

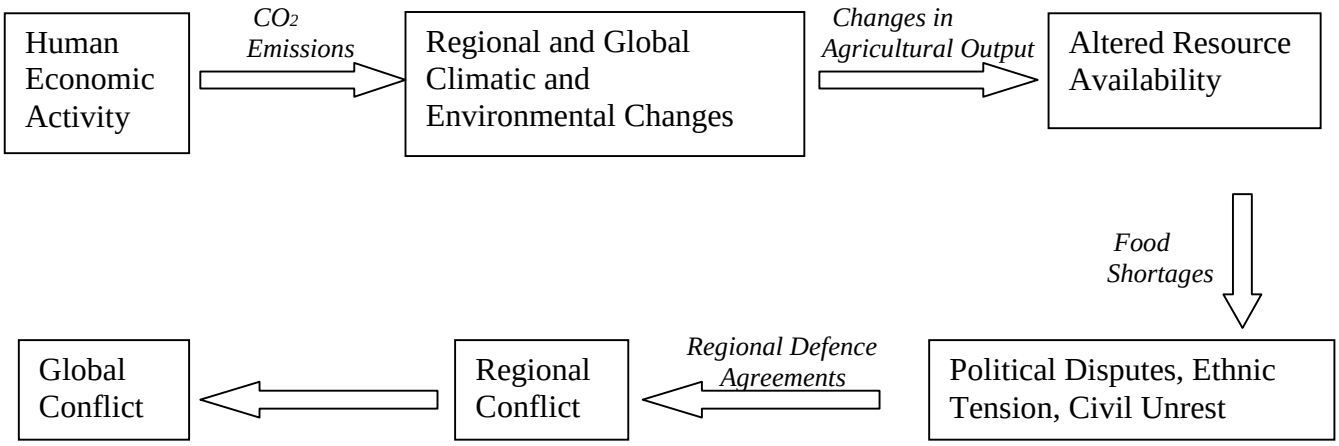

Figure 1: Environmental Routes to Conflict (Chalecki, 1998)

Human Economic Activity

Pressure on the environment is generally attributed to changing drivers such as population growth, economic activities and energy consumption patterns. The high demands for the provision of energy for industrial development, transportation, cooking, heating, cooling, and lighting are some of the main concerns of human activities contributing to environmental problems. According to Depledge (2000), in June 1992, the "United Nations Framework Convention on Climate Change" (UNFCCC) was signed with a concern that human activities are enhancing the natural greenhouse effect, which can have serious consequences on human settlements and ecosystems. The scientific consensus that human activities are causing global warming that could result in significant impacts such as sea level rise, changes in weather patterns and adverse health effects led to the formulation of the Kyoto Protocol in 1995.

Human activities have substantial, cumulative and accelerating effects on the total earth system and the physical environment that it provides for life. Economic drivers ranging from industrial facilities activities to basic electric utilities rely heavily on electric power. The most common and prominent source of energy to generate this power remain coal which if found in abundance in most developing countries. Majelantle (2011) inform us that the levels of carbon dioxide, methane and nitrous oxide in the atmosphere have risen during the industrial era owing to human activities like deforestation or heavy fossil fuel use, spurred on by economic and population growth. The uses of coal as well as the industrial facilities are the main source of emissions causing climate change. These activities come with catastrophes to the earth; some of them identified by Price (1990) include adverse effects on human health in

the form of increased risks of various forms of skin cancer, weakening of the human immune system and increased risk of eye disorders such as cataract problems

Climate and Environmental Changes

During the Midwest Energy and Climate Policy Conference in June 9, 2010, Senator John Warner referred to climate change as a 'threat multiplier', i.e. increases threats, exacerbating problems that already exist. Climate change significantly affects both the national and global security and therefore has also become everyone's challenge. World Bank (2006) informs us that environmental damage linked to the use of both traditional and modern energy can lead to economic losses that will compound existing poverty. At an event titled *"Climate and Energy Security: a strategic national security issue"*, organized jointly with the British Embassy in Warsaw, Rear Admiral Neil Morisetti of the UK Climate and Energy Security Envoy pointed out that national interests and security may be affected by climate change events taking place miles away from its borders and thus multiplying the risks of tensions around the world (GMF, 2012).

The fact that even small changes can cause significant problems for a large portion of the world makes climate change a major environmental concern. Climate change has effects on precipitation and soil moisture affecting the worldwide agricultural output, directly impacting food security. The major climate change implications include disasters that include amongst others severe drought and flooding. Severe drought experienced in developing countries has led to reduction in crop productivity leading to less income for farmers, increased prices for food, unemployment, and migration (Wilson, 1998). Another disturbing issue is that of the impact of flooding. A report from the world health organisation indicates that, climate change displaces millions of people, and there is also the problem of maintaining a clean water supply.

Floodwaters can contaminate drinking water, and sea level rise can lead to the contamination of private wells, leading to catastrophic results (WHO 2010). An additional serious concern is that many ecosystems and species may not be able to adapt to rapid rates of change in climate variables (Wilson, 1989). Other catastrophes include hurricanes and storms that are the main cause of displacement of people as they destroy homes and habitats causing people to seek shelter or livelihoods elsewhere. As a measure, in 2010 Senator John Warner called

for the urgent enactment of a comprehensive energy and climate change legislation to deter any threat that can be posed to the national security and economic position.

Altered Resource Availability

Due to climate change and other environmental changes, resources like food become scarce forcing the need for alternative means of surviving. National interests of different countries change as natural resources become scarce. For example, when coal becomes scarce as a source of energy, an alternate resource like uranium is considered. This means either relocation or use of force come into play in order to acquire the alternate resource. Chances are that, when people relocate, their way of living also changes; the new location gets densely populated and competition over resources becomes rife. This may lead to political disputes, ethnic tension and even civil unrest. Another example would be a situation where the weather pattern changes and crop production is not viable, people who rely mostly on agricultural products for a living will opt for other means like wild animals, excessive fishing, other plants, etc. All these alterations of resources available can bring about disputes and tensions amongst people. The exploitation of natural resources and related environmental stresses can be implicated in all phases of the conflict cycle, from contributing to the outbreak and perpetuation of violence to undermining prospects for peace (UNEP, 2009).

Political Disputes, Ethnic Tension, Civil Unrest

Global warming can bring about catastrophes like drought and flooding leading to deprivations of basic human needs. The severe food shortages, unavailability and scarcity of resources may cause civil unrest in harder-hit countries. This can cause migration, innovation, competition and forced relocation to pursue for resources by people from their native locations to other foreign locations leading to violent conflicts. Some authors and researches like Chalecki (1998), concur to these assumptions that environmental issues lead to conflict and therefore the need for security. An inability to gain a livelihood due to environmental degradation, natural disasters, or development projects obligates environmental refugees to migrate from their homelands. Reasons for displacement include land degradation, drought, deforestation, natural disasters, and other environmental changes that interact destructively with poverty and population pressure (UNHCR 2006). All these reasons arise from the effects of climate change due to global warming and energy utilisation being the main contributor.

Conflicts

Many countries currently face development challenges relating to the unsustainable use of natural resources and the allocation of natural wealth. At a basic level, tensions arise from competing demands for the available supply of natural resources. In some cases, it is a failure in governance (institutions, policies, laws) to resolve these tensions equitably that leads to specific groups being disadvantaged, and ultimately to conflict. In others, the root of the problem lies in the illegal exploitation of resources for the much needed energy (Chalecki, 1998). The effects of climate change and population growth, including dwindling water supplies and diminishing arable land, have reportedly created an untenable and devastating situation in some regions.

An enlightening example is the incident in Sudan's Darfur region where farmers and herders have taken up arms, fighting to gain and maintain control of increasingly scarce water and land. A 2007 report by the UNEP cites environmental degradation, due to climate change, as a catalyst for the ongoing conflicts in Darfur and other parts of Sudan. The linkages between conflict and the environment in Sudan were identified to be of twofold; the country's long history of conflict has had significant impacts on the environment on one hand and environmental issues that has been and continuing to be contributing causes of conflict on the other hand (UNEP, 2007).

The impacts of conflict on the environment can generally be divided into three main pathways;

a. **Direct impacts.** These are caused by the physical destruction of ecosystems and wildlife or the release of polluting and hazardous substances into the natural environment during conflict.

b. **Indirect impacts.** They result from the coping strategies used by local and displaced populations to survive the socio-economic disruption and loss of basic services caused by conflict.

c. **Institutional impacts.** Conflict causes a disruption of state institutions, initiatives, and mechanisms of policy coordination, which in turn creates space for poor management, lack of investment, illegality, and the collapse of positive environmental practices (UNEP, 2009).

Understanding Energy Security

Deese (Winter, 1979-1980) was of the view that even after the world's first energy crisis and well into its second, "energy security" remains a widely discussed but little understood problem. Cornell (2007) also pointed out that Energy Security is a notoriously difficult subject to analyze because it cuts across so many different disciplines. According to Bazilian (2013), the complexities of the issues embodied within energy security are broad and vary depending on the context and perspective from which it is evaluated, and thus, no common definition exists. The complexity was also observed by Forum (2006, p25) who cited the President and CEO of Saudi Aramco, Abdallah S. Jum'ah deliberating at seminar on 'A Perspective on Energy Security', saying that energy security is viewed by various stakeholders in different ways, depending on their interests and objectives. He went on to point out that it is not surprising that when considering energy security, one would think of basic critical principles such as diversity, redundancy, reducing demand, planning, and emergency management.

At strategic level, Energy Security is viewed as an integral part of the national security and can thus be defined as a concept of using a combination of national means to achieve a stable and reliable energy portfolio (McCaskill, 2007). In general, to Deese (Winter, 1979-1980), Energy Security is a *condition* in which a nation perceives a high probability that it will have adequate energy supplies at affordable prices. Even though Bielecki (2001) did not perceive Energy Security as a condition, the author shared the same view of defining it as a reliable and adequate supply of energy at reasonable prices. Other authors then added what this paper believes is of outmost importance to discuss when evaluating energy issues, thus environmental issues. Ruth Winstone (2007) defined it as the need to secure energy supplies and deliver clean, affordable energy to combat climate change. All in all, the International Energy Agency (2001), came up with a more understandable and encompassing definition of Energy Security as "the uninterrupted physical availability of energy, at a price which is affordable, while respecting environment concerns".

Furthermore, some analysts have tried to explain energy security by linking it to Energy Independence. This is a point of interest for the discussions on this paper as the drastic energy situation in some developing countries to include Botswana is a result of reliance on foreign energy. Morgan Bazilian (2013) pointed out that the link likely stems in part from a connotation that "independence" equals resiliency and stability of energy services without

risk of volatility. The author went on to argue that although politically seductive, energy independence can distract from sound decision-making in the energy sector. Buzan & Waever (1998), observed that the energy threats arising from energy dependencies are usually more intense between states (or regions) in close geographical proximity. This observation became a reality as witnessed during the electrical power crisis that hit Botswana as a result of its over-reliance on power from its neighbouring state of South Africa.

Energy is core to the evolution of society and plays a crucial role in the way of living of the modern society making it a strategic issue that must be considered a security issue that has to undergo the process of 'securitisation'. Even though Energy Security is considered a complex notion (Metais, 2013), it is time legislators and planners in developing countries accept that it pose an existential threat that need immediate action. Basques (2012) pointed out that even though the effects of energy issues have serious impacts on both the societies and the environment, it appears that energy security and security of supply are, to say, the least important especially in developing countries. However, Roberts (2008), in his article on the seven myths of energy independence, informs us that energy security is non-negotiable, a precondition for all security and that without it, we have no economy, no progress, no future. Cornell, (2009) shares the same view by informing us that the lack of sufficient energy provision to critical domestic networks or infrastructures can cause the break-down of essential services from healthcare and safety systems to communication, transport, emergency response, and basic utilities.

Importance of Electrical Power

Energy plays an important role in our daily life as well as in the national security of a country. It runs the wheel of economy of the country. The recent increase in energy prices, population and industrialization in developing countries are the most significant threats to energy security (Pranti, 2013). The role energy plays to people's lives was also observed by Gwénaëlle Legros (2009) by stressing that energy deeply influences people's lives as it is central to practically all aspects of human welfare, including access to water, agricultural productivity, health care, education, job creation, climate change, and environmental sustainability. Regarding the national security of any nation, Schramm (1990) made an observation that the availability of reliable electric power supplies is an essential pre-condition for the functioning of modern economies, both in developed and developing countries. Energy plays a vital role in addressing issues of poverty reduction, improvements

to health, education etc. The benefits of energy are overwhelming especially for developing poor countries that face high levels of poverty, unemployment, poor health and education.

