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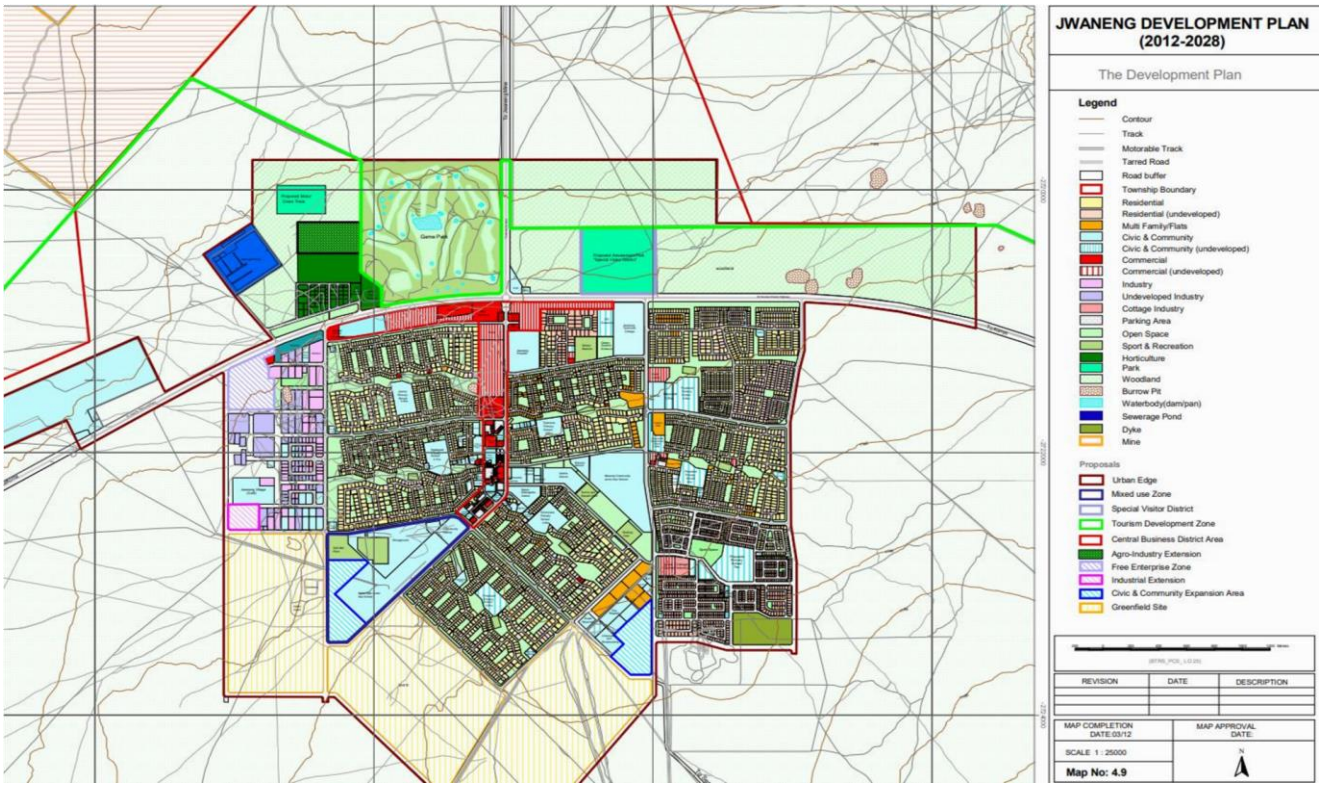
THE ECONOMIC SUSTAINABILITY OF SMALL MINING TOWNS: The Case of Jwaneng, Botswana



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24 October 2019

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Declaration

I hereby declare that the material contained in this research report is my own work excluding where adequately acknowledged and that the final results of this work have not been submitted at a different institution for assessment. This work is for academic purposes in a Master's degree in Development Planning at the University of the Witwatersrand in the year 2018 / 2019.

Signed at University of the Witwatersrand, Johannesburg, on the 24th October 2019.



Abstract

The impacts of mine closure on the local communities and on the nation's economic wellbeing where mining is the main economic activity are often very devastating. This research explores the alternative ways that could be adopted to achieve the economic development of Jwaneng, Botswana. Sustainable Local economic development (LED) is perceived as the solution to moving towards a prosperous future. However LED assumes that all local actors (residents, physical/ urban planner, mine workers, private sector, public sector/government and the mine) will collaborate in shaping the future of Jwaneng. This research highlights that the primary role of urban and economic development planning in working towards economic sustainability in small mining towns is to produce policies and programs that promote economic growth post mine closure. The economy of Jwaneng has performed well for the past two decades; however, the town's physical developed has progressed slowly. Jwaneng has no policy or program that focuses solely on the economic development of the town as such these calls for the need for one that works towards achieving a better economic future post mine closure that enhances the quality of life for the people of Jwaneng. Mine closures in the context of developing countries differ from that which occurs in developed countries, in that alternative socio-economic and environmental options are limited in developing countries.

Nevertheless, building the foundations for sustainable local economic development is a pressing concern in developing countries requiring creativity, cooperation and leadership. As such, the role should be noticed and not overlooked. Jwaneng, Botswana has the potential to be a tourist attraction town post the mine closure with the game reserve and the mine pits being the destinations. The town also has the potential to be a district service centre. As such, the town could be economically functional even post mine closure; however, there is a need for this to be supported strongly through policy. The Government have responded by referencing mining for specific attention in policies on sustainable development, and by issuing legislation and guidelines for mining. Although mining in Botswana is; exceptionally good, excellently regulated and is a point of reference for other countries, there is a need for a more promising intervention. There needs to be an implementation process which aims to ensure promising economic stability and future not just for the locals, but for the town and country as a whole, post mine closure.

Acknowledgements

This Masters Research report was undoubtedly one of the most challenging academic tasks I have ever faced. Without the assistance and support from numerous people, it would have been impossible to complete the requirements of this master's degree. As such, it is them that I owe my greatest gratitude and appreciation.

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Acronyms

Economic Diversity Drive	EDD
Housing Census Department	HCD
Jwaneng Urban Development Plan	JUDP
Local Economic Development	LED
Local Government Commission	LGC
Millennium Development Goals	MDGs
Mining Minerals and Sustainable development	MMSD
Minnesota Department of Energy and economic development	MDEED
National Development Plan	NDP
Natural Resource Governance Institute	NRGI
Randomized Controlled Trial	RCT
Selibe Phikwe Economic Development Unit	SPEDU
State-owned Entities	SOEs
Urban Development Plan	UDP

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Chapter 1: Introduction

Introduction

Mine closure has been an international occurrence that is often caused by the depletion of resources and minerals. Mine Closure, as a result, has caused economic changes which often lead to value depreciation of some commodities and in extreme cases, ex-mining towns are often left with no substantial economic activities. This research has been recognised by scholars, particularly in Australia. There has been a growing trend to explore the future of small mining towns and whether the towns will remain functional even after the lifespan of the mine or not. As such, this study examines the economic sustainability of small mining towns and further discusses the alternative solutions to the uncertainty of the future of small mining towns. This chapter aims to provide the background of the study, the problem statement, the rationale behind the study, its main research question and sub-questions, aims and objectives of the study, the conceptual framework and an introduction to the case study.

1.1 Background

Botswana is a slowly developing country known for its natural resources such as diamonds, copper/nickel and coal. The diamond extraction sector in Botswana has led to the development of small mining towns with Jwaneng, Orapa, Lerala and Dimantsha being the significant examples. The future of small mining towns is the subject of this academic study, and close attention will be paid to Jwaneng (Van Wyk, 2009).

The discovery of Diamonds in Botswana was in 1967, and this has led to the investment in infrastructures such as schools and hospitals. Globally, increasing demand for raw diamonds has increased the need to extract this mineral to drive the economic stability of Botswana. Also, noting that the diamond industry currently contributes 20% to the Southern Africa GDP, it is evident that the mining sector highly drives Botswana's economic development, and this has been the case since diamonds were discovered. The first mine began its production in Orapa / Letlhakane in the year 1972, followed by the Debswana Jwaneng mine in 1982, Lerala in 2003 and lastly Dimantsha in 2008' (Van Wyk, 2009). Due to the extraction of diamonds, internationally Botswana has the fourth-highest GDP, thus making its standard of living relatively high. Although the country's economy is considered to be good and is used as a model for other countries its high dependence on the mining sector could potentially threaten its success and future (Van Wyk, 2009).

The closure of mines is often seen as a problem since it often occurs in small communities /towns which are often located in geographically isolated areas. Mine closures should be regarded as a natural course which is a direct result of the depletion of a natural resource (Grainier, 2017). Mine closures together with their short term and long term impacts should be expected and planned for to maintain sustainable development of such towns. However, this has been an overlooked phenomenon.

The small mining town called Jwaneng in Botswana was mainly chosen as a case study because Jwaneng is well located in the Southern District of Botswana, which is also known as the Ngwaketsi district. The Southern district neighbours South Africa's Northwest Province in the south. In this town, it is expected that when the diamond commodity has depleted labour cutbacks should be expected as well. The local community and the existing local businesses are expected to experience the most devastation social and economic setbacks as they are highly reliant on the mine. Generally, socio-economic devastation should be avoided throughout the mine closure planning process. Places such as Kolmanskop in Namibia, Pomona, Bognfels and Elizabeth Bay are ex-mine towns which became ghost towns after the mine closed (Van Wyk, 2009). The effects of mine closures in these towns demonstrate the dangers this may cause to the local economy. Mining towns such as Jwaneng have mixed and conflicting responses to the anticipated expectations for the future of the town. Based on this, the researcher aims to identify the possible opportunities for the town that could bring about economic diversification and sustainability (Van Wyk, 2009).



Figure 1: Jwaneng, Botswana

1.2. Problem statement

A critical issue that reinforces the need to research on the economic sustainability of Jwaneng was precisely due to the uncertainty of the economic future of the town of Jwaneng. This research understands the term economic sustainability as an integrated and critical part of the broad term "sustainability''. The term economic suitability refers to the sustainable use of resources, both natural and non-natural resources. Economic sustainability seeks to create long-term sustainable values by conserving depleting resources so that future generations may benefit from them as well.

Therefore this research argues that economic diversification is the best tool that helps achieve economic growth and sustainable developments particularly in cases where the mining sector dominates the local economy as the primary contributor and driver of the economy. Economic sustainability will be further explored to find alternative approaches that could bring about the local economic diversification and economic diversification to the town of Jwaneng. The identification of possible economic opportunities for Jwaneng will be used to assist the relevant stakeholders in considering the possible interventions that drive local economic diversification and sustainability of the town of Jwaneng.

1.3. The rationale of the study

The rationale behind this research is mainly to realise that diamonds are a depleting resource, and this may expose small mining towns such as Jwaneng to be in danger of existing as a stranded town economically. This study also seeks to evaluate the role of the planner in ensuring that the community of Jwaneng has a stable future even after the life span of the mine has come to an end. Finally, this study seeks to explore alternative sustainable methods that could keep the town functional and growing even after the lifespan of the mine.

The drive of this study is at most around economic sustainability and how this will fuel settlement development. The research should, therefore, set the scene for discussions and recommendations that create the platform for public-private collaborations that work towards urban growth, economic sustainability and spatial development (Atkinson, 2009).

1.4. Research questions

The main question is resultant from the realisation that there is a possibility of the future of Jwaneng to be a socio-economic success or failure. This question is not commonly researched in academia of Botswana, which is primarily why this research is essential. While most research looks into the growth and development of mining settlements (Atikins, 2009), fewer researchers have looked into the process and impact of mine closure and the effects these may have on the socio-economic wellbeing of small mining towns Littlewood (2010) and DiBoscio (2010).

Main Research Question

Which possible measures could be taken to ensure economic sustainability in Jwaneng even after mine closure?

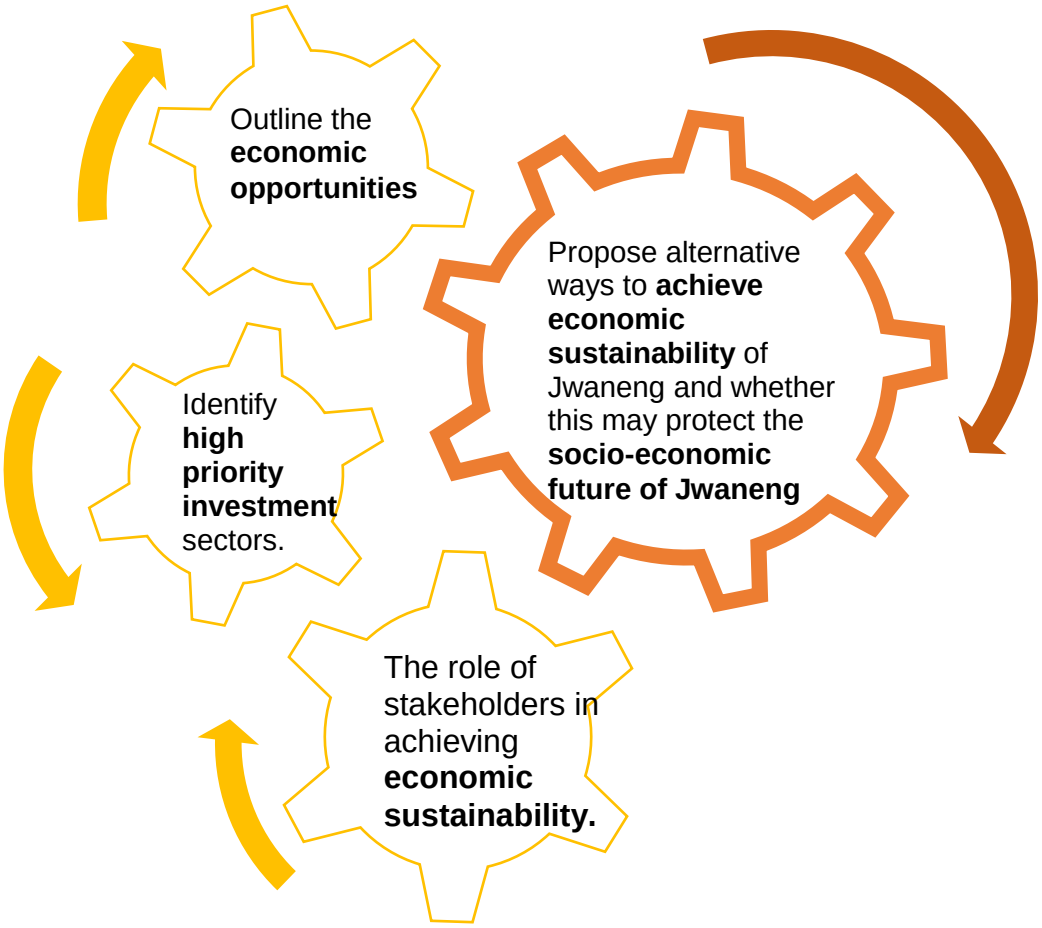
Sub questions

- How will Jwaneng continue to be economically and socially functional post mine closure?
- How can LED be used as a tool to achieve economic stability post mine closure?
- What plans have been implemented so far that seeks to improve the local economy of Jwaneng?
- Which other sectors could potentially keep the economy of Jwaneng active post mine closure

1.5. Research aims and objectives

The main aim of this research is to identify the different ways of achieving the economic sustainability of Jwaneng and whether this may protect the socio-economic future of Jwaneng. The different ways of achieving socioeconomic sustainability are identified by analysing the theories that have been done on economic sustainability and economic diversification in mining towns. The objective of doing this lies in the identification of the economic opportunities for Jwaneng and finally to determine the aspiration of stakeholders and investors in the economic sustainability planning of Jwaneng. Note that in this research, the term economic sustainability is about the ability of an economy to support a defined level of economic production for current and future economy of a region, city or country.

Figure 4: Research Objectives



Benefits of the study

The research will highlight the possible interventions derived from different stakeholders that could reduce or prevent economical challenges, which could arise as a result of mining activity concluding.

- The research will ultimately outline the economic opportunities that stakeholders could engage in, to benefit from the existing mining industry present in Jwaneng for the future.

- The study will also look into finding sustainable measures that could assure better mine closure policies that seek a well-planned future for the mineworkers, the town and the economy of the country.

1.6. Research key definitions

It is essential for the keywords used in this research to be clearly defined. These definitions include the definitions of terms such as:

- "Mining town and mining settlement."
- "Economic Sustainability"
- "Economic Development"
- "Economic stability."
- ‘'Economic diversity.’’
- "sustainable mining."
- ‘’settlement development."

1. A **Mining town** is a human settlement with specific services, functions and characteristics of an urban centre. It is the kind of settlement which usually exists as a district centres for the neighbouring rural areas benefiting from its services.

2. A **‘mining settlement’**, on the other hand, is a type of human settlement that has specific functions and characteristics of an urban centre. Such settlements are generally built-up, with resilience to commodity market fluctuations. These settlements are mostly independent and often differ in political-economic and socio-cultural terms in comparison to ‘mining communities’ which usually experience extreme dependency on the natural resources in their area.

3. **Sustainable mining** has different meanings to different people; some perceive sustainable mining to be cohesive with sustainable development. Sustainable mining, specifically in mining that is carried out in a manner that preserves the environment protects the local indigenous cultures and finally improves the well-being of the local community.

4. **Economic sustainability** is the ability of a town, city region or country to maintain non-renewable resource management. This phenomenon is essential as it supports the present and future level of economic production. Economic sustainability

6. **Economic diversification** is a concept that came about due to the realisation that it is perilous for a town, city, region or country to rely on only one commodity or sector a means of economic survival. This concept includes the production of products, the improvement of skills, and the improvement of other skills and an increased rate of employment.

7. **Economic stability** in this research report refers to the steady and manageable growth of the gross domestic product. It also seeks to maintain employment and decrease unemployment. Economic sustainability avoids economic crises, such as decreasing production rates and increased commodity prices.

8. **Mine closure plan** is a sustainable manner of planning for post-mineral depletion or a period when mining activities have ceased. This plan is often done over the life span of the mine and attempts to be responsive to the needs of the mine and mining settlement without compromising those of the future.

9. **Sustainable development** is the development that meets the needs of today without compromising the ability of future generations to meet their own needs. According to the Brundtland Report (1987), sustainable development is a development that addresses the current and social, economic and environmental needs o

10. **Local Economic Development:** according to the (World Bank Urban Development

    The unit, 2003: 4) "Local Economic Development (LED) is the process by which public, business and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation. The aim is to improve the quality of life for all."

Similarly, in this research, LED is considered to be a process where the relevant stakeholders' to take part in shaping the economic future of their town, city or region. This process acts as a form of participation act that encourages the local community and relevant stakeholders to partner and work towards the job creation and sustainable economic activities (Canzanelli, 2001).