Due to energy poverty, especially in developing countries, efforts to meet United Nation's Millennium Development Goals (MDGs) remain a major challenge. Wayahead (2011) concurs by observing that Africa's extreme energy insecurity remains the region's obstacles to achieving the United Nation's Millennium Development Goals (MDGs), as well as the region's actual and potential contributions to global climate change and economic development. The importance of energy security in this era therefore cannot in any way be overlooked by both international and national policymakers as energy is necessary for meeting basic human needs and a prerequisite for economic development. The vital role of electricity, which forms part of the energy portfolio and the main topic of discussion in this paper, is clearly indicated by Kelly (2011) on his paper '*Electricity Reliability: Problems, Progress and Policy Solutions.*' The author informs us that in addition to the inconvenience experienced by consumers during prolonged periods without electricity service, a power outage can literally mean the difference between life and death.

Power interruptions can result in fatalities, injuries, days of lost productivity and thousands of money in production losses and equipment repairs. In 1932, the then president of the USA Franklin D. Roosevelt stressed that:

> 'Electricity is no longer a luxury. It is a definite necessity. It lights our homes, our places of work and our streets. It turns the wheels of most of our transportation and our factories. In our homes it serves not only for light, but it can become the willing servant of the family in countless ways. It can relieve the drudgery of the housewife and lift the great burden off the shoulders of the hardworking farmer.' (http://www.intellectualtakeout.org)

Even after receiving such sensitive warning speeches, most developing countries find themselves in a chronic energy poverty situation. It is therefore disturbing to find nations suffering at the hands of energy poverty, especially electricity, when there is abundance of resources at their disposal.

Linking Energy to National Security

The definition of "National Security" originated from simpler definitions which initially emphasised the freedom from military threat and political coercion to later increase in sophistication and include other forms of non-military security as suited the circumstances of the time (Romm 1993). The author went on to list security from narcotic cartels, economic security, environmental security and energy security as the non-military elements of national security. The noticeable transition on the security paradigm is highly influenced by the role energy plays in the functioning of modern economies and the society. The role energy plays in the national security cannot be overlooked and thus making energy top on the security agenda calling for Energy Security. At a strategic level, Mccaskill (2007) defined Energy Security as the concept of using a combination of national means to achieve a stable and reliable energy portfolio.

At the end of World Wars and the Cold War, the approach to security changed and an observation was made by different political analysts and writers that energy plays an important role in the national security of any given country as a fuel to power the economic engine. The impact of energy on global security and economy is clear and profound, and this is why in recent years, energy security has become a source of concern to most countries (Gal Luft, 2009). According to Corporation (2007), energy issues affect our lives, economy, national security, and environment. The report further enlighten us that, without access to reliable, affordable energy, businesses and industries cannot produce the goods and services that form the backbone of a large and strong economy. To realise a reliable energy portfolio that can support economic growth, improve political stability, and national security, legislators and planners have to act decisively and urgently to arrest the prevailing modern energy situation.

Charrett (2009) is of the view that the Securitisation Theory (ST) feeds into the logic that immediate and undemocratic state action is the only method to manage security concerns, which often result in the negative securitization of a sector. On the other hand, Cornell (2007) pointed out that at the the nexus of energy and national security, challenges faced within the energy sector should be differentiated in order to construct sustainable, viable, and effective strategies. To achieve this, the author outlined the need to look at the of energy security on national security through military, domestic, and economic lenses. The main point to observe here is that sectors to be considered in the national security agenda will

depend entirely on the state action. The threats to energy security and environmental vulnerabilities associated with the provision of energy, especially electricity, can be considered the base of linking the national security to energy security.

Energy should therefore be considered by governments and politicians as an important aspect in the national security of their respective countries and the world as a whole. If energy security is not attained, it can have a direct impact on other elements mandated with the nation's overall national security. For example, effects related to energy challenges like climate change lead to migration, floods, conflict over resources etc, will definitely add more missions to the already burdened armed forces. Just like other developing countries, Botswana should appreciate the role energy plays in the national security and put to use the combination of national means to achieve a stable and reliable energy portfolio. It is therefore relevant to illuminate the pompous role energy, especially electricity, plays to the modern society.

Effects of Energy Poverty

Most developing countries are generally behind in making progress toward improving access to modern energy services and according to Gwénaëlle Legros (2009), lack of progress in providing access to modern energy services will act as a bottleneck, severely constraining many countries' ability to meet their overall development aspirations. The impact of energy poverty is immediate and felt by companies, suppliers, consumers and market traders (Forum, 2006). This is rightfully so as energy is directly linked with the key global challenges that the world faces; poverty alleviation, climate change, and global, environmental and food security (UNIDO, 2008). This observation was also made by Gwénaëlle Legros (2009) pointing out that **e**nergy is arguably one of the major challenges the world faces today, touching all aspects of our lives. For those living in extreme poverty, a lack of access to modern energy services dramatically affects health, limits opportunities and widens the gap between the haves and have not's. The World Bank (2006) shared the same sentiment in that without access to modern energy services, the poor are deprived of opportunities for economic development and improved living standards.

Energy poverty therefore entrenches poverty, damages health, constrains delivery of local services, increases vulnerability to climate change, limits expansion of opportunities, erodes environmental sustainability at the local, national, and global levels, and creates negative

impacts on education and health. (Gwénaëlle Legros, 2009). The effects of energy poverty were further elaborated by Kelly (2011) when she highlighted that the effects of power outages go beyond the annoyance experienced from the outage itself. In addition to being responsible for deaths and injuries when they interfere with elements of day-to-day life, outages pose a real public safety hazard. When an area of a city loses power, police and fire-fighters must be diverted from protecting neighbourhoods to recovery operations and to make sure citizens are safe. When the power fails, many residents turn to candles for light and generators for power—both of which introduce an inherent danger. Similarly, the transportation infrastructure is compromised as traffic lights go dark and police are diverted to direct traffic (Kelly, 2011).

Energy and the Society

As already explained above, both the economic and environmental consequences resulting from efforts to realise energy security can seriously affect the society in one way or another. Non-sustainability of economic and human development linked to energy poverty can threaten individual livelihoods as well as local, national and international economies. Some of the most common threats that need to be overemphasised include the following;

- ***Health*** **-** Lack of access to clean, efficient, modern energy in the home can impact health in many ways. The most important direct health effects result from the air pollution caused by burning solid fuels, often in poorly ventilated spaces and simple stoves (Bruce et al. 2000; WHO 2006). This releases large amounts of smoke in households and breathing this smoke affects the health of all members of the family, but especially that of women and their young children.

- ***Gender*** **-** The time spent collecting solid fuel also imposes opportunity costs that constrain socio-economic development generally. Rural women and girls suffer disproportionately from energy poverty, bearing the physical burden as the main energy service providers and users (World Bank, 2006). School-age girls lose time for going to school and for after-school study contributing to low school enrolment.

- ***Poverty*** **–** according to a 2006 World Bank Report, Poverty reduction is linked not only to the provision of modern energy services, but also to energy security. The poor suffer relatively more when energy prices increase as the resort to fuels that are

locally ‘free’ in cash terms but have costs of much time and physical effort mostly by women and children.

Worldview of the State of Energy

The security paradigm has transited from one stage to another depending on the political situation in different parts of the world. The military and economic sectors enjoyed all the recognition as instruments of power by most politicians during the World Wars and the Cold War era with minimum attention given to the environmental sector. As a result, amongst the environmental sector, only oil was considered a security concern as it facilitated the movement of armies and to those supplying oil it became an economic and political tool for power (Cornell, 2009). The economic growth and changes in social fabrics observed in developing countries has led to the high global demand of energy making it a security concern. However, overcoming this demand is a big challenge. Winkler (2006) informs us that the sourcing, production and use of energy is faced with two major drawbacks. First, the overall energy system has been very inefficient. And second, major environmental and social problems, both local and global, have been associated with the energy system.

The importance of energy security has for long been stressed by politicians, analysts as well as different writers in the field of security. In 1923, the then president of the US president Calvin Coolidge on his first annual message about American dependency on foreign oil pointed out that with the enormous deposits of coal in existence, failure of supply energy ought not to be tolerated. Electricity plays a pivotal role in the development of modern society and securitising energy will ensure sustainability that will also be enjoyed by the future generation. It is time that legislators and planners accept that the transition in the security paradigm which was mostly influenced by historic events like wars have taken a complete turn and focus should be on energy. As is the view of this paper, the wars are over and with peacekeeping organisations as well as conventions in place and laws being successfully enforced; the interests and the way of life of the modern society have changed dramatically. Their economic development and their welfare in general are less dependent on the protection of the military but to other facilitators in the energy sector like electricity.

In the 63rd edition of the British Petroleum (BP) statistical Review of World Energy, the group chief executive, Bob Dudley, highlighted that the world of energy in 2013 echoed

broader themes such as; emerging differences in global economic performance, geopolitical uncertainty and ongoing debates about the proper roles of government and markets (BP, 2014). He pointed out that with the emerging economies like China and India, coal became the fastest-growing fossil fuel and stressed the importance of policy in strengthening the use of renewable forms of energy. The BP review demonstrated that the world's quest for secure and fairly-priced energy can be met if smart government policies allow for a flexible global energy system that can adapt to the changing world. According to a BP (2014) report, the global primary consumption increased by 2013 with emerging economies dominating the growth and accounting for 80% of the increase. As a result, the growth in global CO2 emissions from energy use also increased.

As for Africa, the BP (2014) review shows that the region experienced the slowest growth in electricity generation since the recession in 2009. Energy security can be achieved in the power generation sector through a balanced and diverse portfolio of fuels than the much reliance on coal. The abundance of energy resources in some regions and individual countries does not help in aiding growth in electricity generation as observed in the SADC region. The region was engulfed with electrical power crisis in the wake of 2008 with Botswana receiving the worst blow from the crisis. It is therefore relevant to have an insight on how some countries perceive energy as a security imperative within their national security agenda.

Historical Background of World Energy Crises Trends

The definition of security in international relations has its basis in what is called the traditional military-political understanding of security, namely that security is about survival. Originally, energy security was a straightforward strategic objective aimed at ensuring fuel for national defence (Vactor, 2007). According to Yergin (2006), energy security has been a question of national strategy dating back to World War 1 (WW1). Since then, energy has repeatedly become an issue of great importance that even politicians cannot ignore. For a long time only the political and military sectors of security were given priority in the securitisation process and yet their sustenance highly depended on other sectors, especially the environmental sector. The environmental sector encompasses a number of referent objects to include amongst others; water, oil, gas, minerals, electric power etc to be considered of security concern. Due to the influence of the military sector during wars, oil was given high

consideration as it helped armies to move and had been used as a political tool of power by supplying nation. However demographic changes, the modern society way of life and the change in international political landscape have dictated the shift in the security paradigm to include other sectors.

The impact of energy on global security and economy is clear and profound, and this is why in recent years, energy security has become a source of concern to most countries (Gal Luft, 2009). As an economic booster, Cornell (2009) observed that readily available, affordable and reliable energy provides solid economic growth and helps to maintain levels of economic performance. Bielecki (2001) called for the securitisation of energy citing that energy security is of paramount importance to the global economy because energy is one of the key inputs, along with capital, labour, and knowledge, into all economic process. Historic events regarding energy crisis have proven that energy crisis affects everybody in the same manner and therefore call for a holistic approach to energy issues. In 2013, in his article titled '*Ten years after the Northeast Blackout: How secure is our grid?'*, Gal Luft pointed out that the lesson from 2003 electrical power crisis is that real energy security begins at home, workplace, local gas station, grocery, bank and other businesses we frequent.

It is a reality that market and geopolitical uncertainties brought about a major shift in the global and domestic energy landscape and calling for policymakers to re-visit energy policies and consider security priorities. In order to understand the energy problems any nation is likely to encounter it is important to reflect back on the past events. This was emphasised by President Jimmy Carter in 1977 during his address to the nation on Energy when he said;

> 'We must look back into history to understand our energy problem. Twice in the last several hundred years, there has been a transition in the way people use energy.' (http://www.intellectualtakeout.org)

He cited the change from use of wood (which had provided about 90 percent of all fuel) to coal, which was much more efficient and subsequently from coal to oil and gas which were more convenient and cheaper than coal. However, despite this advice and numerous warnings made by experts in the energy sector, the potential for energy crisis remain high and on-going energy crisis events indicate that the current situation could even become worse. Williams (2003) described energy crisis as a situation in which the nation suffers from a disruption of energy supplies (in Botswana case, electricity) accompanied by rapidly increasing energy

prices that threaten economic and national security. According to Forum (2006), the historic energy security concern of oil disruption has now been joined by others as evidenced by the electric power black-outs in Europe or North America. The insight on the latter events will help as lessons learnt for the discussions on this paper's case study of Botswana power crisis situation.

Historical Events

The effects of energy poverty especially power failures have been a thorn not only to ordinary people but to high ranking politicians. In his Special Message to the Congress "To Protect the American Consumer" in 1967, President Lyndon B. Johnson of the US said:

> 'The Northeast blackout in November 1965-affecting 30 million people in 6 States and Canada--was a spectacular reminder of how vital an uninterrupted flow of electric power is to our safety, defense, health and convenience.' (http://www.intellectualtakeout.org)

Five decades later other energy crisis surfaced and Kelly (2011) pointed out that the North-eastern blackout that took place on August 14, 2003, and numerous other devastating outages since then, have raised public awareness of electricity grid reliability and energy security in the U.S. However, the effects of these power outages should not be a lesson to the U.S public but to the entire world community as the outages affect us all in the same way. It is therefore of paramount importance to discuss the effects of the crisis to sensitise developing countries on giving energy security the attention it deserves.

The U.S. Power Crisis

In 1998 North America experienced what came to be known as Great Ice Storm of 1998 that caused massive damage to electrical infrastructure leading to widespread long-term power outages. As a result, millions were left in dark for periods varying from days to weeks, and in some instances, months. The loss of electrical power did not only affect human life but other sectors of the economy like the agriculture sector. Pig and cattle farmers could not provide water or adequate ventilation to their barns full of livestock leading to death of many animals (McCready, 2004). Two years later, the state of California in the USA also experienced electricity crisis, known as the Western U.S. Energy Crisis caused mainly by market manipulations and capped retail electricity prices. In addition to the direct impact the power outages had on the residents, one of the state's largest energy companies collapsed and the economic fall-out that greatly harmed governor Gray Davis's standing (Sweeney, 2002).

In 2003, the Northeastern United States and Ontario, Canada experienced the most severe power crisis that can be expected in an industrialised country. According to Luft (2013), every city between Detroit and Ottawa, including New York, turned dark making it the most severe power outage to ever occur in the U.S. As a consequence, the lives of 50 million Americans and Canadians were turned upside down, and, due to the blackout, the lives of eleven ended. Airports, ground transportation systems, banks and stock markets were shut down; cellular communication and cable TV services were disrupted; and millions were forced to boil their water and, absent air conditioning, swelter in a 90 degree summer heat (Luft, 2013). The situation was so severe that it affected both the states and individuals equally. ATMs ceased to discharge cash, gasoline pumps became useless, and in high-end commercial buildings employees were trapped in their offices and elevators when the electronic doors refused to open.

The European Power Crisis

During the same year of 2003, on the 28 September Italy was caught up with a serious power outage that became the largest blackout in a series of blackouts. The blackout affected a total of 56 million people and the most significant events included the trapping of people in underground trains leading to cancellation of both train trips and all flights (BBC, 2003). A reporter, Giuseppe Michieli, in Italy informed BBC News that for four hours there was no telephone, television, public lighting, no police service in the streets and public awareness. A month earlier, August, London also experienced a power outage during a rush-hour. As a result, commuters using the Tube were plunged into darkness and some were stuck underground. This in turn overloaded other sectors as buses had to transport commuters evacuated from stations and trains and the fire brigade had to rescue people stuck in lifts.

Power Crisis in the Sub-Sahara Africa Region

In a news article posted in The *New York Times* of July 2007, Micheal Wines reflected that perhaps 25 of the 44 Sub-Sahara Africa nations face crippling electricity shortages, a power crisis that some experts call unprecedented (Wines, 2007). It is however shocking to find some developed countries that have access to resources that can generate enough electricity still facing a challenge of chronic power outages. In general, the appalling power situation in the region is linked to amongst others; incompetent management, poor maintenance culture, inadequate funding, corruption and vandalising of facilities. Therefore, in addition to lessons

observed in power crises in developed nations as observed above, this paper will therefore take a brief look into the Nigerian and South African power situation to help analyse the Botswana situation.

Nigeria Situation

In a 2013 article titled ***'****Not Darkness Africa, but Darkest Nigeria – 120 Million Without Electricity'* the U.S. Central Asia Biofuels Ltd company CEO, John Daly outlined that Nigeria has vast natural gas, coal, and renewable energy resources that could be used for domestic electricity generation. He further pointed out that the country lacks policies to harness resources and develop new and improve the current electricity infrastructure. Yvonne Ndege, an *Al Jazeera's* West Africa correspondent based in Abuja, Nigeria in an article *'Explaining Nigeria's energy crisis'*, dated June 2012 stated that Nigeria has had for decades a chronic shortage of electricity touching every facet of almost everyone's lives. She described the situation to be as bad as people have to spend large quantities of cash on diesel-fuelled generators that power their homes and keep businesses afloat. Wines (2007), also made an observation that in Nigeria, virtually all businesses and many residents run private generators to supplement faltering public service, saddling economies with added costs and worsening pollution. The end result of the power shortage made Nigeria one of the most expensive places in the world to live, work, and do business. The situation has further driven some talented and innovative entrepreneurs, business people, and scholars away (Ndege, 2012).

South African situation

South Africa is well known for its muscular chain of power plants that fill the power gaps of its neighbours in normal times. However, according to Wines (2007) in 1998 the government monopoly and world's fourth-largest power utility, Eskom, was advised that it would run short of power in 2007. This forecast was actually optimistic as Eskom began running short of power in 2006. This happened despite the fact that South Africa generates 40,000 MW of power for a population of 50 million people as compared the 4,000 – 5,000 megawatts (MW) of power for a population of 150 million Nigerian people (Ndege, 2012). As South Africa started to experience widespread rolling blackouts, Calldo (2008) raised a question as to how a country of its stature, which had an excess of power supply found itself in such a predicament.

In 2008, huge blackouts occurred throughout South Africa and government was forced to call the deepening power crisis a "national emergency". According to Bernstein (2008), the major cities were paralysed by traffic gridlock many food-processing enterprises lost their entire stock and at least one person died on the operating table. Economically, gold and platinum mines were forced to stop all production for about five days and in turn major mining companies were forced to lay off a considerable number of workers. Manufacturing, services and tourism were also badly hit. Eskom adopted a system that came to be known as 'load shedding' (i.e. a process in which electricity delivery is intentionally stopped for non-overlapping periods of time over different parts of the distribution region) as a way of alleviating the impact of electricity crisis, however disruption to the economy and everyday life persisted.

Causes of Energy Crises

As populations increase and countries become more prosperous and more heavily industrialised, energy demand will definitely outstrip the available supply. Developing countries especially those that depend mostly on foreign energy supply are highly vulnerable to energy shocks. The political instability of energy producing countries, the competition over energy sources, attacks on supply infrastructure, as well as accidents, natural disasters, rising terrorism, and other factors are shocks affecting supply of energy. Energy shocks therefore become a challenge as observed during the past historic power failure events that occurred in different parts of the world. In 1973, President Richard M. Nixon in his special message to the US Congress on Energy Policy warned that:

> 'If present trends continue unchecked, we could face a genuine energy crisis. But that crisis can and should be averted, for we have the capacity and the resources to meet our energy needs if only we take the proper steps--and take them now.' (http://www.intellectualtakeout.org)

This speech is a clear indication that, with the modern society energy is pivotal for their development and survival. It encourages nations to put to good use the available resources in order to meet future energy challenges already observed in some regions. However, to Africa, there is a serious challenge in averting energy crisis due to a number of issues. A report by AU (2009) indicated that some of the constraints Africa face include amongst others; lack of infrastructure to facilitate energy exchange between countries, shortage of specialized human

resources, poor maintenance of existing energy facilities, and inadequate information and data on the African energy situation. In contrast, researchers and scholars believe that despite these constraints, the problem of energy security can still be solved.

Lundquist et al (2001), on the report of the US National Energy Policy Development group report, pointed out that energy security must be a priority of a country's trade and foreign policy and that energy crises are a call to put to good use the resources and talents within us than to push for larger political agendas. Even though efforts are being made to address energy issues in developing countries, as shown by numerous seminars held to share ideas, little improvement on energy security is attained. Speaking at the New Partnerships for Africa Development (NEPAD) and United Nations Development Program (UNDP) workshop for Sustainable Energy for All in Gaborone on April 22, 2013, NEPAD head of energy division, Mosad Elmissiry, pointed out that the majority of African people lack access to clean energy even though Africa is blessed with massive and varied energy resources. He further urged Africa energy stakeholders to double their efforts to address the challenge of making energy available and accessible to the bulk of the African population (Government, 2013).

The issue of power crises most developing countries to include Botswana find themselves in at the moment should be a wakeup call for all. Despite observations and arguments posed by numerous writers and analysts, power shortages have become a growing and serious challenge to most democratic countries, especially in the SADC region. This serious energy challenge surfaced despite the fact that the region has sufficient energy resources augmented by assistances on a variety of rural energy programmes, including investment projects, training and capacity building from organisations that include UNDP, the World Bank, the European Union, FAO and other agencies. Arguably, this problem should not be that serious in countries with a democratic form of government that has been maintained over a long period of time.

Causes of Energy Shocks

Energy security is vulnerable to threats that include reliance on foreign dependency political instability to suppliers, heavy competition over energy sources, terrorism to mention a few. Most developing countries have for a long time depended on foreign energy for a long time leading to most countries being vulnerable to energy shocks as observed by numerous power cuts and high rise of price experienced by most countries in the Sub Sahara Africa region.

Botswana being an independent, shining democracy for the past four decades experienced the severe energy shock despite having a mix of energy sources in abundance. The problem of neglecting energy as a security concern by policy makers has always prevailed due to different reasons to include policy choices associated with politicising energy issues.

Roberts (2008) pointed out that it is hardly surprising that policymakers shy away from energy security and opt instead for the soothing platitudes of energy independence. Haluzan (2013) linked energy independence to energy security and pointed out that in most cases improved energy security also means improved energy independence. Legislators and planners in developing countries are therefore faced with a major challenge of revising their national strategies to fully accommodate energy as a security imperative. This will in turn help most sub-Saharan African countries overcome the major challenge of energy poverty. In most developing countries, governments are the custodians in providing the much needed affordable and environmentally friendly energy. As a result it is not surprising that when crises like these occur, the nation as a whole will seek answers from policymakers especially on policy choices.

Policy Choices

The impact of relying on what can be considered 'untested policies' by most developing countries can be highly linked to most crises associated with energy. The true value of energy, electricity in this discussion, to the national security, economy and the quality of life has received little attention to policymakers. This has lead to the power crises that have engulfed most countries in the sub-Saharan Africa region of recent. The convergence of government policies, laws and regulations plays an important role in ensuring the provision of the much needed energy. The root problem leading to energy poverty in most developing countries can be linked to how legislators and planners during independence perceived energy in their security agenda. Just like Cornell (2009) pointed out, it is important to define energy security in a more nuanced fashion as politicizing or militarizing energy issues can yield confused and aggressive policy choices which hinder the achievement of energy security at any level.

Most developing countries, especially in sub-Saharan Africa, were exposed to liberation wars, civil strives and population problems influencing politicians and policy makers in most countries to look at security in a traditionalist position and thus not considering energy as a

security challenge. Maundeni (2010) pointed out this in his article on Developmental States, that, states that went through peaceful transformation focused on and pursued continental and regional liberation whilst those that went through liberation wars, later experienced civil wars that compelled them into high expenditure on military security.

To cite an example; 'during NDP 8 the policy of maintaining a balance between local generation and imports to obtain a least cost mix was adopted and expansion of local generation was deferred to take advantage of the relatively cheap power in the region' (Government, 2003). Over a decade later, the country found itself in a power crisis situation characterised by looming blackout and disruption due to power shortage. This shows the dangers of depending on foreign energy and thus the purpose of this paper is to evaluate the level and approach of energy security in developing countries. Emphasis will be given to Botswana electrical energy situation with the view to sensitise policy makers and other national decision makers about the importance of energy security.

Reliance on foreign energy

Haluzan (2013) linked energy independence to energy security and pointed out that in most cases improved energy security also means improved energy independence. The author went on to emphasise that going for more domestic energy resources instead of relying on expensive foreign fuel import is very positive thing for future energy security. Domestic energy resources means a mix of both renewable energy and fossil fuels with the latter being the main climate change driver and thus the link of climate change to energy security. Studies have shown that even though renewable energy will play an important role in improving energy security, fossil fuels will continue to determine the destiny of future global energy security. Kerry (2002) concurs by indicating that for 30-50 years in the future, like it or not, the major dependency on fossil fuels will continue. The author highlighted that in future, scientists believe literally catastrophic consequences from global warming will occur in the absence of serious emission reductions. These observations calls for an extended effort, especially in developing countries, in recognising the importance of energy security and ensure enactment of a comprehensive energy and climate change legislation without delay.

According to Williams (2003), many experts argue that the degree of dependence has no impact on energy security as long as foreign energy is imported form secure sources. The achievement of securing foreign energy supplies is highly dependent on the ability of

governments to exercise various foreign policy options. However, energy supply becomes vulnerable when energy producing countries start experiencing any form of political or economic turmoil. The fact that overdependence on imports poses threats on the energy cannot be overlooked as observed in Botswana. Botswana relied on 80% imported electrical power from ESKOM and when South Africa started to experience increased power deficit, the crippling consequences were felt by all economic sectors. Most importantly, the development driving tool, Vision 2016 goals progress was hard hit by this energy shock.