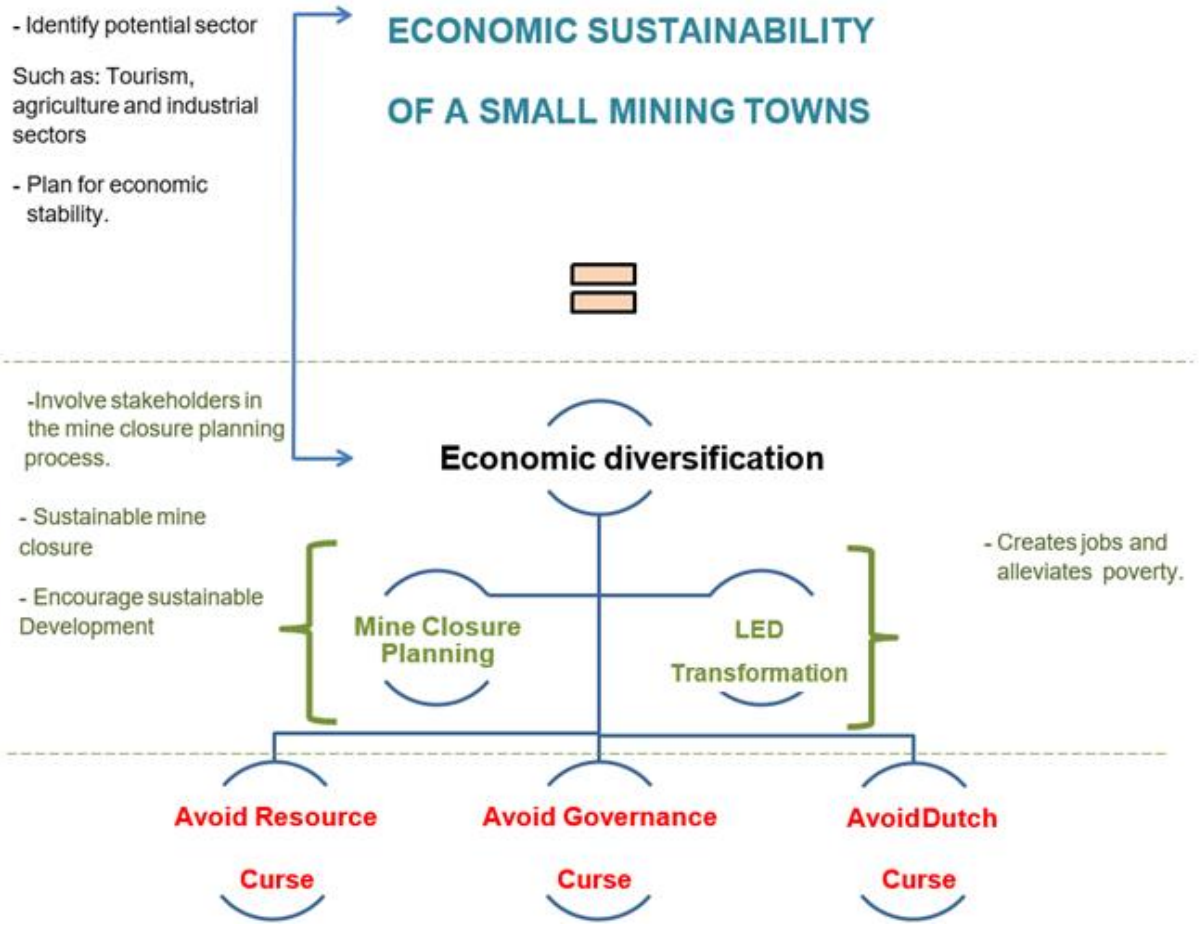
1.7. Conceptual framework diagram

From the problem statement, it is evident that the uncertainty of the future economy of Jwaneng is a concern that should not be overlooked. As such, the conceptual framework embodies the key concepts that will help solve the identified problem statement. The conceptual framework identifies that the ultimate goal of the research report is to address the challenges of achieving economic sustainability

Economic sustainability of small mining towns is not an easily achievable goal since it aims to manage the local resources without compromising the economy of future generations. Economic sustainability is particularly important as it considers the economic future of the town of Jwaneng and goes to the extent of post mine closure planning. There is a need to recognise the importance of economic diversification and Local economic development. Economic diversification in Botswana is often planned for at the national level of government as it is a broad and national scale objective. Policies such as the Economic diversification drive play big a role as it ensures that mineral led economies such as that of Botswana are supported by other sectors to maintain economic stability. The policy then uses a cluster development concept which seeks to identify the areas of potential by maximising the returns through the commercialisation of other sectors to ensure that they produce higher revenues than in previous years while local economic development is discussed in detail in the Jwaneng Development plan.

Having a mineral led economy does result in specific outcomes such as mine closure. Mine closure often results in devastating economic situations such as the Resource Curse, the Governance Curse, Dutch Disease and Ghost towns. As such the conceptual frameworks intend to avoid these situations since they often lead to stagnancy, the rapid decrease in demographics of ex-mining towns and extreme case these may lead to ghost towns with little to no economic activity.

Figure 4: Conceptual framework



Based on all of the above, this research report aims to show that there is increasing recognition for the importance of proactive mining closure policies and long term priorities that should give guidance to how economic stability may be achieved even post mine–closure. Planning for mine closures should not only be addressed when approaching the end of the lifespan of the mine. This type of long term planning should be entrenched in the Jwaneng Urban Development frameworks whereby the threats and opportunities in the local economy may be identified. More integrated municipal documents similar to the Urban Development Framework for Jwaneng should be developed.

Chapter 2: Literature Review

2. Introduction

The objectives of this study are to identify the challenges of achieving economic sustainability for Jwaneng and how economic sustainability may protect the socio-economic future of Jwaneng. Literature is sourced from different sources ranging from such as books, academic papers, articles, journals, web-based information, government reports and policies. All data acquired from these sources include literature written at a global scale, at a National scale and finally at a local scale. Note that this research is of a descriptive and normative nature. The term normative in this research refers to a phenomenon in human societies that differentiates actions as either desirable or undesirable. A constructive approach was used to analyse the findings of this research. Meaning that the different perspectives, opinions and meanings were taken into consideration when conducting this research.

In this chapter, the understanding of different theories regarding economic diversification urban sustainability and socio-economic sustainability of mining settlements are reviewed. Following the global perspectives, is a review of the lessons learnt from different case studies. An understanding of Botswana's progress and efforts towards a future without diamonds is detailed out following and finally an understanding of the Jwaneng Urban Development Plan. This chapter is divided into four phases which are:

Phase 1: Global perspectives on mineral depletion and economic instability.
Phase 2: Lessons learnt from other case studies
Phase 3: Botswana's National Perspective: Efforts towards socio-economic sustainability
Phase 4: Case study Jwaneng, Botswana.

Phase 1: Global perspectives on mineral depletion and economic instability

Theories regarding economic growth, development and sustainability, are examined in the context of economic sustainability of Jwaneng, where it has relevance to the economic diversification of Jwaneng. This literature is grounded on international comparative perspectives regarding the causes and impacts of mine closure, from which the researcher created a theoretical frame of specific reference to Jwaneng through research done on other case studies.

At a global scale, economic sustainability and mineral resource development seem to be a conflict. This conflict is caused by mining or the extraction of mineral resources which is not closely monitored and planned. Minerals are finite resources, meaning that they are a depleting resource. Globally there has been an increase in demand for the extraction of minerals as a means to support the global economy. This increase in demand on its own is unsustainable because continuous extraction of any mineral will eventually exhaust the minerals and compromise future generations

Understanding Sustainable development in mineral-based economies

The principle of sustainable development derives from the debate that questions whether the Earth's limited natural resources will provide for humanity of growing population even post-mineral depletion? Economists such as Thomas Malthus in the early 1800s argued that because the human population is growing, natural resources will eventually deplete. However, economists have continued to overlook this dilemma and have often focused on the efficient use of natural resources. Therefore, there is a need to account for the resource scarcity adequately. Resources may face the possibility of decreasing in quantity extracted, and if such resources are used carelessly, they may deplete. Exhaustion of a mineral often leaves the growth of the urban settlement in which they operate in devastating situations such as economic stagnation; as a result, there is a need to plan for long-term growth and the technical progress of developing towns (Freeman, 1973).

The depletion of minerals is a limiting factor to the extractive industry and more importantly, a threat to long term economic growth. Economists have critiqued the argument modelled by Malthus, which examined whether the current paradigm of world economic development is ‘sustainable' (Friedman, 1973), which means that increased mineral extraction is bound to lead to a social catastrophe (Kuyek and Coumans, 2003). The assumption that industrial production, population and pollution would continue to grow exponentially in the future as they have in the past, which led to the Meadows' team to conclude that since the world is physically finite, the exponential growth of these three must eventually decrease (Friedman, 1973). This assumption then led to the prediction due to that as of the 1980s, the ability of cities to remain economically stable was only a generation away.

The Global theoretical framework of urban sustainability

The term ‘sustainability’ in development planning has led planners to redefine the term as times evolve. The notion of ‘sustainability’ generally speaks to how cities and regions should be revitalised and redeveloped. Sustainability is regarded as either a vital aspect of urban development. It is common amongst planners, particularly urban planners, to describe the efforts to solve issues such as urban sprawl, congestion, and decline in pursuit of achieving ‘urban sustainability' (Basiago, 1990).

According to Pramit and Akhilesh (2018), urban sustainability is an economically stable city or town, meaning that in order for an urban area to be sustainable, it needs to have a flexible economy. Sustainable urban developments can be measured with suitable sustainability indicators, which include the standard of living and quality of life. However, in urban theory, there is no human settlement that embodies ‘sustainability' whether in its social, economic or environmental form. Therefore, ‘urban sustainability’ implies the vitality of a city as a complex system that provides an adequate quality of life of its citizens or the capacity of nature which support its activities (Ba Isago, 1990). While others define urban sustainability narrowly in terms of the economic sustainability' of a city, its potential ‘to reach qualitatively a new level of socio-economic, demographic and technological output which in the long run reinforces the foundations of the urban system (Basiago, 1995). Others associate urban sustainability with environmental sustainability which is highly focused on the preservation of the environment while others link it to the broader notion of social sustainability and the importance of a bottom-up approach which is mindful of equity and participation in a process that involves the public and land development. Physical/ Development planners speak of urban ‘sustainability'; they mean the pursuit of urban form that synthesises land development and nature preservation.