Geopolitics

The political turmoil in rich oil producing countries, the rise of new economic giants (China and India that present heavy competition over energy sources), natural disasters and accidents are some common threats to energy security. The World Energy Council (2014) identified some of the following regional issues in the world to be influential in geopolitics:

- the economic growth of China and India influenced the energy demand to shift to the east, as a result there was competion for scarce resources, market uncertainties and sustainability of continued growth rates;
- The European Union (EU) cohesion is hindered by the absence of common energy policy with negative effects on common energy market and regional interconnection;
- In the Middle East and North Africa, the global energy supply is affected by the political fragility and potential conflict (e.g. around Suez Canal);
- Terrorism is on the rise of late and it is responsible for the physical risks and cyber threats affecting energy markets.

Developing countries should consider these event and act decisively to ensure they realise energy security to avoid crises.

It is a known fact that internal and external politics can have a negative effect on energy issues. Pressure from local politics can influence decisions of energy supply by energy exporting countries and thus affecting those countries that rely heavily on imported energy. As populations increase and energy demand goes high, more energy sources are highly utilised resulting on their depletion and bringing in geopolitical issues. Politicians then tend to use this as a platform to put pressure on government to change their foreign policies on

energy issues and thus cutting those who rely on foreign energy. In an article posted on the Botswana *Sunday Standard* newspaper dated 16 March 2014 by Khonani Ontebetse, South African opposition party was particularly against Eskom's continued power supply to Botswana. Their main argument being that supplying neighbouring countries with electricity while supply to their own country being insufficient is unacceptable and thus requested for parliament review of the preferential supply agreements. This political pressure forced Eskom not to renew its sale agreements with BPC leading to numerous power outages that engulfed Botswana

Others

In addition to the above discussed vulnerabilities, attack on supply infrastructure in the form of natural disasters, accidents and the rising terrorism pose a great threat to energy security. Terrorists can use the destruction of energy infrastructure as a political weapon to force governments to bow down to their demands. In a report made by Dr Frank Umbach, of the European Centre for Energy and Resource Security; following the Islamic terror group attacking of a gas plant in Algeria, pointed out that long-term disruptions to electricity and/ or internet would mean the country could lose essential services such as energy and water supply. Natural disasters are normally a result of the effects of climate change and therefore it is everyone's responsibility to ensure that energy is utilised with outmost care to avoid such natural disasters.

The Use of Non-Renewables to fill the Energy Gap

When discussing environmental issues regarding security, the European Commission Green paper on energy in 2000 referred to "sustainability" being connected to a speech act concerning the environmental sector of security (GreenPaper, 2000). Sustainable development provides a framework for managing human and economic development, while ensuring a proper and optimal functioning over time of the natural environment (Bass, 2006). Winkler (2006), closely linked sustainable development to sustainable energy which always implies a broad context covering resource endowment, existing energy infrastructure, and development needs. The author quoted Davidson (2002a) defining sustainable energy as energy which provides affordable, accessible and reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs.

The escalating use of energy in attaining economic development and social development has become the main environmental deterioration contributors. As a result, the developmental needs and goals of the future generations are highly compromised calling for a sustainable development paradigm that is highly contested in the security agenda. This discourse was emphasised by the then U.S secretary of state Colin Powell in 1999 when he pointed out that:

> "Sustainable development is a compelling moral and humanitarian issue, but it is also a security imperative. Poverty, environmental degradation and despair are destroyers of people, of societies, of nations. This unholy trinity can destabilise countries, even entire regions." (iipdigital.usembassy.gov)

According to Hake (2009), sustainable development demands that we seek ways of living, working and being that enable all people of the world to lead healthy, fulfilling, and economically secure lives without destroying the environment and without endangering the future welfare of people and the planet. The generation and supply of energy, especially electricity, have a profound impact on environmental security and therefore sustainable development is a crucial link to energy and environmental issues.

The U.S. Global Change Research Program (2009) informs us that energy is at the heart of the global warming challenge and that, it is humanity's production and use of energy that is the primary cause of global warming, and in turn, climate change will eventually affect our production and use of energy. This observation was shared by the IPCC and Al Gore (2008), when they contended that greenhouse gases (GHGs) have increased significantly due to human activities and thus contributing to global warming and climate change. The 2001 report, the Intergovernmental Panel on Climate Change confirmed that:

> "There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities."

Many environmental and social problems are a result of the development of most energy sources and their disposal. The generation of electricity in most developing countries that include Botswana is coal based. According to the IEA report on Power Generation from coal, coal remains the biggest single source of energy for electricity production and its share is growing (IEA, 2010). The report shows that coal-fired power plants provide over 42% of global electricity supply and at the same time, these plants account for over 28% of global carbon dioxide (CO2) emissions. These emissions are the main cause of global temperature

changes and the consensus is that they are anthropogenic, mostly related to the combustion of fossil fuels (Energy, 2009). As a warning, a report by the IPCC released in April 2007 warned that global warming could lead to large-scale catastrophic effects on humanity and wildlife. Therefore, if energy security is not given the priority and urgency it deserves, there will be vulnerabilities to environment that are of national security concern.

Regional Perspective towards Energy Security

The SADC region experienced a high deficit in electrical power at the wake of 2008 and as a result most of the member states were hard hit by the crisis. The problem surfaced despite the fact that there are sound and promising endeavours to attaining energy security in the region. Member States have as a ***strategic goal*** the harnessing of regional energy resources to ensure, through national and regional action, that all the people of the SADC Region have access to adequate, reliable, least cost, environmentally sustainable energy services (SADC, 2010). It is therefore important for this paper to highlight the perspective of two countries with energy policies are linked somehow to try identify the gap that may have contributed to the crisis.

South Africa's perspective

The concept of energy security can be considered multifaceted as it requires the understanding of a complex wave of policy it encompasses and the need to look at energy in an integrated manner. The policies may be aimed at addressing, to mention a few, energy demand, energy supply, national and international relationships depending on individual countries or regions. As such, countries and regions have different ways of achieving energy security. There are many definitions of energy security and for South Africa's policy purposes; the Department of Minerals and Energy adopted the following definition:

> "Energy security means ensuring that diverse energy resources, in sustainable quantities and at affordable prices, are available to the South African economy in support of economic growth and poverty alleviation, taking into account environment management requirements and interactions among economic sectors." (DME, 2007)

Trollip (et al. 2014) argued that this definition is out-dated in this focus, citing that on ground it is primarily concerned with energy resources and energy supply leaving out poverty, the environment and affordability aspects. As a result, South Africa also remain stuck with the major problem of the use of fuel for cooking, especially in peri-urban and rural areas where

most poor and disadvantaged South Africans depend largely on firewood, charcoal, coal and kerosene for their cooking needs (Winkler, 2006). This observation is a true reflection that lack or poor policy implementation has a serious impact on the development of any country.

However, the situation in South Africa can be considered unique in that energy sector has been largely driven by economic and political forces, which have had a profound impact on energy policies. When evaluating South Africa's energy policies, (Winkler, 2006) considered three different periods: during the apartheid period, due to the political isolation of the country, energy policies were mostly centred on energy security. After the advent of democracy, energy policies were directed to addressing the injustices faced by the majority of the population who had previously been denied basic services. From 2000, energy policies focused on trying to achieve the targets and timetables that the government set after 1994.

Energy Supply Trends

The South Africa's energy profile which has been characterised by excess electricity capacity in the past has experienced a major shift post-apartheid era. Coal has and remains the dominant fuel contributing 70% of the country's primary energy and fuelling 93% of electricity production (Winkler, 2006). The environmental challenges resulting from the use of coal were given less consideration as by then energy supply was limited due to racial discrimination by the apartheid government. The country's national energy supply has always been considered to be secure and well-structured allowing for excess energy to be exported to neighbouring states. According to Winkler (2006), the massive power station projects initiated in the 1960s and 1970s by the apartheid government, driven by concerns about energy security, left the national utility with large excess capacity in the 1980s and 1990s. Also, the secrecy and controlled polices that prevailed during the apartheid period only provided modern energy services to the 'white' population group and limited or no services at all to the rest of the population (Winkler, 2006). As a result energy was in abundance to export, however the situation changed after the 1994 democratic elections.

The new democratically elected government of the ANC embarked on providing the basic services, especially electricity, to the poor and disadvantaged majority of South Africans. The implementation of such strategy had some implications both to South African energy security and regional geopolitics. The move meant the demand side of energy shot up to surpass the supply leading to electricity crisis that the SADC region experienced at the wake of 2008.

The challenges to energy security were a result of what Trollip (et al.2014) pointed out when he quoted a statement made by the South African Department of Energy in 2012 that, 'Over the past 20 years South Africa has not made significant investments in the energy sector'. The author went on to inform us that the crisis occurred even though the 1998 White Paper on Energy Policy and the foremost electricity planning resources at the end of the 1990s, namely the Eskom Sales Forecasts and the Eskom Integrated Strategic Electricity Plans (ISEP's), had indicated that, unless additional capacity was added to the national system, supply would exceed demand around 2007. Despite the unfortunate energy situation experienced of late, South Africa has a number of credible policies on energy that, if well implemented can bring the energy security to stability.

The Energy Security Legislation and Framework

At independence and thereafter, the new South African democratic government main focus was on the introduction of and new legislation. The implementation of policies was left behind and thus contributing to the energy crisis situation the country experienced in 2008. However in 2008 a framework legislation, The National Energy Act, 2008 (No 34 of 2008) was formulated and signed into law in 2009 as a measure to effectively implement policy. In 2009, the Department of Energy was established with the mandate to formulate and exercise oversight on the implementation of overall energy policies and to ensure access to affordable and reliable energy by all South Africans and to promote environmental friendly carriers (DoE, 2009). The department of energy came up with an Integrated Energy Plan informed by factual and evidence-driven data and information. The effectiveness of the plan was hampered by insufficient data as the provision of the needed data was on voluntary basis.

The energy challenges coupled with blackouts plagued the electricity supply industry made it necessary for South Africa to change its approach to energy security. The DME (2007) Energy Security Master Plan formulated an energy security strategy with the following intended outcomes:

1. In the short term, secure adequate supplies of affordable energy for continued economic growth and development;

2. In the medium term, enable policy- and decision- makers to make informed decisions on these complex inter-dependent energy outcomes, and,

3. In the long term, ensure that the strategic planning and subsequent growth and development are sustainable.

Achieving Energy Security

Considering the definition of energy security South Africa adopted, the DME (2007) highlighted that an integrated approach is required to ensure that all the constituting elements are addressed in a coordinated manner. A very important recommendation made by the Department of Minerals and Energy in 2007 was for the government to craft an energy security strategy targeted at two specific strategic areas, namely: 1) infrastructural and 2) policy and governance (DME, 2007). The assumption informing this recommendation was that South Africa will have the capacity to be more proactive than reactive in planning the investment needs of the energy sector. South African energy sector is blessed with a strong natural resource base with a variety of energy options and a well-developed energy and transport and grid infrastructure (Winkler, 2006).

Even though efforts were made by government in ensuring energy security, Trollip (et al. 2014) blamed the shortages in bulk electricity supply and other energy challenges to failure by the South African government to create the conditions for adequate investments in major required energy infrastructure developments. Another challenge according to Winkler (2006) is that the South African energy demand is dominated by energy types that have environmental advantages and disadvantages like coal, liquid fuels and electricity. South Africa being party to a number of international conventions and protocols on climate change faces a serious challenge of realising energy security. However, with proper energy sector governance and policy implementation, success can be achieved. A positive move was observed by Winkler (2006) when he informed us that South Africa has embarked on diversifying its energy supply base and reducing its reliance on the coal that accounts for 75% of its energy supply.

Climate Change

According to (DME, 2007), climate change, greenhouse gases and economic development are intricately linked both in the short and the long terms. In the short-term, South Africa cannot sacrifice its development at the altar of the environment but in the long-term, unless South Africa, along with the rest of the world, does something about global warming, its own

economy is threatened by climate change. The South African government, through the National Environmental Management Act (NEMA) (Act No. 107 of 1998) vowed to respect, protect, promote and fulfil the social economic and environmental rights of everyone through legislative and other measures that can help prevent pollution and ecological degradation. The action by the government is of outmost importance since history has shown that the energy sector is the main cause of pollutants that are harmful to both the environment and human health and well-being.

Coal has been and still remains the dominant source of energy and as such, like the rest of developing countries, South Africa faces the challenge of the negative health effects of burning coal and wood fuel. South Africa has one of the highest Green House Gases (GHG's) emission profiles among developing countries mainly due to the reliance on coal energy sources for electricity generation and the production of synthetic liquid fuels, and energy-intensive industries (Winkler, 2006). As already mentioned, the country has embarked on diversifying its energy supply base, however Winkler (2006) informs us that at present, the commercial exploitation of South Africa's renewable energy sources is limited, but it is clear that the cost of renewable energy will continue to decline as the technologies mature. Increased use of renewables and a speedy implementation process will require the introduction of new policies.

Botswana's Perspective

Botswana has relied entirely on foreign energy, especially electricity supply, right from colonial period until the electrical power crisis that surfaced and caused some level of panic to the nation experienced in the wake of 2008. South Africa remained the main energy supplier to the country and therefore, its perspective towards energy security directly influenced Botswana's energy perspective. However, unlike South Africa whose energy supply trends were enormously changed by the government transition from the apartheid regime to the democratic regime, Botswana's energy perspective has been shaped by different aspects. Amongst the many aspects that can be discussed, this paper will look at the following three periods;

At Independence:

At independence, Botswana was rated one of the poorest countries with virtually no economy leading to total dependence on Britain to cover all the administrative and development costs.

Since there was generally no economic activity by then, the population was largely rural and relied on traditional means of survival. Their main source of energy was firewood as it was used for cooking, heating and lighting. A few people were found in the newly established towns like Gaborone and as such provision of modern energy was not considered a priority, rather the little donations were geared towards basic social amenities like education and health care (Gaborone, 1994). Even with abundance of resources that could provide the much needed modern energy, it was close to impossible to come up with infrastructure that could ensure its provision. As a result, there was virtually no policy introduced to address issues of energy and environmental protection.

The Economic Boom Period:

After the discovery of diamonds at Orapa in 1967, the over reliance on donors for Botswana's development was relieved and the planning and execution of economic development took off. As observed by Government (2003), since the 1970's the expansion of the economic activity brought a rapid change on the pattern of settlement. A substantial amount of urban migration was observed as the country industrialised and better developments were only found in towns. The industrialisation and population growth in towns, as studies have shown, contributed to the development of the energy sector. The demand for modern sources of energy like electricity went on to the increase and thus forcing legislators to consider energy as a key aspect in policy making.

The energy perspective during the period did not change much due to policy choices that were clouded by a number of factors. Two aspects can be considered as the main contributors to the unbalanced policy choices that, what this paper believes, led to energy security being given less attention by legislators. Firstly, as Botswana transformed into a middle income country, several development partners either ended or reduced some of aid programmes geared towards developments. As a result funds that would otherwise have been used for the generation of electricity were therefore channelled to the abandoned programmes by donors as a sustainment measure. Secondly, a small population characterised by an unequal wealth distribution with the majority being poor, meant customers had a limited ability to pay for the high costs of electricity provision.

The 2009 African Development Bank country report concurred as it indicated that despite the impressive economic record, Botswana's high income inequality could adversely affect

long-term development prospects. Due to limited government resources, providing electricity to the low density dispersed small communities over wide areas became a major challenge leading to the legislators and planners adopting a policy of importing rather that generation of power. The policy choice worked well for the country, however it seems the policymakers by then remained highly comfortable with the short term solution and did not take into consideration the foreign energy supply shocks that led into the recent electrical power crisis. The AfDB (2009) report identified the Botswana's electricity crisis as a bottleneck to the competitiveness of the economy and recommended for the building of its own electricity supply platform.

The Power Crisis Period:

The AfDB (2009) pointed out that the vast coal reserves and the abundance of solar energy available in Botswana can be exploited to secure the country's energy needs. However, implementing the appropriate strategies that could improve the provision and maintenance of infrastructure and infrastructural services to meet the electricity crisis remain a major challenge that needs an urgent reassessment. The idea of putting sectors like the electricity sector under state monopoly as a measure to protect consumers from the so-called unscrupulous private players has been proven to be misleading by the power crisis that Botswana witnessed. The only power provider, Botswana Power Corporation (BPC), which has relied on the government policy of buying power than generating own power was hit hard by foreign dependency shock and in the process failed the nation as a whole.

The situation reached a state of panic and confusion when South Africa had to cut supply to Botswana to meet its own demand during the time of world economic recession. Botswana was forced to change its policy on energy security and embarked on a project of power generation with the implementation of Morupule B Power plant. In 2007, the Botswana parliament approved amendements to Electricity Supply Act liberalising the electricity generation (*Mmegi*, 2014.p3). Due to the poor economic performance, the best option was to go for cheap service providers which also resulted in yet another crisis. According to *The Voice* (2014), the power plant was way behind schedule to address power shortage and on commissioning it failed due to technical problems leaving the nation in a state of panic and government under pressure to come up with short-term solutions. The failure to tackle the

energy situation proved that the country has limited implementation capacity as well as lack of sufficient skilled manpower.

The Energy Security Legislation and Framework

The National Development Plans have been and remain the main instruments for the implementation of policies, programmes and actions to achieve objectives. Energy services are coordinated by the Department Energy Affairs (DEA) under the Ministry of Minerals, Energy and Water Resources (MMEWR) (Seanama, 2012). The draft National Energy Policy, which is crafted in line with the national vision 2016, aims at facilitating the provision of energy services at a least cost to the economy as well as to improve service delivery to meet customer needs (MMEWR, 2011). The policy also includes environmental issues, a task which is mandated to another ministry, Ministry of Environment, Wildlife and Tourism (MEWT). The conflicts of interest found between ministries have a serious negative impact on policy implementation, especially when there is no clear mechanism of consultation.

The electricity division within the DEA coordinates, implements and monitors electricity policy developments, projects and programmes. It works closely with the BPC to ensure the smooth implementation and running of electrification projects (MMEWR, 2011). The division's key task is the administration of the Electricity Supply Act (ESA) and related regulations. The Botswana Power Corporation (BPC), a state owned vertically integrated national power utility with a monopoly was established in 1970 with a core mandate of the electrical power generation, transmission and distribution in Botswana. BPC also represent Botswana in the Southern African Power Pool (SAPP), a regional body responsible for addressing electrical power distribution in SADC region. During that time, Eskom provided electricity cheaply to its neighbours and as such BPC adopted a business model of distributing South African power than being a local power generator (Cjdalzeil, 2013).

Warnings from; the NDP 8 mid-term parliament debates advocating for own power generation, the 1996 BPC Workers Union's advice of the possibility of power crisis (Mhotsha, 2014), as well as Eskom's decision to end power supply to Botswana in 2007 did not help in changing the policy. When Botswana started to suffer acute power shortage the government's perspective took a turn and BPC was instructed to embark on own power generation. Efforts to timely address the power crisis were thwarted by a number of issues including poor project implementation and slow mobilisation of the use of renewables. An

important observation here is not to point out who is at fault but just like (Cjdalzeil, 2013) quoted,

> "Sometimes the cheapest short term commercial answer proves very economically expensive in the long term and delaying the building of important infrastructure just retards the country in the longer term."

Botswana will appreciate some economic lessons learnt from its dependency on energy imports and strive for a better strategy of attaining energy security.

Achieving Energy Security

Botswana's perspective to the achievement of Energy Security can generally be looked in two ways based on the government's commitment. Firstly, the government of Botswana committed itself to develop and promote a wider use of coal to substitute for imported energy. Secondly, the government devoted to develop cost-effective sources of energy by implementing several strategies to advance the use of renewable energy (Letsholo, 2015). There is a tremendous potential of growth for the Botswana energy industry with significant reserves of coal, extensive biomass and a high level of solar insolation to meet the country's energy needs. However, at the moment the much needed electric power is generated thermally in coal-to-electricity power stations mainly found at Morupule. At the wake of blackouts the country experienced when South Africa experienced its own under-capacity problems, it became clear that the country require reliable power for sustainable development. The resultant of the power shortages proved to be a major economic bottleneck.

Botswana's power needs became significant and immediate and as a result a plan was made to boost domestic electricity generation. Letsholo (2015) pointed out that the increase in imported power coupled with the need to have security of supply has necessitated a policy shift from importing cheap power to having self-sufficiency in power generation. In 2008, the construction of a coal-fired power plant, Morupule B, started and was to be running by the end of 2012 (Mathews, 2014). Unfortunately the project was way behind schedule and it faced technical problems during the commissioning face. As per *Mmegi* (2014.p3), the technical faults included boiler failures, blockages, leakages as well as non-technical issues of non-compliance with safety standards that led to three fatalities in 2012. In another effort to achieve high levels of self-sufficiency in power generation, the MMEWR, (2011) informs

that an amendment of the ESA was made to allow for the participation of the private sector in the country's electricity industry such as Independent Power Producers (IPPs).

Climate Change

Botswana's perspective towards energy and the climate problems is considered along two axes. The horizontal axis makes a distinction between Energy and Climate on one hand and Pollution and Waste on the other. The other axis makes a distinction between the base problems (e.g. global warming) and the challenges inherent in responding the problems (e.g. reducing CO2 emissions) (Letsholo, 2015). According to a UNDP (2009) report on Poverty-Environmental Initiative, climate change will continue to affect Botswana with the poor being the most vulnerable if management of the environment is not given high priority. The observation is very important when planning for energy security since coal is the most readily available source of energy in Botswana yet its contribution to climate change is well known. For a long time the implementation of draft policies aimed at addressing environmental issues remained a challenge as departmental roles within the energy governance were not clear.

Botswana is a signatory to a number of international, continental and regional conventions that advocate for the implementation of strategies and enforcement of policies that address environmental issues, especially energy related ones. The environmental sector has come top in the security debates with publications on environmental security stressing for measures to be taken by all to addressing environmental concerns. Botswana also took a positive step to ensure the country adheres to the conventions and remain committed to ensuring environmental challenges are addressed accordingly. The country established a Ministry of Environment, Wildlife and Tourism (MEWT) in 2002 in order to bring environmental issues under one roof for better co-ordination of policies, strategies and programmes (Letsholo, 2015). Just like any developing nation, Botswana faces a set of environmental practice challenges ranging from inherent problems and mistakes accrued in many years without environmental policies in place.

Another challenge is that as Botswana experience massive economic growth, the increase in economic activity has a negative impact on clean operations (Letsholo, 2015). It is of great concern, not only to Botswana but the African continent as a whole, that economic operations that are not clean cause climate changes that has a negative impact to the continent's food security. Despite these challenges the country leadership continued to make efforts to

encourage the implementation of environmental programmes like the Vision 2016. In the long term vision the government promised that by 2016, Botswana will have taken measures to limit the pollution that would otherwise have resulted from rapid industrialisation. However, there still have bottlenecks in speeding up the implementation process defeating the whole idea of realising the Vision 2016 target. On evaluation by international bodies overseeing the progress in tackling fundamental environmental issues, Botswana was rated not to be doing enough. A major concern raised by UNDP (2009) is that Vision 2016 views the environment as a sectoral rather than cross-cutting issue and as such, it does not fully address critical environmental issues.

Conclusion

The literature review demonstrates that even though the concept of energy security is difficult to analyse as it cuts across many disciplines, it can be understood. Different stakeholders can view energy security in different ways depending on their interests and objectives. Energy is without doubt an important aspect to modern society and has proven to play a pivotal role in the national security of any nation. The unavailability of energy can therefore be considered an existential threat to humanity. To modern society, energy poverty remain a bottleneck that affects companies, consumers and market traders as it frustrates development aspirations of any nation. In most energy poverty events, the poor are most affected as they are deprived of opportunities for economic development and improved living standards. Energy affects lives, economies and the environment making it a security imperative.

Electricity has proven to be at the helm of running the wheel of any country's economy. It influences people's lives as it is central to all aspects of human welfare to include amongst others; health care, education, job creation as well as environmental sustainability. Despite its importance, providing the much needed modern energy remains a major challenge, especially to developing countries. The literature review has shown that if proper steps are not taken in well time, the world will continue to face genuine energy crisis. Energy shocks are the main causes of energy crisis and if strategies to address these shocks are in place, the crisis can be averted. The energy shocks vary and some of the most common includes; policy choices, foreign dependency, geopolitics, terrorism and disasters. It is therefore important to look back into the history of energy crisis to understand energy problems in order to find ways of closing the existing energy gap.

In trying to close the energy gap the use of the readily available and cheap non-renewable fossil fuels has been dominating and on the rise as energy demand increased. The use of non-renewables like coal has proven to be detrimental to human and economic development. The use of non-renewables is the primary cause of global warming which is responsible for many environmental and social problems the modern society face. Global warming is the root cause of climate change which has serious effects to both national and global security. It has a direct impact on food security, human health as well as the physical environment. The effects of climate change can lead to political disputes, ethnic tensions and civil unrests that account for most regional and global conflicts.

The literature review has overemphasised the importance of energy to the modern society and this paper therefore argues that energy deserves the due priority in the security agenda. The existence of society and economic development rest on the readily available and access to modern energy and as such, securitisation of energy needs immediate attention by all. This paper is of the view that the securitisation process can help politicians and policymakers shift from the traditionalist state focused military view of security to a more encompassing one. Energy security can be attained if all stakeholders can give it the due attention and remain focused on implementing diverse energy policies.

CHAPTER THREE

METHODOLOGY

Introduction

In the wake of the year 2008 Botswana experienced what some authors described as a crunch time since independence when it experienced power crisis. The country has abundance of energy resources and sound economy to generate enough power for its people and even

export. The power crisis left so many 'how' and 'why' questions to locals and the international community. The dire situation triggered the need to uncover meaning, develop understanding, and discover insights relevant to the research problem. Since the problem of energy poverty is something that has existed in society for a long time, the research on this paper will entirely be based on desktop qualitative methodology. Even though there are a many data sources that are normally used in qualitative research, this paper employs organisational and institutional documents as data sources. The research will rely on the description and interpretation of data rather than having the raw data as a basis for analysis.