Based on the above, it is evident that the city and regional planners in their diverse roles have drifted away from the ideal definition of sustainability. While one may argue that the term sustainability in its self has different meanings, there is a need to have a shared understanding of the term "urban sustainability". It is as if the city and regional planners have seized upon the idea of ‘sustainability' as a tangible goal which is cautious of the socio-economic wellbeing of an urban area.

- **Mining towns and the issue of local economic development**

Sustainable mining is a dynamic process which may either bring life and prosperity or stagnation and decline to a small mining town. Solving all problems that lead to poor mine closure planning is a complex process (Lederman & Maloney, 2007). Therefore, mines and the local councils need to be mindful of the dangers that mine-closure may have on the people. Post- mine- closure planning may be best achieved by identifying the next best competitive advantage of the mining town and further strengthening it. All mines will close eventually, but it is not always clear when this will happen. Once the mine has closed, existing infrastructure will be vacant and non-functional as a direct result of the discovery and extraction of the mineral (Lederman & Maloney, 2007). As such, it would be of great benefit to the economy of the town to strengthen other potential sectors.

Mine closure often leads to a rapid decrease in the number of businesses decreasing the mining town and settling where they will be more profitable. As a result, much commercial and retail space thus leaving infrastructure abandoned. “Social impacts in the mining communities get worse when the mine closes (Kuyek and Coumans, 2003: 3).
The impacts of mining activities may go to the extent of transforming the natural landscape, polluting the air, reducing the quality of water, waste and noise tend to take place. These impacts may ultimately cause devastation of indigenous vegetation and wildlife. The cost of mining activity impacts on the natural environment should be considered in its totality, before the commencement of any mining activity. The damage to the environment should also be addressed before, during and after mine closures. If not appropriately mitigated, the impacts of mine-closure may lead to the town is a ghost town (Kuyek and Coumans, 2003).

Typical causes and results of mineral decline/ depletion

1. Ghost towns:

The term Ghost Town is commonly used to describe wholly depopulated communities which are left with slight evidence of their previous existence. This evidence is usually in the form of decayed infrastructures and the rapid decrease of economic and activity. Ghost towns often have decreased demographic profiles; they all demonstrate evidence of previous economic activity such as abandoned mines or shut down factories. Western United States Midwestern and Appalachian towns are typical examples of towns that have experienced ghost town (Mueser *et al*. 1995). Often, these towns are located in geographically remote places ranging from isolated plains or mountainous locations. Throughout time, there is a trend around the times in which these towns were established. Most of these towns were developed during intensive mining booms between the 19th and 20th century, while some of these towns were developed during times when production was typically at its peak (Mueser *et al*., 1995). The decline of these towns is mainly caused by the need to benefit from economic booms and industries without strategically planning for the future. The economic booms and busts of such towns often require an increase and dispersion of critical labour supply. The living and working conditions of such a bust are often left in adverse conditions. As a result, complementary sectors to the mining/ manufacturing sector go through economic decline. Given such rapid wealth and growth, complementary sectors tend to grow. As a result, the economy is left under unusual situations where localities remain less dependent on dominant industries as demand for non-basic goods could be increasing, while dependents of the dominant sector are left unemployed and often vacate the town after mine/factory closure (Graves *et al*., 1995).

Globally, the need for local labour and housing investment models to avoid situations where towns become ghost towns has increased. The importance of understanding the sources and dynamics of ghost towns through an analysis of the impacts of economic boosts and busts throughout history has indeed reduced the number of Ghost towns. Surely the modelling the future empirical extensions should, without a doubt, enable testable predictions of the future of towns at risk of becoming ghost towns in the future (Graves *et al.*, 1995).

Negative externalities such as poor amenities and poorly maintained public facilities influence the ability of firms to attract labour. Also, a rapid decrease of the population often leaves ex-mining / manufacturing towns with populations, thus constraining local businesses and causing a declining economy. Ghost towns are usually a result of such externalities. According to Anand and Sen (2000: 2005), a ghost town is a town that has been abandoned due to an economy that has failed or because of human-caused disasters/ natural disasters such as mineral or resource depletion,

floods and wars. In his research report, the potential primary cause of the closure of mines is the shortage of financial resources and the depletion of a mineral.

Anand and Sen (2000:2015) state that," The goal of conserving productive capacity does not necessarily lead to the obligation to leave the world as we found it in every detail. Based on this, the future of the coming generations needs to be conserved. Although the preferences of future generations are unknown, sustainability is applicable only when the capacity to produce well-being for the future has been conserved (Anand and Sen, 2000). Preservation of the resources is essential as the society's extensive stock market is to be maintained, so the duration of reproducing capital is prolonged (Anand and Sen, 2000).

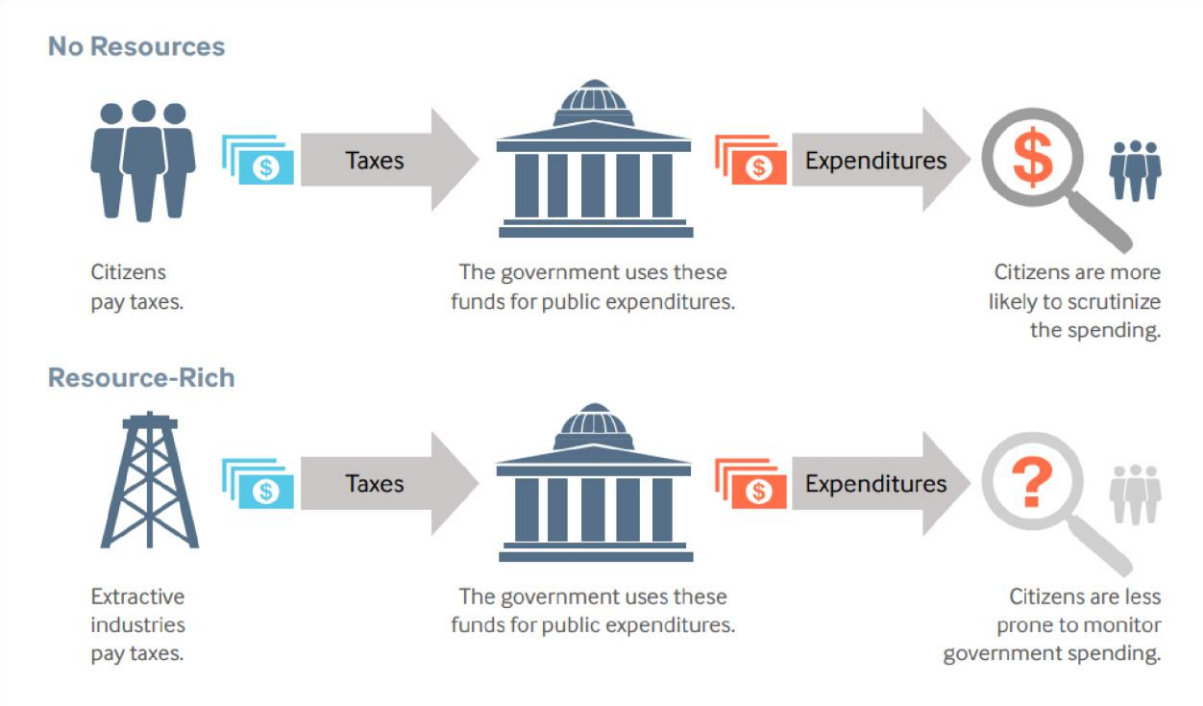
The lifespan of a mine is often dynamic and variable; as such, it is often difficult to plan for the socio-economic future of a mining community. Factors such as the market, prices and technological costs directly influence the lifespan of a mine. As such, these factors fluctuate, the uncertainty of the lifespan of the mine increases. Ackerman et al., (2018) argue that mining communities are in existence primarily because of the discovery of a mineral; only in a few cases does a mining town function well preceding the mine closes. Based on these realities, leaders often advocate and work towards economic diversity beyond mining. However, one may argue that given that small and medium enterprises are strengthened and stimulated in Jwaneng, then growth and money circulation will keep the local economy of Jwaneng stable and functional for a more extended period. Such stimulation is therefore essential in any small mining town as it works as a tool that works towards the creation of employment opportunities and economic benefits that will ultimately have a positive impact on the sustainability of the town and its economy (Ackerman et al., 2018).

2. The resource curse

The literature in this section intends to explore why some countries prosper, and others remain stagnant even though they are resource-rich countries. This section aims to understand what the developed-countries are doing right to get a better grip on the challenges and hurdles facing developing countries. The term resource curse refers to the socio-economic and environmental changes that are common in resource-rich countries (NRGI, 2015). The reality is that resource-rich countries in the globe often find themselves in devastating circumstances which are usually caused by the failure to utilise their natural resources to their current and future advantage. Resource-rich countries often are more prone to economic stagnation and decline (NRGI, 2015).

However, this does not necessarily mean that resource-rich countries are set to experience the resource curse. NRGI (2015: 1) states that "Countries with non-renewable resources face both an opportunity and a challenge. When used well, these resources can create greater prosperity for current and future generations; used poorly, or squandered, they can cause economic instability, social conflict, and lasting environmental damage." As such it is essential to realise that while resource countries may experience difficult challenges, these may be mitigated by taking decisions that help avoid the resource curse and utilise the availability of resources positively (NRGI, 2015).

Figure 6: The resource curse



https://resourcegovernance.org/sites/default/files/nrgi_Resource-Curse.pdf
Accessed: 20 February 2019

Institutions are essential factors that determine whether a country will be rich or poor. Developed countries have good institutions, while undeveloped countries have corrupt institutions. Therefore the correlation between poverty and corruption is direct. The wealthiest countries in the world are merely invariable also the least corrupt ones. Moreover, the most corrupt countries are also the poorest. When countries are corrupt, they cannot collect enough taxes to get the institutions needed to escape the poverty trap (Humphrey, 2012). Half of the wealth of the world's poorest twenty countries goes into offshore accounts. Lost revenues in these countries amount to between $10 and 20 billion dollars a year. As such, good governance and effective management

of resources is the key to economic sustainability. Resource-poor countries prosper more because they have diversified their economies and have managed to strengthen all their potential sectors.

Given this, one may argue that the more natural resources and exported goods a country has, the lower economic growth. Countries with less or no natural resources surprisingly grew the fastest. During the 18th century, Germany, Brain and the United States developed tremendously as a result of their natural resources resource reserves. Back then, transport costs were very high and so having resources gave an edge. However, due to revolutions in global transport and energy today, countries can easily import these commodities from outside (Humphrey, 2012). Countries like Japan and Korea became world-class steel producers despite their complete dependence on iron ore imports. Therefore the question is if having natural resources does not give countries a significant advantage today is it disadvantageous? Another common aspect that plagues these nations is the lack of entrepreneurship with a blooming natural resource sector wages tend to go up in this sector (Alexeev and Condras, 2009). With high wages to be earned, people now prefer to work instead of taking the risk of starting their own business. Eventually, this leads to the death of innovation and overall development, as well.

Of all the countries worldwide, only twenty-five of them is doing well economically while the majority of the countries in the rest of the world are poor. Countries all around the globe have realised the danger of not growing their economies as this will set their future generations up for extreme poverty. The economy is growing at a slow pace, and there is hope that one day, there will be hope for a more prosperous future. According to Humphreys, (2012) Countries such as Zimbabwe with a slow growth rate of 3.5% will only qualify the country as a rich country in hundreds of years. The resource curse theory argues that socio-economic decline in developing countries may be caused by different factors such as poor governance and poor resource management (Humphreys, 2012). Given this, the literature in this section intends to explore why some countries prosper, and others remain stagnant even though they are resource-rich countries. This section aims to understand what the rich countries are doing right and get a better grip on the challenges and hurdles facing developing countries (Humphrey, 2012).

Another rare phenomenon is seen in Iran, despite being exceptionally resourced manufacturing exports in Iran have gone up because the government kept energy prices such as electricity very cheap for companies and provided these companies with many more nations may be headed towards disaster.

The notion that the depletion of natural resources is a curse rather than a blessing has become a norm. Sachs and Warner (1995) argue that resource-rich nations or mineral exporting nations are often associated with poor development prospects. The fact that most of East Asian, including the Republic of Korea; China; Hong Kong and Singapore are resource-poor countries, further emphasises that economic sustainability is determined by economic growth and development. There is certainly evidence that a disproportionate number of the poorest countries are dependent on mineral exports.

Alexeev and Condras (2009) argue that countries that fail to develop remain resource-dependent, while countries with resource abundance may be linked with a higher potential for economic growth. This character means that many rich countries including Canada, Australia, Norway, the United States, and Latin America's are top performers in the world's economy, while countries such as Chile are mineral dependent and its economy is developing slowly. In Africa, the two wealthiest countries, South Africa and Botswana, owe much of their wealth to gold and diamonds. In short, resources are not necessarily a curse, but many countries have squandered their resources, and in some cases, the presence of mineral resources may have contributed to economic stagnation or decline. What is it about mineral depletion that can make things go wrong? Surely this calls for Local economic development processes to be taken seriously in order to conserve a better future without the extracted commodity.

The evolution of Natural Resource Curse

Recently literature is written by Badeeb et al., (2016) on the evolution of the natural resource curse, challenges the view of natural resources being a "curse". In the 1980s, literature began to realise that resources are indeed a blessing for developing countries. This new understanding emerged and significantly increased over time. The approach to viewing natural resources as a blessing came about when the understanding that the role that minerals play in developing countries today differs from the role they played in the late 19th century was realised (Badeeb et al., 2016).

Frankel (2010) brings to light the potential and possibility of an inverse relationship between natural resource dependence and economic growth. In this approach, Frankel studies the Dutch disease and the economic cycle and how they have affected institutional performance and the future of the economy. From this new way of understanding the possibility of an inverse relationship between natural resource dependence and economic growth, Sachs (2007) then provides ideas to help countries overcome the resource curse.
The ideas are as follows:

- Natural resources should offer an income stream from resource extraction as this will boost the living standards by financing public and private consumption.
- Natural resource extraction should finance higher levels of investment, both directly from the extraction of natural resources.
- Resource income is mostly used to finance the public sector, and as a result, this may obstruct spending on developing public goods and services, including the development of infrastructure. Therefore there is a need to spend on developing the built environment.

Van der Ploeg, (2011) then brings into perspective that the resource curse can be avoided by resource-rich countries with good institutions, trade transparency and high investments in exploration technology. Proper planning and management of the use of resources will be of great benefit to the development of urban areas. Maximising on the returns of resources can, in turn, lead to well-managed cities and towns where minerals are extracted, thus leading to urban sustainability and a stable economy for the future.

Humphrey (2012) argues that countries that fail to develop remain resource-dependent, while countries with resource abundance are linked with a higher potential for economic growth. The ability of countries to diversify their economy insinuates that countries such as Canada, Australia, Norway, the United States, and Latin America's have a well-performing economy. On the other hand, countries such as Chile are mineral dependent, and its economy is developing slowly. In Africa, countries such as South Africa and Botswana owe much of their wealth to gold and diamonds. In short, resources are not necessarily a curse, but many countries have squandered their resources, and in some cases, the presence of mineral resources may have contributed to economic stagnation or decline. What is it about mineral depletion that can make things go wrong? Surely this calls for Local economic development processes to be taken seriously in order to conserve a better future without the natural resources (Humphrey, 2012).

Botswana Proves that Africa can avoid the 'resource curse.'

Botswana is the top producer of diamonds worldwide, and according to (Bauer et al., 2013) it is a country where proper management of resources has yielded some of the most tangible benefits for the country. Some of the key measures taken by the government to ensure that these gains made by the diamond industry may be transferred into the wellbeing of the population and the reduction of poverty have been included in policy (Bauer et al., 2013).

Recently, some resource-rich countries have defied the odds as they have experienced positive and fast economic growth. This turnaround has proven that the anticipated negative impacts of

natural impacts on economic growth are not applicable in all cases. Cross sectorial studies after the year 2000 have proven that the curse hypothesis needs to be studied in a time cautious framework in order to remain more transparent and applicable (Bauer et al., 2013). Based on this, it worth mentioning that the resource curse hypothesis needs to do in different countries bearing in mind that each country has unique growth determinants and economic growth may occur at different periods. Moreover, this research report speaks to the dangers of resource dependence and the impacts it may have on economic growth.

Botswana has managed to overcome the resources curse and has managed to avoid the Dutch disease by investing in public goods and infrastructure. Also, the Government of Botswana went the extra mile by taking measures that successfully helped boost productivity. This approach was made possible by escaping import substitution policies. The volatility curse was prevented by ensuring that the public expenditure and the country's revenues are not coming from the same pot. By doing so, the government were able to create a savings fund which ultimately avoided the pro-cyclical general nature (Bauer et al., 2013).

1. 3. The bad governance curse

Botswana has proven that a Sub-Saharan African country can live a sustainable success story (Mkandawire, 2001, Acemoglu, Johnson and Robinson, 2003, 2010; Beaulier and Subrick, 2006; Leith, 2005; Lewin, 2011; Mbabazi and Taylor, 2005).

Despite the inappropriate political system in Botswana, it is evitable that the multi-party state is well managed and is functioning well. The Botswana Government has been recognised as a leading Regional example in regards to investing significantly in education, health and infrastructure. Botswana has mainly benefited from exporting its natural resources. However, Botswana has fallen short in maximising opportunities to develop other sectors in the economy. The country becomes stuck in a phase of overlying and depending on natural resources and export-led growth lacking the ability to diversify the economy and develop other sectors

Mineral-based countries in Africa and some international countries tend to follow a trend of bad governance. Globally, the term good governance is also known as "good economics bad politics" whereby the government owns all mineral resources and as expected, most if not all revenues belong to the government. The dominance of government ownership of all-natural such as corruption which has resulted in insufficient loses. Throughout time, mineral-based economies have followed the trend of malicious dictatorship and predatory regimes that have caused civil conflicts (Collier and Hoeffler, 2004).

Botswana has had good progress by avoiding situations caused by mismanagement of its resources. Botswana's success may demonstrate luck as it has a relatively low population with fewer chances for ethnicity polarisation/division and conflicts that may arise. The government should be commended for this as it has maintained and designed the conditions of good governance. The government deserves all the credit as it also ensures a stable social and economic progression. The establishment and the rule of law on property rights has created transparency and to extend respect for property rights throughout the country. Backed up by the Tswana Tribal Tradition in the form of kgotla also known as the consultative institution, the delegation of the rule of law on property rights in less developed areas has undoubtedly played a significant role in building trust and confidence in the Government of Botswana. Surely this gives a sense that the government has the people's best interest at heart and seeks to support and promote development (Collier and Hoeffler, 2004).

Acemolglu and Robinson (1999) argue that the critical explanations of development success are in the implementation of the rule of law and the reinforcement of property rights. Emphasis on the importance of pre-independence colonial regime highly determines the aftermath of development success post-colonialism. For instance, in sparsely populated areas, the colonial regime was more exploitative and did so with no restrictions from the rule of law on property rights. Botswana's colonial history turned out to be unique as its rule of law remained the same. Unlike most African countries, Botswana was colonised for different reasons either than an economic or strategic advantage. The Botswana Government did not impose an extractive regime. The Role of democracy was indeed a controversial one; the country has managed to maintain and practice parliamentary democracy (Collier and Hoeffler, 2004).

Although Botswana has been perceived to have one of the best governance, the countries democracy is not perfect. The country has been ruled by only one political party since it gained its independence in 1966. The country has tribes that are treated as a minority such as the San; nevertheless, Botswana still operates democratically. The government of Botswana may well be commended for its responsiveness to the needs of the people and has demonstrated to be fair and highly transparent mainly. While some may argue that democracy is not necessarily a valuable tool that stimulates economic growth, an argument may arise that East-Asian economies as well as Latin American economies have admirable economies but were not led by a democratic government (Acemoglu, Johnson and Robinson, 2003).