Research Design

For the purpose of this research, documents will help provide background information as well as historical insight to help understand roots of energy crisis and also provide supplementary research data that will add value to knowledge base. This information will help verify findings during the analysis which will in turn inform the recommendations this paper will come up with. During the research, prior literature explaining general perspectives by different nations on the environmental sector as a security concern will be reviewed. The aim will be to try and gain information and insight that can help in understanding the historical roots of the power crises in general. Focus will be narrowed towards energy issues as the main discussion of this paper revolves around the electrical power crisis that hit Botswana.

After collecting the required background information from the literature, the paper will come up with themes that will help in analysing the power crisis situation. The themes include review of; energy policies, energy sector governance; environmental security initiatives and most importantly the impact the power crisis affected the Botswana nation. Through the analysis of specific key documents containing information about electricity issues in Botswana, the research questions will be addressed. In areas where themes in the discussions fail to corroborate with the literature reviewed, conclusions can be reached and ultimately recommendations made.

Data Collection

This research is entirely based on documents as the main source of information for analysis. Most importantly, like Bowen (2009) quoted Yin (1994), documents provide broad coverage; they cover a long span of time, many events, and many settings. Another observation made by Bowen (2009) was that documents are 'unobtrusive' and 'non-reactive'; i.e. there is no

direct contact with the subject of the study and thus data can be collected without following any formal procedures. As such this paper does not anticipate any ethical dilemmas. However, to a lesser extent, former legislators and policy makers who are normally blamed when a crisis of any nature affects a nation can be affected.

The data for this investigation will be collected from primary and secondary sources. The primary data will be obtained from organisational and institutional documents (i.e. policies and other strategic published documents). The secondary data adopted in the study will be obtained through literature review from relevant publications and information sourced from libraries and internet. Documents used in this research are in the public domain and as such can be obtained without the authors' permission. This makes the method less time-consuming and less costly than other research methods since data contained in the documents have already been gathered.

In the literature review, the research will examine and interpret data contained in a number of selected texts found in a wide range of possible data source to include journal articles, magazines, reports newspapers, internet and any other source of information available in the library. The case of Botswana power crisis is not a new phenomenon and therefore makes relevant to adopt this research method to unpack the research problem. Since the main objective of this paper is to analyse and generate knowledge on the role energy plays in the national security of developing countries, Botswana being the centre of discussion; policies, development plans and any other research conducted by different organizations locally will mostly be points of reference. The document analysis will help to elicit meaning, gain understanding, and develop empirical knowledge (Bowen, 2009).

Data Analysis

The analytic procedure will be to pick excerpts and quotations from selected documents and organise them into major themes and case examples through content analysis. The information and insight of literature review documents will generate knowledge on the historical root of the power crisis Botswana experienced. The organisational and institutional documents (i.e. policies and other strategic published documents) when compared to the knowledge generated from the literature review will provide a means of tracking change and development. The credibility of the research findings will depend on whether both the

documentary evidence contradict or corroborate with the former (contradictory) calling for further investigation.

In analysing documents in this research, an interactive process of combining elements of content and thematic analysis will be adopted. Pertinent information from selected documents with the relevant authenticity, credibility, accuracy, and representativeness will be identified. The selected data will be categorised to uncover themes pertinent to the power crisis phenomenon. Generally, the data collection and analysis are conducted at the same time in this research. In sum, data will be collected from selected documents, categorised as per characteristics, evaluated and analysed to come up with recommendations that may help in tracking change and development to the phenomenon.

Limitations of the study

Even though the method is generally considered to be exact due to the inclusion of exact names, references, and details of events (Bowen, 2009), there are however some limitations inherent with its use in this research. In Botswana most policies are still draft policies, and as they are used for analysis in this research, the data's reliability and validity remain questionable since they can be amended at any time. The other source of data being the local media remain a problem since their interviews are normally politically motivated and thus will likely be aligned to issues that criticise government and leave out positive data that can better inform this research. Most documents used were prepared for some purpose other than this research and therefore they will not provide sufficient detail to answer a research question. Just like Bowen (2009) pointed out, documents are sometimes either difficult to retrieve or may be deliberately blocked. The low irretrievability of documents becomes a major constraint as some of these documents contain relevant data to address the research questions.

Conclusion

Due to time limit and the advantage of readily available information on the research area, a qualitative desktop document analysis method of research was adopted. The research will rely on the description and interpretation of data rather than having the raw data as a basis for analysis. The documents used will provide broad coverage of the research questions as they cover a long span of time, many events, and many settings. The data for this investigation will be collected from both primary and secondary sources obtained from libraries, internet

and media houses. The analytic procedure will be to pick excerpts and quotations from selected documents and organise them into major themes and case examples through content analysis. Even though the method is generally considered to be exact due to the inclusion of exact names, references, and details of events (Bowen, 2009), there are however some limitations inherent with its use in this research.

CHAPTER FOUR

DISCUSSIONS

Introduction

Botswana has been praised for its remarkable economical achievement since its independence in 1966. The country's transformation from one of the ten least-developed countries at independence in 1966 to a middle-income country is characterised by a sustained economic growth anchored in good governance, peace, political stability and sound macroeconomic management (EU, 2007). Just like other developing countries, Botswana's development path has also been characterised by rapid economic growth, urbanisation and changes in

population growth (MAPP, 2007). The rapid economic transformation brought changes in the social fabric of the society influencing the change in energy utilisation. The need for modern energy rose at an alarming rate but it seems developing countries had focussed on other areas like health care and education than the energy sector.

As a result, Botswana found itself in a sensitive situation of power crisis that affected the society's welfare and the economy in general. This paper's discussions share a view by Professor Grynberg who was quoted by Cjdalzeil (2013) saying:

> "How did a nation like Botswana, which has 2/3 of Africa's coal, with an enormous inferred resource of some 212 billion tonnes end up sitting in the dark? The simple answer is that Gaborone is no different from Lagos or Baghdad which both sits on a sea of oil and like Gaborone, also sit in the dark. Depending on what one believes, it is either God or nature that makes coal and oil, but it is men that generate electricity and it is the decisions of men that explain our darkness."

However, this paper intends to sensitise about the importance of energy as a security concern by trying to review some areas that deal directly with energy issues. A brief historical background of the energy situation in Botswana is discussed to understand how the power crisis might have come about. The energy sector is responsible for the provision of the needed energy and as such its structure is reviewed. Policy choices and implementation will be discussed as they have a direct bearing on the achievement of energy security objectives. Energy, especially electricity affects other sectors of the economy and individual welfare and therefore the impact it had on other sectors during the power crisis will be discussed. Some important lessons drawn from the discussions will be outlined to conclude the discussion.

Brief energy situation background

Molosiwa (2009) pointed out that energy is crucial for the development and growth of the economy as it contributes significantly to the national GDP and national employment. This view is shared by Bergasse (2013), who informs us that energy is an essential commodity for most human activities and therefore, poor access to reliable and affordable modern energy services can act as a barrier to economic and social development. The changes in social fabric of the society that include; among others, the decline in the use of fuel wood, industrialisation, swelling demography etc, attributed the increased consumption and access to electricity. Despite these changes, Muluzi (2012) informs us that in January 2008, the then acting Chief Executive Officer of the Botswana Power Corporation, Jacob Ruleru, revealed

that they had seriously underestimated power requirements. As a result the country found itself hit hard by power poverty that characterised by blackouts commonly known as load shedding.

It is relevant to reflect back onto the status of energy resources that are available in Botswana in order to verify that the power shortage is a result of biased decision making by policymakers and unsound security management. The 2012 UNDP Energy Policy Breif indicated that the local energy resources are considered to be in abundance. Statistics reflected that: coal (200 billion tonnes), sunshine (3200hrs at 21MJ/m2), biogas (2.2 million cattle, 3kg dung/LSU/day) and fuel-wood (200 tonnes/annum). Only petroleum products (LPG, petrol, diesel and paraffin) are imported. With the amount of energy sources above and a small population of around two (2) million, Botswana can be considered to be in a better position to generate excess amount of power and import to other states in the region.

Botswana has relied on almost 80% of imported electricity through a power contract with the South African power giant ESKOM which expired in 2012. However, by 2011 BPC installed capacity supplied a little over 12% of the country's demands while 66% was still sourced from South Africa (SADC Today, 2008). All along, Botswana has been importing most of its electricity from South Africa's ESKOM through a contract that expired in 2012. In 2011, South Africa's power deficit increased and the country started experiencing rolling blackouts and Muluzi (2012) pointed out that Botswana's crunch time had come. The power supply was drastically reduced leaving Botswana with what could be termed the greatest challenge of today. Botswana started to experience numerous power outages that somehow ignited a sense of panic and uncertainty to the nation. As a result politicians, businessmen as well as ordinary citizens were left speculating as to what might have led to the depressing power situation.

Overview of the Energy Sector

In 1984, the government of Botswana established the Department of Energy under the Ministry of Minerals, Energy and Water Resources (MMEWR) with the overall policy goal of providing affordable, environmentally friendly and sustainable energy services that will promote social and economic development (GoB, 2003). Since this paper's discussions are based on electricity as an energy security's main contributor, it is imperative to reflect on the how the nation access this commodity. In 1970, the Botswana Power Corporation was established with the responsibility to generate, transmit, distribute and supply electricity

nation-wide. As the demand increased, the government reviewed the electricity supply Act and in 2007 Independent Power Producers (IPPs) were accommodated in the Act (GoB, 2003). Some of the IPPs include CIC Energy, African Energy Resources and Shumba Coal Resources. The Botswana Energy Master Plan (BEMP) is responsible for the analysis of current energy demand, energy supply and cross cutting issues dictated by new developments and changes in the economy and energy sector.

The energy sector in Botswana comprises both conventional and non-conventional energy sources with the conventional dominated by electricity, petroleum products and coal whereas the latter is mainly biomass, in the form of fuel wood (Mazeze 2009). However, Botswana is faced with the challenge of supplying the much needed electrical power and the only hope at the moment is the controversial Morupule B power plant project completion. The government embarked on the use of coal at this plant to generate power to meet demand. This undertaking was based on a coal mine plan developed over a period of 25 years to assess the sustainability of the coal supply to the power expansion project and the existing power station (ESIA, 2007). The use of coal in coal-fired plants have substantial impacts on both air quality and climate change. Large amounts of carbon dioxide (CO2) are emitted, which lead to warming of the Earth and associated climate changes. The mitigation or reduction of these gases will therefore pose another major challenge that the government has to take into consideration.

Botswana has a draft national energy policy whose overall goal is to ensure provision of affordable, environmentally friendly and sustainable energy services in order to promote social and economic development. The 2005, which remains the current energy policy, can be considered the most brilliant and promising as views of small end users such as households and small scale businesses were considered during its formulation (UNDP, 2012). The country's energy policy has objectives developed with the view to achieve the aspirations of the long term vision (Vision 2016). Despite the country having such a good energy policy, Botswana found itself faced with a serious power crisis characterised by power outrages since 2008. To most analysts on the energy sector, most developing countries have a serious problem of both policy and projects implementation due to number of factors to include skilled manpower, lack of funds as well as corruption. During NEPAD/UNDP workshop for Sustainable Energy for All, the chief power engineer at the ADB, Ram Babu, pointed out that the recent power blackouts happen due to poorly maintained power infrastructure, prone to collapse and unable to keep up with the surging demand (GoB, 2013).

The International Energy Agency (IEA) also observed that a quarter of Sub-Sahara Africa's power plants are not in operating conditions and the existing infrastructures rarely extending beyond the main cities (Muluzi, 2012). Deliberating at the NEPAD/UNDP workshop for Sustainable Energy for All in Gaborone on April 22, 2013, Mr Boikobo Paya outlined that in order for Botswana to address energy shortage challenges, the energy sector will focus on attaining energy security and self-sufficiency by increasing the generation capacity and making use of cleaner and more efficient technology (GoB, 2013). This paper is of the view that to reach the goal of a successful energy development, the country needs careful planning, systematic implementation of the plans and continuous and effective management of issues of national interest like energy. In an article posted on Mmegionline (20/10/2015) titled "Botswana's Implementation Problematic: A case for a Comprehensive Audit", Taolo Lucas quoted a speech made seventeen (17) years ago by the then President of the Republic of Botswana, Mr Masire addressing parliament saying;

> "there is a growing gap between the establishment of policy and its implementation", and further noted that " the rapid growth in the formulation of policies have not been matched by the pace of implementation" (www. mmegi.bw).

Lucas also pointed out that the implementation problem has not found resolution in three successive National Development Plans. Over years, Botswana has been praised by donors for the ability to implement projects, however with time there was a dramatic change in the construction industry. Almost all government sponsored projects were neither finished on time nor within budget. Some of the most prominent project which can be cited as examples include amongst others: the Francistown, Gaborone and stadia which failed to meet the 2010 deadline; the Dikgatlhong and Ntimbale dams which ended up filled up before the transfer infrastructure was built; and lastly the Morupule B which failed to meet the 2012 deadline. The conclusion reached by this paper is that the current problem of failure to implement projects can be directed to the project owners, being government. This assumption is based on the fact that during the time when donors were project owners, there were very few cases of project failures due to the employment of capable project managers and good project procurement tools.