Some argue that democratic governance, to a certain extent, may delay economic development. Countries such as India are led by democratic governance; however, they still struggle to develop their economies for the better. In the case of India, democracy has proven not to be sufficient or not to be a toll that stimulates economic growth (Acemoglu, Johnson and Robinson, 2003).

Botswana carries a unique governance model. Democracy works best for Botswana and proves to be an essential catalyst for economic development. Although the impression that good governance guarantees economic growth and success is highly speculative, it is evident that democratic governance is effective. Resource-rich countries need to be responsive to the needs of the people and to provide economic equality for all while respecting the law and maintaining peace (Collier and Hoeffler, 2004).

While very few resource-rich African countries are productively governed with peace and harmony like Botswana, it is, to a certain extent, the democratic institution establishment at independence are very crucial. Determining economic success and proper LED processes on the contribution made by the leading government is, to an extent, misleading. Good governance should not be a unique tool used to determine economic sustainability (Acemoglu and Johnson, 2003).

When it comes to matters of mineral exploitation, leaders are always cautious of how resources were managed in their country. The rights of the states versus the rights of other external parties were never equal. While the most significant diamond deposits we discovered president Khama's homelands, he chose the well-being of the whole country over the wellbeing of the Bangwato. The dedication to no corruption is what made Botswana's success story. The government took it upon their hands to asset all the mineral resources rights to the state, after independence the government of Botswana reached an agreement with all tribal authorities, the agreement stated that the government has all rights over mineral resources. Essentially the decision allowed for the management of minerals to be in the hands of the government. Botswana's case is different and highly commendable; the government of Botswana avoids corruption by all means and ensure that the well-being of the country is in their hands (Acemoglu and Johnson, 2003).

Will good governance cure the resource curse?

Stevens (2015) questions whether good governance is a remedy for avoiding the resource curse in his research. The report titled: The Resource Curse Revisited. Stevens (2015), interrogates the concept that good governance is a tool that quickly dismisses the resource curse.

- ***Lack of diversity***

He speaks on the danger of lack of diversity; he argues that instead of questioning the negative impacts extractive industry we should rather question why the extractive industry did not have a positive impact on the economy even post mine closure? Stevens takes a unique stand when he says exhaustible resources should not be seen as an income, and instead, they should be seen as an opportunity to rearrangement the national portfolio assets. Diversifying the economy by investing in different sectors can effectively avoid the over-reliance of the country's economic

future on only one sector (Stevens, 2015). This approach is fundamental and should be taken today, while the resource has not depleted. Surely the lack of diversity is the core reason why the resource curse is a common phenomenon in resource-rich economies (Chatham House, 2016).

- ***The direction is better than speed; many countries are going nowhere at a fast pace.***

Stevens (2015) also outlines that every resource-rich country needs to identify the right and most convenient place for its economy to develop. Some countries may need to slow down their pace or speed up their pace towards development. Generally, Stevens (2015) highlights that slowing down the pace may be a critical decision for building institutional capacity as this will allow strong economic linkages to form between the public and the private sectors. A clear direction towards economic sustainability is much more critical than the speedy pace that leads nowhere, as such local authorities should be cautious of rushing into implementing LED processes without understanding the dynamics of Local Economic Development processes (Stevens, 2015).

Resource-rich countries often find themselves in situations where they take long to plan for a future without the extracted commodity. Nonetheless, the uncertainty of when the resources will deplete leaves countries with unrealistic expectations of a rapid and radical economic transformation, thus putting pressure on the government to proceed quickly (Brunnschweiler, and Bulte, 2008).

Stevens (2015) ultimately tries to outline that there is no universal way to manage resources and work towards economic sustainability. All countries, cities and towns have different challenges and backgrounds. Every country, city or town has its comparative advantage. While others may excel at maintaining good governance and resource management, others may succeed at diversifying the local economic development. Therefore based on this, it is evident that there is no single answer to achieving economic sustainability; however planning for resource development and management requires fundamental rethinking (Stevens, 2015).

In extreme cases, the abundance of a natural resource without proper management may cause corruption. How mineral revenues are collected may easily result in a lack of accountability and transparency (Chatham House, 2016).

Exhaustibility of natural resources

Resources are indeed a blessing, both in the short and the long run, mainly because they do make a positive difference during their existence. While this may last for a particular time, resources do have the potential to become a blessing even in the long run only if they are conserved in the form of physical and human capital or the form of financial assets. (Collier and

Hoeffler, 2004). The depletion of any resource usually happens suddenly or unexpectedly as such this transformation may be planned for by accumulating finances and diversifying the economy, so there are alternating sectors that drive the economy. Based on this preparation, future generations will surely benefit from this (Collier and Hoeffler, 2004). Therefore the phenomenon of natural resource exhaustibility raises awareness to mineral led economies to create sustainable plans that will be achievable and beneficial to future generations (Collier and Hoefflier, 2004).

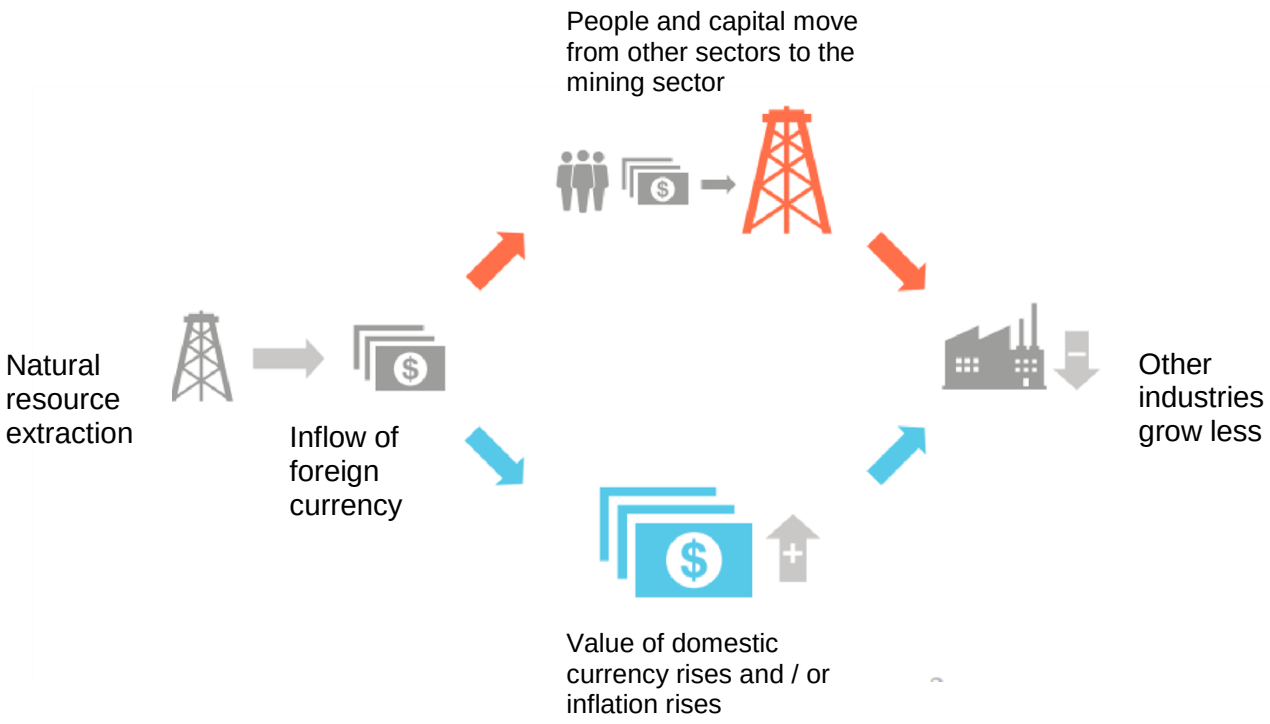
The Dutch disease

The Dutch disease is an economic term that is used to describe the adverse effects that often come as a result of the fluctuating and rapidly booming resource exporting sectors (NRGI, 2015). According to NRGI (2015: 2) "A large increase in natural resource revenues can hurt other sectors of the economy by causing inflation or exchange rate appreciation and shifting labour and capital from the non-resource sector to the resource sector." Venezuela, Chile, Trinidad and Tobago demonstrated that the discovery of a mineral leads to an immediate rise in international prices which eventually leads to increased income and expenditure. As long as some of the increased expenditure goes to domestically produced goods, there will be a real appreciation of the currency, which causes productive resources to move from non-mineral traded goods, the output of which declines, to nontraded goods, the output of which increases. This trend then introduces the notion of economic diversification which looks into equally distributing attention and efforts from mining led sectors to non-mining sectors (NRGI, 2015). The revenue can finance the resulting excess demand for tradable goods from the mineral exports because an increase in income, expenditure initiates the entire process, and consumption, it is not clear why it should be thought of as a disease (Basdevant, 2008).

The presence of positive externalities in the declining sector and the declining trade of goods is thought to have spillover effects that contribute to long-run growth and industrialisation. Hence, the real appreciation caused by mineral exports is said to cause "deindustrialisation," contributing to poor long-run performance. It is argued, the mineral sector fails to stimulate the non-mineral sector through linkages to the rest of the economy (Lewin, 2011). Against this effect, one must weigh the advantages that minerals bring in terms of increased saving and hence, investment, which should offset any loss of competitiveness caused by the real exchange rate. Moreover, because the government is usually the chief beneficiary of the resource revenues, the increase usually eases constraints on public goods, such as infrastructure, education, and health, which should contribute to growth and industrialisation (Lewin, 2011). If a private investment or public goods expenditure fails to materialise, the problem lies not in the real exchange rate but rather in the failure of financial markets to allocate the saving and investment productively or of government to invest wisely (Lewin, 2011).