Policy Choices

The contribution of policy choice to the issue of sustainability cannot be ignored as it affects long-term planning. This problem dates back to the era when most Sub-Sahara Africa

countries were gaining their independences. Due to economic hardships and poor political climate in the region, most countries had been engulfed with civil strife and population problems influencing decision to least consider energy as a security discourse. Political leaders were more into making locals happy by providing social welfare services and sidelining quality services like energy. Maundeni (2010) observed that at independence, the local taxes introduced by the British were abolished. Education and access to the health clinics was free and thus prioritising equality and social welfare at the expense of quality services. The observation here is that issues of quality services like energy were politicised instead of being securitised.

Cornell (2009) pointed out that politicising energy issues can yield confused and aggressive policy choices which hinder the achievement of energy security. By then issues of energy and other environmental concerns were totally left out as they had no political influence to the local population. As a result policy choices were not balanced to holistically cater for all sectors in the security paradigm. The problem of policy choice was further compounded by what one may describe as an addictive disease, foreign dependency. Reflecting back on the issue of electricity generation and supply in Botswana, 'during NDP 8 the policy of maintaining a balance between local generation and imports to obtain a least cost mix was adopted and expansion of local generation was deferred to take advantage of the relatively cheap power in the region' (GoB, 2003). Over a decade later, the country found itself in a power crisis situation characterised with looming blackout and disruption due to power shortage.

Arguably, developing countries have the capacity to acquire energy security as they have high volume of untapped energy sources to use. This is verified by the UNDP 2012 report which informs us that Botswana's domestic energy-related resources present immense opportunities for addressing her energy insecurities and increasing access to energy services. The abundance of sunlight, coal and cow-dung forms the basis of such opportunities. Even though improving and diversifying the energy mix can help Botswana and other developing countries attain energy security more need to be done regarding policy implementation. This paper shares the same opinion with Kiratu (2010) that the implementation of an outward policy on energy supply would potentially promote a coordinated strategy for expansion and operation, thus reducing the cost of building expensive power plants and ensuring that

electricity can be transferred from areas with low costs to areas with higher costs, which bodes well for economic development in SADC as a whole.

Implementation

In 2012, Isak Katali, SADC Energy Forum chairperson and Namibia's Mines and Energy minister warned that if planned energy projects do not come on stream, SADC economies will come down to their knees. He pointed out that projects have been on the drawing board for much too long with completion dates continuing to shift (Muluzi, 2012). Trollip et al., (2014) pointed out that crisis in energy security will prevail even when definitive policy statements have been made at the highest-level since implementation has been problematic and remains problematic. Botswana remains a good example as it witnessed power crisis that can be linked to failure to address energy issues through clear policy, and/or definitive legislation and regulation to implement the policy. In an interview by Spencer Mogapi of Sunday Standard newspaper in 2010, the then minister of Mineral, Energy and Water resources, Ponatshego Kedikilwe highlighted that lack or poor implementation of projects contributed significantly to the power cuts, popularly known as load-shedding, in Botswana.

The then minister emphasised the importance of completing the Morupule B project on time so as to avert what could degenerate into crises that would have far reaching consequences across all the sectors of the economy. That proved true as the project was not completed on time and consequences were clearly felt across all sectors of the economy. Another initiative meant to help the country boost the energy sector by mixing non-renewable with renewable energy hit a snag. The BPC-Lesedi project, implemented by a French electricity company Electricte de France (EDF), was meant to help provide electricity to areas not covered by BPC grid. However, things seem not to have gone down well between the two parties with the French firm accusing Botswana government of lack of commitment (Lute, 2014). The author indicated that the decision by EDF to pull out of BPC-Lesedi is likely to see Botswana lose grants from the likes of World Bank and the United Nations (UN) which were expected to help develop the renewable energy sector. To a developing nation like Botswana, this will be a major blow since the country relies heavily on such grants for the implementation of such projects.

In developing countries most of the specific policies in place are a result of the past legislative action and initiatives, it is therefore mandatory for the state to take stock of how

individuals and organisations work together and are motivated to ensure there is a positive transition in the energy sector. To have proper and successful project approaches, it is of utmost importance to invest on both individual and organisational capacity development. Matheson (2011) defined capacity as the ability of people, organisations, and society to manage their affairs successfully. He went on to outline that there are three levels of capacity: the enabling environment, organisational capacity, and individual capacity. This paper will therefore use the three levels to try access their impact on the Botswana power crises situation.

The Individual **–** even though capacity development plays an important role in the implementation and maintenance of energy infrastructure, there should be well defined strategies/approaches to individual capacity development in the energy sector. Matheson (2011) highlighted that capacity development is not an end in itself; instead, defined environmental goals should be the basis for determining capacity requirements, which in turn should be the basis for defining capacity development priorities. The basic parameter to equip an individual to be able to effectively and efficiently be able to implement energy related project is training. For a long time the Botswana government has relied on foreign skilled labour in the energy sector for both project implementation and routine maintenance of the existing electricity infrastructure (GoB, 2003). The failure of most major projects in Botswana, Morupule B being an example, can be linked to poor project implementation as a result of individual capacity development (i.e. project supervisors and consultants engaged by government).

The education system in the country has only be offering courses geared for white collar jobs and little attention was given to expert training in the field of energy. There is still a clear indication of deficiencies of relevant experts in the engineering sector as evidenced by government's introduction of retaining incentives like the scares skill allowance to selected professions. Despite this initiative by government, there is still a problem of retaining the required skilled labour that will offer continuity in the energy sector due to political interference. Individuals that hold top posts that oversee the running of specialised sector are normally appointed by politicians. There is normally a chance that the selection of candidates may be more inclined to political affiliation of the individual than his capacity requirements leading to poor implementation.

Projects in the energy sector attract huge amounts of funds and yet in most cases, the accounting officers that are charged with managing such projects are offered unattractive remuneration packages as compared to their counterparts in the region. As a result, they are subjected to being involved in acts of corruption for personal gains and as such compromising the project quality or even leading to project failure. Even though no official information about the level of corruption in the energy sector can be easily accessible in Botswana, cases of corruption in the construction industry have been confirmed by local media and the Directorate of Corruption and Economic Crimes (DCEC). These are some of the root causes of the situation faced at the moment where Botswana has very well formulated policies that fail the nation due to their poor implementation. It is the responsibility of the organisation to ensure that individuals are well trained and highly motivated to ensure proper policy and project implementation.

The Organisation – the organisation is generally mandated with policy implementation and at this level a number of organisations are expected to work together. Strengthening the organisational capacity to plan, co-ordinate works and improve capacity of local authorities is required (Matheson, 2011). In the Botswana setup, some of their roles will overlap and therefore constant consultation through meetings and workshops can help close the gap that contributes to poor policy implementation. The exchange of skills between organisations is key to the implementation process and it is important for organisation to have a close and consolidated relationship. This set-up requires a central control at a higher level to give a strategic direction and do the required monitoring. This therefore put the government at the top to oversee that the implementation is done properly and that organisations are not politicised. Once organisations get politicised, there is danger in appointing people with wrong skills to hold strategic position and thus open door to failures in the highly sensitive energy sector. The fact is that the government is solely responsible for providing the enabling environment for proper policy implementation.

The Enabling Environment – Botswana can be commended for providing good policy tool like the draft national energy policy and strategy, however there is an urgent need to implement regulatory approaches like liberalising the energy market and encourage electricity generation from non-renewable sources. The stable political environment and the robust economic growth observed in Botswana remain the foundation of an appealing enabling environment for proper policy implementation. Energy organisation all over the

world would not hesitate to get involved in the provision of energy to Botswana. The problem that befell the country is that only one organisation has been dominating the power industry, thus monopolising the industry. Furthermore, government opted to support untested policies like importing power than generating own power and be self –sufficient. All has been well for so many years and as a result the government somehow forgot to nurture the enabling environment. The national draft energy policy failed to give the strategic direction for policy objectives implementation. This strategic direction forms the basis of the enabling environment as it will allow all stakeholders to be brought on board in the implementation of the policy. Organisational roles will be clearly outlined and the required individual skills will be identified with ease. As a result, organisations and individuals will be highly motivated to efficiently implement vital policies like energy to avoid crisis observed in the past historic events.

Review of Energy Policy Objectives

The problem of power outages can directly be linked to failure to meet certain energy policy objectives. However, the Botswana situation is without doubt due to some omissions in the draft energy policy which are key to the success of realising these objectives. The biggest mistake is the one observed by Wright (2007) in that the draft energy policy which does not have strategies on how different policy objectives would be achieved. Despite this setback, as a way forward it is relevant to discuss some of the major objectives geared towards ensuring energy security is achieved.

Governance within the Energy Sector

The main challenge in the energy sector in most developing countries was observed by Kiratu (2011) in her synthesis report on energy security in South America and Southern Africa. Kiratu (2011), pointed out that the detrimental effect of improperly delineated roles is evidenced in Southern Africa. The “hybrid” market that has emerged following previous attempts at the privatization and liberalization of the state utilities sector has created many grey areas in terms of regulations and the roles of different players and institutions, creating uncertainty and standing in the way of meaningful cooperation among key actors (Kiratu, 2011). This fragmented institutional and regulatory environment approach hinders the participation of clean electricity suppliers in a market leading to the domination of monopolistic utility providers and the continued use of coal. The problem of the fragmented

approach in the energy sector is also prevalent in Botswana and can, to a certain extent, be attributed to the recent power crisis.

In Botswana, the MMEWR formulates, direct and coordinate the national energy policy with parastatal (BPC) generating and supplying electricity. Coal is the main source of power generation in Botswana and as studies have shown, power generation technologies are associated with a wide range of environmental impacts. The Department of Environmental Affairs in the Ministry of Environment, Wildlife and Tourism is responsible with environmental vulnerabilities to include greenhouse gas emissions. As climate change is a global challenge, and BPC being unable to meet the power demand, there is need for alternative off grid power sources that are environmental friendly. The responsibility for the off-grid power supply and installation lies with the Department of Electrical and Mechanical Services (DEMS) under the Ministry of Works and Transport. This kind of arrangement has a serious effect on policy formulation and most importantly the implementation part. There is a general problem of overlaps and clarity of roles to these key actors and in turn this affects the improvement of their effectiveness.

Kiratu (2010) highlighted that divided responsibilities within government makes it nearly impossible to make decisions that simultaneously have a bird's eye view of the domestic governance of energy and climate change. Therefore, for Botswana to come up with an integrated energy planning that can achieve its objective of sustainable development the government needs to come up with a well-organised structure that will undertake the screening and synthesis of the many options available. As a result, the country can be able to supply of modern affordable energy services and at the same time maintaining environmental integrity and social cohesion (Kiratu, 2011). One problem which is normally overlooked in the energy sector, especially in developing countries, and yet has a profound negative impact is corruption. Corruption has been identified to be the main contributor to the slowdown of development in general and more important in development of effective policies. With a fragmented approach in the energy sector, there will be a high possibility of corruption as accountability and responsibilities will be shifted between institutions.

Facilitation of Economic Efficiency

It is widely accepted that modern forms of electricity are key in facilitating economic diversity, creation employment and ultimately reduction of poverty. A report by ESIA (2007)

indicated that the deepening energy crisis across the Southern Africa sub-region is a major impediment to Botswana's economic growth plans, poses a threat to stability, and requires a major concerted effort at the national and regional levels to address the energy challenge. The production, transformation and distribution of power generate jobs as well as both small and medium scale enterprises. As an effort to improve Botswana's economic development, in 2008 the Government of Botswana (GoB) introduced the Private Sector Development Strategy

Access and Affordability of Energy Services

The government's strategy as outlined on the Vision 2016 was to electrify around 100 villages by the year 2016. Between 2004 and 2007, rural access to electricity doubled to 44 percent, though short of the 60 percent target under the National Development Plan (ESIA, 2007). Most of the major villages, towns and cities are fully electrified with commercial power, a very commendable achievement. Botswana made a remarkable achievement in the process of electrification doubling its electrification rate between 2006 and 2008 as well as rural access to electricity (Government, Sustainable Energy for All, 2013). The majority of those residing in the rural areas are the poor and those relying entirely on government subsidies and poverty alleviation programmes that only provide low income. Despite the national grid being accessed to their villages, the majority of residents could not afford even the revised connection fees nor sustain the swelling bills. Those who managed to get connected to the grid faced yet another challenge of availability of the fuel (electric power) due to power cuts or related appliances (electric stoves) due to high costs.

Just like the UN-HABITAT (1991) outlined on their theme paper presented to the thirteenth session of the Commission on Human Settlements, Harare, Zimbabwe, 29 April – 8 May 1991; cultural preferences, lack of disposable income of the households as well as the unavailability of the fuel and related appliance(s) in the Botswana market became a serious setback to the government's effort. As a result, most residents resorted to switching fuel from the more expensive, highly convenient types of energy (LPG, electricity) to the less costly and less convenient fuels (wood, other biomass). In some households, electricity is just used for lighting whilst wood is still highly used for cooking and heating as a way of economising on the use of income on high rates. This is a clear indication to governments in developing countries that access to reliable energy alone does not guarantee human development and therefore energy policies should also address the issue of individual household affordability.