Based on all of the above, the negative impacts caused by the Dutch Disease may be reduced by transforming resource revenues inflows into investments that strengthen other sectors, the figure below demonstrates the process of the Dutch disease.

Figure 7: The Dutch Disease



Economic Sustainability and the benefits of Local Economic Development and Growth

Sustainable development is best defined by Ekins and Max-Neef (1992: 69) who define it to be “the process of economic progress of economics which contributes to the improvement in human welfare”. The Minnesota Department of Energy and economic development (MDEED) believes that the creation of jobs is not necessarily the cure for economic sustainability. Instead, the creation of employment is life-sustaining and creates an opportunity for growth (Eisinger, 1988). As such economic development should strive to concern and involve the people through different ways such as:

- Equipping the local communities with education, health and nutrition so that they can contribute positively to the socio-economic and political structure in their countries and local communities (Smit et al., 1996).

- Introducing inclusive participation in all the planning dimensions as a means to achieve effective development strategies (Smit *et al.* 1996).
- Economic development should help create developments that are for the people. Developments that meet the needs of the people and create sound opportunities for all without compromising the needs of future generations (Smit et al., 1996).

In the 21st century, prosperity is said to be focused mainly on maintaining a good standard of living and relatively high quality of life for all (Cole et al., 2001). In order to reach this achievement, a comprehensive model that identifies the economic value of the natural and human capital as an essential aspect to maintain should be taken into account. This recognition is essential as it considers economic, environmental and social responsibility and ultimately focuses on the most critical factors for success. The focus on community-wide and regional collaboration surely does justify economy development as it primarily seeks to create jobs and create independent livelihoods in different sectors. Such livelihoods have brought out the awareness that being excessively reliant on a depleting commodity is a risk; therefore, the locals need to recognise that they need to plan for the future without the diamond resource. Though this future maybe decades from today, individuals need to learn to conserve and plan for future generations. (Ekins and Max-Neef, 1992).

At times the economic development through the increase of small-medium enterprises is a responsibility that is perceived to be faced by the private sector. However, a needless qualifier, by this, it is essential to realise that economic development is to be practised by the public sector as well. Economic development is not restricted to be practised by the private sector only. The public sector may work towards economic development by ensuring and increasing public employment. In the case of Local economic development, jobs are created locally, and they often come as a result of foreign investment in local areas and some instances, jobs are created as a strategy to fulfil the upliftment of different sectors other than the dominant sector. However, it is essential to note that each of these processes is made possible by the by private investment, while the public sector may either partner with the private sector or make the process of investment easier for the investor. Generating jobs is indeed essential for various reasons such as reduced unemployment, more income, more significant tax revenues, lower-cost to the government and a productive economy (Ekins and Max-Neef, 1992).

Petrin et al. (1994) argue that, in order for development to progress in any region or town, entrepreneurship should be used as a tool that stimulates and fuels the rate of development. Countries, regions and communities have demonstrated that the promotion of entrepreneurship has resulted in higher growth rates. However, poor governance and economic management may distract the role that entrepreneurship plays in the development of the economy. An entrepreneurial economy differs from a non-entrepreneurial economy in numerous ways. The economic vigour and structure of an entrepreneurial economy are often stable and ever active. Such an economy may be seen as sustainable since innovative ways are used to secure a future without having to be over-reliant on a specific commodity that will eventually deplete (Petrin *et al.*, 1994). The level of competitiveness amongst entrepreneurs often triggers the social liveliness of an entrepreneurial economy. Such an economy is essential for a small town like Jwaneng since it will encourage the locals to come up with innovative business ideas that will, in turn, guarantee a good quality of living for all (Salvatore, 2004).

Entrepreneurialism is vital as it diversifies the economy thus guaranteeing economic resilience. In response to this, the argument that economic vitality leads is a necessity for social vitality (Petrin et al., 1994). By this Petrin et al. (1994) argues that without economic vitality, factors such as education, the development of social facilities as well as services and basic needs and services cannot be developed and maintained in an area for long term purposes. It, therefore, safe to mention that social vitality cannot exist without economic vitality. However, it is worth mentioning that economic vitality may only exist if the economy is managed well through adequate use of capital raised from taxes and levies. The government makes use of these funds to provide the nation with the available services (Salvatore, 2004).

Successful promotion of LED in Mining Communities

Projects on the De Beers Koffiefontein mine in Namibia have attempted to promote LED in mining communities. These projects include the Mining, Mineral and sustainable development projects which all in all seeks to promote advanced planning and a transparent relationship between the company, the local government authorities, the community and Non-profit organisations (MMDS,

2002). This close relationship is essential mainly because it will lead to successful mine closure, and post mine closure stability will be achieved (MMDS, 2002). An early commitment to economic sustainability post mine closure is fundamental as it gives room for community consultations and incremental planning for the future without the extracted mineral commodity. In addition, early preparation for the future may lead to higher efficiencies and improved management of resources thus leading to sustainable mining (World Bank, 2002)?

Community consultations are an essential approach to achieving LED in mining communities as they bridge the gap between cooperate and community expectations, they also tap into the common understanding of the company knowledge and the expectations and different experiences of the community. (World Bank, 2002: 14) states that "One mitigation strategy that has to be employed early in the mine closure process, is that communities have to be assisted by government and the mining community in realising that they need to reduce their dependency on the mine" Based on this statement, it is therefore essential to recognise that the diverse roles of stakeholders do form an essential part of the advancement of LED in Jwaneng, Botswana as a tool to work towards an economically sustainable mining town.

The role of Government Institutions in LED processes

The Central Government plays a vital role in facilitating and continuously contributing to the local economic development processes (Scott, 1995). The several ways in which the government may contribute to LED processes are as follows:

- The government may contribute by establishing detailed policy and frameworks which allow LED to take place (Dale, 2002). In the case of Jwaneng, Botswana, the government has put forward the Urban Development framework.

- The government may contribute by providing public services and well-maintained infrastructures such as water supply infrastructure, transportation networks and public facilities (Scott, 1995). This provision will make entrepreneurship and the operation of small-medium enterprises manageable.

- The government may also contribute to LED processes in small towns by providing management and co-ordination through regional

authorities. In addition, the government may contribute to LED processes by supporting the LED to acquire credibility and recognition from stakeholders (Scott, 1995).

- Government contribution towards LED processes may be made by initiating the development of institutions such as education that will, in turn, contribute to the enhancement of LED processes.

- Finally, the government may also create networking and collaboration opportunities for the locals involved in LED processes to interact and network with relevant stakeholders, such as NGOs and government authorities (Dale, 2002).

- The government has the power to encourage state-owned entities as well as community programmes that are highly interested in community participation and the involvement of the locals in addressing their challenges and planning for their futures (Dale, 2002).

The role of Regional / District and Local Authorities, and Municipalities / Councils in LED processes

Local authorities often take the lead in Local Economic Development processes as they advocate strongly and more effectively for the local community. Because of this reason, the local authorities can provide adequate leadership for the local community without the national government; this is because they understand the dynamic needs of the community (Dale, 2002). The regional authorities work closely with the local authorities in ensuring effective LED processes, particularly in district centres.

Based on the above, the regional and local authorities and municipalities/councils can contribute to LED processes in several ways, such as:

- Guaranteeing that local regulations and by-laws work for the best interest of small-medium enterprises, the promotion of new businesses and finally, the expansion and stability of existing businesses. This contribution may is best accomplished by developing policies that make businesses easier to establish and operate. Policies should, in turn, address issues concerning labour, tax, business protection and trade policies.

- Contribution towards LED development can be made by enhancing the existing business development policies so that they promote the growth and stimulate the development of local businesses. Partnerships between Local businesses and Foreign/ external investment on local projects and developments should be strongly encouraged, as this will create favourable conditions that will keep the local economy sustainable. Such collaboration will create jobs for the local labour force. While this may require financial injections, the regional and local authorities may enhance the LED processes by proving Small- medium enterprises with financial assistance. Given this useful governance tool that works towards reducing poverty, the local authorities may encourage youth in small towns to practice entrepreneurialism and develop innovative business ideas.

- Developing a local economic framework is essential as it will strategically detail out the local social, economic and environmental struggles in conjunction with all relevant stakeholders. While a similar policy exists in Jwaneng called the Urban Development Plan (JUDP), what seems to be lacking is the economic breakdown of all the desired plans for the future of Jwaneng. This, therefore, makes it difficult to develop realistic and sustainable plans.

- The regional and local authorities may contribute to LED processes by instigating an efficient time distribution of updated information and solutions to challenges through public meetings, consultations and announcements.

- The regional and local authorities could contribute to LED processes by providing incentives and rewards that will eventually attract investment into the development of towns. This approach will encourage individuals to consider and start their businesses. Besides, the local government can protect the business that has contributed to the towns overall economic diversification through the formulation of bylaws that protect and work for the best interest of the local SMMEs (Edwards *et al.,* 2002).

- Contribution towards LED may also be made by implementing land-use policies that enable Local Economic Development Strategies to transpire at ease (Edwards *et al.,* 2002). This may be achieved by ensuring town planning is following towns development plan. The availability of land should safeguard the primary purpose of local economic development and support the ultimate goal of working towards economic sustainability.

- A bottom-up approach must be implemented as a means to support LED processes must be adapted through the co-ordination and involvement of stakeholders such as foreign investors, national role players and the local community in decision making, particularly in issues that concern prospects and economic development (Edwards *et al.*, 2002).

- Introducing new developments in and around small mining towns such as Jwaneng may lead to the attraction of investors. Developments such as the provision of land to expand or create accessible industrial sites or retail spaces may be advantageous to the LED of Jwaneng. Given that the town is located along the Southeast corridor that links Namibia to South Africa is an advantage of a note. This, therefore, should Encourage projects to re-stitch the town and revitalise the local economy. In the case of Jwaneng, there is a need for more pedestrian-friendly zones around the retail strip in Jwaneng; this contribution will be detailed out in the later stages of this report (Edwards *et al.*, 2002).