Security of Supply and Diversification of Supply Sources

The energy sector in Botswana has adopted a monopolistic approach with one organisation mandated with the generation and distribution of power. On the other hand there is a problem of the dominance of one source of power generation adopted by the organisation. The recent power crisis Botswana experienced are an indication that such an approach by the energy sector is failing the nation and therefore the need for diversification. Molosiwa (2009) clearly outlined that the Botswana energy subsector will promote the use of locally available sources of energy to reduce reliance on imported energy sources. This makes perfect sense looking at the fact that the country is blessed with high volume of untapped energy sources which can be utilised. This is verified by the UNDP 2012 report which informs us that Botswana's domestic energy-related resources present immense opportunities for addressing her energy insecurities and increasing access to energy services.

It is vital for the country to have a proper energy planning for demand and supply side of energy management in order to achieve a prudent utilisation of energy resources. Botswana has access to other sources (renewable) of energy, especially solar energy, whereby the country receives one of the highest rates of insolation in the world. Regardless of this opportunity, the abundant solar energy has an insignificant contribution to the national energy supply. This has led to power outages during hours coal-fired power stations face maintenance challenges and breakdowns. As a result, some households and some government institutions resorted to the use of fuel wood for cooking and heating. This in turn becomes another challenge to the government as the use of fuel wood has a negative impact on gender, health and on the environment.

Another area of concern is the over reliance on one dominant source of energy supply. In 2007 Independent Power Producers (IPPs) were accommodated in the electricity supply act, however what is now disturbing is the fact that up to date those IPPs do not exist. It is the government's mandate as the overseer of the restructuring of the energy sector to put politically motivated considerations aside and concentrate on the technical-economical background. As a nation, it is of economic benefit for individuals and individual groups to be encouraged to participate in energy activities. This can help create the much needed jobs and at the same time help diversifying energy supply resources and thus help the country attain energy security. The power outages Botswana experienced had serious implications to other

sectors of the economy and national security in general and some of them are discussed below.

Impact of Power Outages on other Sectors

It is quite an interesting experience to acknowledge that power interruptions that were once a minor inconvenience are now major events affecting nations. For example, environmental degradation, poor health care, inadequate water supplies and female and child hardship are often related to low energy consumption. The power outages experienced in Botswana directly affected businesses and residents in one way or another ranging from heating, cooling or medical support to economic impact as local business operations get interrupted. In rural areas, energy can create opportunities for development particularly for the youths and for community participation. In a survey conducted by '*The Voice* Newspaper', the outcome showed that the power outages impacted negatively on the economy, the society as well as the environment.

Society

In Botswana, the household sector has been the largest consumer of paraffin as it was mostly used for cooking, heating and lighting. However, the pattern of consumption changed as more households had access to electricity. Most households started to depend entirely on electricity for cooking, heating and lighting. The effects of power outages have different outcomes depending on whether one is residing in urban areas or rural areas. In urban areas where the majority of residents are of middle to high income status, they entirely rely on electricity for cooking, lighting and heating. The power outages brought their normal way of living to a halt. As evidenced by the response given to *The Voice* newspaper by some residents in Gaborone, residents complained about a number of issues; one woman explained that her family was constantly being deprived of hot meals as she failed to cook (*The Voice,* 2014). Local media reported some incidents where patients in life supporting machines and ICU at the main hospital, Princess Marina hospital had to be evacuated to a private Gaborone Private hospital due to the malfunctioning of diesel generators during power cuts period.

The power cuts affected the welfare of children as some residents indicated that school children had to take cold baths in the morning; go to school without breakfast as well as packed lunch and in the evenings they were unable to study in the dark. All these issues in a way affected their examination results outcome which also became a heated issue within the

political sphere (*The Voice*, 2014). The crime rate escalated as criminals ambushed and robbed individuals during the hours of darkness. However, in rural areas there were fewer incidents related to the power outages as most residents in the rural Botswana still rely entirely on the use of cheap fuels like wood for both heating and cooking. The only major blow was felt by school children as they also could not study for their examination in the evenings. All in all these incidents bring in a serious bad image for a country that has been praised a shining democracy in Africa and calls for immediate government intervention.

Economically

It is generally arguable that energy is a major catalyst for business expansion, job growth and a more vibrant economy. The power outages in most developing countries, for example in Botswana, is a clear indication that as the economy grows, so will be the use of electricity. The vital contribution of electricity in every country's gross domestic product makes electricity more productive and useful than any other form of energy. Benza (2014) observed that in 2014 Botswana's economic growth was on the decline largely by the electricity sector which had been contributing negatively to the economy. The prevailing water and electricity shortages have disrupted production across all economic sectors. One resident interviewed by the Voice Newspaper expressed some level of fear in that the power outrages could affect big investors like the newly established DTC from London.

The survey also showed that large and small retail store managers cited problems ranging from spending more on acquiring diesel generators and on diesel itself to making loses on damaged products (Voice, 2014). Some of the retail shops were forced to return workers home as there was no production due to the power outages. When interviewed by *Voice Money* on the 12 March 2014, the Botswana Confederation of Commerce Industry and Manpower (BOCCIM) CEO Maria Machailo-Ellis confirmed that the services sector together with hospitality and retail sectors were badly affected by the power situation and that is bad for the country's economy (*The Voice*, 2014). These lessons learnt are indeed vital to the securitisation process to be implemented by developing countries to ensure energy is highly accepted as an existential threat to national security.

Environment

The current electricity situation in Botswana has exerted immense pressure on the legislators and planners in the energy sector to come up with immediate solutions of providing the much

needed electricity. With the vast and widespread coal reserves in excess of 212 billion tonnes (Abi, 2010), Botswana has the potential to not only satisfy Botswana's own power requirement but also meet the energy needs of other nations in the SADC region (ESIA, 2007). The use of coal is at the moment the only answer to solving the power crisis that engulfed the country. However the use of coal, the least clean fossil fuel, comes with environmental challenges that include global climate change. In its endeavour to realise energy security, Botswana has to come up with robust and well informed policies that will equally address environmental issues already discussed in this paper.

Unlike other countries in the region, because of her geographical location, Botswana is immune from natural causes of climate change but contributes through a number of human activities. Botswana's contribution to greenhouse gases might be considered to be insignificant but the effects of climate change are indiscriminate. Just like (Biswas, 2011) pointed out, environmental challenges ranging from pollution, excessive carbon emissions and rapid population growth have led to increased scarcity of natural resources like water, energy, and food which poses threat to human security. The 2001 Botswana Government country report indicated that the country is "highly vulnerable to climate change" due to its fragile ecosystems and (semi-) aridity. Climate change is likely to add to existing stresses in Botswana causing significant changes in prevalent vegetation and rangeland cover, affecting species types, composition and distribution, as well as those depending on them. The most vulnerable sectors are identified as agriculture/livestock, woodlands/forests, water and health.

According to Majelantle (2011), the impact of climate change to Botswana was also pointed out in 2001, when the former Minister of the then Works, Transport and Communications, Honourable David Magang made a deliberation to the UNFCCC that;

> "Botswana only contributes about seven percent of Africa's total greenhouse gas emissions while Africa itself contributes only about five percent of the global total. The country is, therefore, a minor contributor to the problem of global warming and climate change. However, Botswana, like many of the developing countries, will be significantly impacted by climatic change. The country is not well endowed with surface water resources so water scarcity is a key concern. The availability and quality of water, which may become more seriously affected under the predicted climate change scenarios, are thus Botswana's developmental challenges…"

Furthermore, Botswana Government (2001) reported that water scarcity or water stress and land degradation will have negative impacts on GDP, poverty, health and food production. Climate change is likely to impact on Botswana's ecosystems, especially the Okavango Delta, with a probable negative impact on tourism as well as livelihood opportunities for the peoples residing in the basin. However, like Majelantle (2011) mentioned, it is very difficult to accurately relate how it will affect other global issues like temperature and precipitation since there is a problem of data unavailability with regards to GHGs in Botswana

CHAPTER FIVE

CONCLUSIONS

It is surprising that even though energy is arguably one of the major challenges the world faces today, touching all aspects of our lives, it is not captured in the MGDs. The provision of electricity is the greatest infrastructure challenge to Africa with the Sub-Saharan Africa region experiencing the lowest rates of energy access, capacity per capita and electricity consumption per year. Efforts were made to states by experts to take into account the need to urgently address lack of regional policy in the energy sector. However, in 2007 the SADC region had ran out of surplus generation capacity just as it was accurately predicted by the Southern African Power Pool (SAPP) over a decade ago. Despite the good governance characterised with sound economy and an abundance of energy resources, Botswana was engulfed by power outages that ignited a sense of panic to Batswana. To some authors,

neglect of energy security by policymakers and politicizing energy issues can yield confused and aggressive policy choices which hinder the achievement of energy security.

The traditionalist realistic approach focusing on the state focused military view of security changed post the Cold War era, the Copenhagen school worked on the new concept of security which would be able to comprise even non - military threats. This was a result of arguments that threats and vulnerabilities can arise in many different areas, military and non-military. This process can help in ensuring that well thought of policies are implemented and well natured to meet the challenge of providing services to the society. A point of concern is that even after the world's first energy crisis and well into its second, "energy security" remains a widely discussed but little understood problem. Energy without doubt qualifies as a strategic issue for any given nation as it is the core of the way of living of modern societies and has played a crucial role in their evolution and therefore should be a security issue that has to undergo the process of ‘securitisation’.

The lack of progress in providing access to modern energy services will act as a bottleneck, severely constraining many countries’ ability to meet their overall development aspirations (Legros, 2009). The impact of energy poverty is immediate and felt by companies, suppliers, consumers and market traders. Energy has a direct influence on livelihoods as well as local, national and international economies and more importantly the environment. Without energy, poverty, environmental degradation and despair become destroyers of people, of societies, of nations. Electricity plays a pivotal role in the development of modern society and securitising energy will ensure sustainability that will also be enjoyed by the future generation. Historic events regarding energy crisis have proven that energy crisis affects everybody in the same manner and therefore call for a holistic approach to energy issues. Mccaskill (2007) defined Energy Security as the concept of using a combination of national means to achieve a stable and reliable energy portfolio. This therefore tells us that energy is directly linked to the national security and should thus be securitised.

Electricity influences people’s lives as it is central to practically all aspects of human welfare, including access to water, agricultural productivity, health care, education, job creation, climate change, and environmental sustainability. Just like the former U.S. President Franklin D. Roosevelt once said, electricity is no longer a luxury but a definite necessity as it lights our homes, our places of work and our streets. Just like other developing countries,

Botswana's development path has also been characterised by rapid economic growth, urbanisation and changes in population growth (MAPP, 2007). All these require electrical energy that will meet demand, however Botswana's crunch time came when the country started experiencing rolling blackouts starting in 2008. This depressing situation occurred even though the country has a draft national energy policy that can be considered the most brilliant and promising in the region. The biggest mistake is the one observed by Wright (2007) in that the draft energy policy does not have strategies on how different policy objectives would be achieved. As a result of the power outages the society, economy as well as the environment were seriously affected. The country should therefore speed up efforts to ensure energy security to avoid this depressing situation.

Recommendations

According to Winkler (2006), in order to optimise an energy system, three approaches must be applied simultaneously. Firstly, an evaluation of future energy scenarios and technology options must be made, together with their associated impacts. Secondly, information should be clearly disseminated so that the market can drive the energy system optimally. Thirdly, until the parties concerned are empowered, steps should be taken to encourage external cost accountability and longer-term energy planning. Initially government can coordinate these steps, but over time they should be self-perpetuating. Botswana has relied on the cheap, readily available electricity from South Africa for a long time and thus giving little attention ti energy issues. The relaxed situation somehow led to the massive daily power blackouts that translated to a national crisis. Government had to come up with short-term solutions to try tone down strong politcal and media overtones that were coming from the public in general.

- To effectively achieve energy security, the energy governance sector should allow adequate inputs by all key stakeholders and in addition to ensure diversification of energy supply, investment opportunities in the energy sector should be made public and published on annual basis. This will help facilitate the inception of the long awaited Independent Power Producers (IPPs).

- Government in developing countries are compelled to continue providing energy services subsidies to the majority poor since it has proven that the current schemes

and subsidies provided by Botswana government to connect did not help the rural poor as affordability to sustain repayments remains an issue.

- Energy is directly linked with the key global challenges that the world faces; (poverty alleviation, climate change, and global, environmental and food security). The Millennium Development Goals and the development needs of the poor cannot be met without increasing their access to energy.

- Through securitisation, legislators and planners can understand and appreciate energy to be a security concern in their respective countries since it believes that threats and vulnerabilities can arise in many different areas, military and non military.

- The depressing situation the Botswana nation experience should be a learning curve to both the country and other developing countries and a warning to legislators and planners to speed up efforts in ensuring energy security.

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