The Mining Company can contribute to LED processes by:

- Processes are developing and training local community members or sponsoring students as a way to address LED. The Jwaneng mine does sponsor bright students by paying for their studies; the mine may also be commended for its training programmes that are often awarded to workers as a means of them expanding their knowledge.

- Mining companies may contribute to LED processes by transferring ownership by selling fixed assets to capable local individuals within the town or the local business community.

Local Community can contribute to LED processes

The local community may best voice their concerns; however, the local community s\often needs some formal representation in order to gain recognition. NGOs are

an organisation that best represents the local community. The Local community may work toward LED by:

- Showing interest in participating in shaping the economic development of Jwaneng. Interest may be shown by attending and at times, organising the workshops, community meetings with stakeholders (Edwards et al., 2002).

- The local community ay contributes towards LED development by taking part in the community projects and programmes that take into consideration the vulnerable groups such as the disabled, women and the elderly and children (Edwards et al., 2002).

- The local community may show their innovative ways of eradicating poverty. They could collectively start community projects such as gardening. The community may also attempt to solve their problem by doing for themselves; this will show the local government that the community does not expect to spoon-fed. Demonstrating some sentimental value in a particular project will encourage the local community to take care and maintain the work of their own hands. This harmony may only be fulfilled once the local community selects its trustworthy community leader and management (Edwards et al*.,* 2002).

- Initiating and driving their Community economic development strategic plan. This will be an essential contribution to the LED strategic plan.

- Building a close and transparent relationship with the local authorities as well as other relevant stakeholders. Creating such a relationship will make it easier for the local government to recognise the voice of the local community, thus allowing for a bottom-up approach (Edwards et al., 2002).

NGO's can contribute by:

Non-profit organisations are well known for representing communities and being the voice to the voiceless. NGOs may contribute to the LED processes by:

- Providing a vision for local economic sustainable that is known and shared with different stakeholders.

- NGOs may contribute by delivering assistance to the local community in the field of economic development. This delivery may be done by providing support for Small Medium Enterprises and well as supporting local businesses on projects that have the development of the economy as their primary goal. Such businesses often, crafts and arts, agriculture, woodwork and needlework, such SMEs lack recognition and require the support and representation from a more formal body such as NGOs. NGOs together with the local authorities can provide such SME with stalls or financial grants that help keep them running with ease (Edwards et al*.,* 2002).

- Assisting with the LED infrastructural development projects, since NGOs exists as a mediator between the local government and the community, however, the NGOs do not get the necessary priority and recognition from the government (Edwards et al*.*, 2002).

- NGOs may also transfer skills to grassroots communities to the local community.

Based on all of the above, it is evident that LED processes in any town should be a controlled process which takes into consideration the different perspectives of all stakeholders. Such a process is essential as it enables different stakeholders to share a vision that is dedicated to the development of the local economy (Edwards *et al.*, 2002). The literature derived on LED in small mining towns demonstrates that there is a need for local stakeholders to plan for the future of their towns. As such, different stakeholders should contribute differently to the processes of Local Economic Development. Cities such as Johannesburg, Kimberly and the United Arab Emirates have benefited from the extraction of minerals. The dedication towards diverse local economies led to an improved local economy and a prosperous future post mine closure. These cities focused on strengthening their local economies so that the local communities will not over-rely on just one commodity (Edwards *et al.*, 2002).

Phase 2: Possible lessons from different case studies

Introduction

Mineral-based economies are often challenged by the increase in the economic development of the mining sector, while other sectors remain stagnant. In Botswana, the mining sector has increased its production over the years while sectors such as the agriculture sector have declined. This section of the literature chapter focuses on investigating international and local mining towns. The different challenges experienced by different towns are discussed to outline the lessons that could be learnt. The sample case studies were selected randomly from international, African and Botswana case studies.

1. Case studies of Carletonville and Koffiefontein

Carletonville and Koffiefontein in South Africa are particularly relevant case studies for in this research report because they encountered similar economic changes. The discovery of minerals in these two towns ultimately led to the LED transformation with the agricultural sector being the most active sector after mining. Post mine establishments in these towns resulted in the development of LED changes. As a result of this, the towns encountered several changes which include the development of infrastructure and the growth of the towns as the mines expanded (Helmuth, 2009).

The work opportunities that came along with the establishment and expansion of the Carletonville and Koffientein mines surely had a positive contribution to the LED transformation as they increased the local labour population. The expansion of the mine directly influenced the increase in population in Carletonville and Koffientein. The establishment of these two towns was undoubtedly crucial as the discovery of minerals led to their LED. Shortly after the mines were established, numerous economic changes took places such as the development of shops and the growth of agricultural activities and craft activities. The mining companies in these towns contributed to the development of the towns by developing facilities such as schools and recreational facilities (Helmuth, 2009).

In the case of Carletonville, the availability of underground water was in excess. As a result, the mining company decided to pump out the surplus water gradually, and it would then be used for other purposes (Helmuth, 2009). In the 1960s, the depletion of water then left the community leaving the town with fewer agricultural activities. The agricultural sector then lost its position as the prime sector, mainly because of the negative impacts that the mine had on the town. Some of these negative impacts include the increasing number of sinkholes that occurred as a result of

intense ground movements during blasting. Lives were lost due to the sinkholes. Based on this, although the mining company developed the town and played a role in ensuring LED transformation, the mining company has had negative impacts on the environment and the safety of the local community.

Mine closure in Koffiefontein in 1982 left the town economically stagnant, and businesses declined while in Carletonville businesses shut down. From these two case studies, a few lessons could be learnt for Botswana's very own copper and nickel mine in Selibe Phikwe.
The closure of the BCL mine led to the economic stagnation of the town, and later businesses shut down. The effect of mine closure became the primary catalyst to Local Economic Development. The implementation of the LED through the empowerment of small businesses in the agriculture sectors in Carletonville did not necessarily guarantee economic stability and sustainability. Instead, it seemed like it is the most straightforward approach to keeping the town economically active, even post mine closure (Helmuth, 2009).

While the solution to economic decline, may seem to be mine closure policies and LED programmes it is important to note that the lack of mutual co-operation, exchange of ideas and close collaboration between the local government and the local mining industry. Long term planning pre-mine closure is the cure or solution to maintaining economic stability and sustainability post mine closure (Van Eerden, 1996).

2. The Case Study of Welkom

Welkom is a small town that was founded in 1947 as a private company town. The discovery of gold resulted in positive changes in the town. The economic and social effects of mine closure in Welkom led to the different attempts in the Matjhabeng area. The discovery of gold in Welkom benefited the town in numerous ways, such as the availability of labour in mines (Nel and Binns, 2002). The discovery of gold in Welkom also led to significant changes such as an improved town planning department which would actively plan the development of the town in order to ensure sustainable development. Complementary industries such as the construction industry have contributed towards the development in

Jwaneng. Developments in Free State, Welkom continued for over three decades leaving the town in an excellent socio-economic state, until the 1980s when the gold prices dropped, and the mineral eventually depleted following mine closure (Helmuth, 2009). The closure of the mine brought about socio-economic devastations which negatively impacted the community of the town. Some negative impacts include the retrenchment of workers; furthermore, the families of the retrenched workers are impacted as they relied on the monthly remittance from the mine. As a result, most of the unemployed miners ended up in poverty and reliant on government funds. Also, the lack of adequately targeted recovery plans was problematic to stakeholders since the local community members together with the local organisations were left with the burden of experiencing the negative impacts of the Welkom mine closure (Helmuth, 2009).

Developments in government gave limited support while the national government gave no direct support. The rapid decline in the economic stability and activeness in Welkom, as well as the neighbouring towns, drove the local officials, the local business community and the local mining community to work collaboratively (Helmuth, 2009). The cooperation between stakeholders then led to the establishment of an organisation called the Free State Goldfields Development Centre which aimed to promote the management of changing economies from one which was previously dominated by the mining sector to one which is diversified, competitive and more export-driven (Nel and Binns, 2002). Stakeholders, such as the local technical college also play a significant role in ensuring that emerging entrepreneurs are provided with sound training.

Support at the provincial level to this initiative was provided by the (FSDC) through supporting the development of plans and initiatives in Welkom that create jobs and reduce unemployment rates (Helmuth, 2009).

Numerous stakeholders in Welkom supported the notion of diversifying the economy in different and highly competitive ways. The Free State provincial government provided support through the construction of a racetrack for recreational purposes, while the Harmony Gold Group has supported the economic diversification phenomenon by establishing a gold jewellery cluster in the Welkom. Anglo-Gold has been highly supportive by providing land for the development of facilities to be used for small business clusters.

These developments were indeed sustainable as they still are active and still are supportive of the local community. The economy managed to remain stable even post mine closure. The trade union and the mineworker development agency have created an entrepreneurship training centre which assists unemployed ex-mine workers.
Several lessons are to be learnt from Welkom, one lesson that stands out the most for the case of Jwaneng, Botswana is the ability to create cooperation amongst stakeholders to work towards economic sustainability. The case of Welkom demonstrated that the involvement of the national government is of great importance when implementing LED initiatives (Mameja, 1996). Together with other stakeholders, the Government has the most influence, ability and capability to create a sound economic environment for diversification.

Based on the above, it is evident that a single-sector economy dependent on only one commodity and highly reliant on international commodity prices is highly risky (Nel and Binns, 2002). In the case of Welkom, the town was over-reliant on the mining sector. As a result, the diversification of the economy became a challenge (Nel and Binns, 2002). There is no doubt that collaboration between stakeholders such as the local community, the government, the business community, NGOs is of great importance when attempting to address the social and economic challenges caused by mine closures. Although measures are taken to restore the local economy of Welkom, only a smaller pool of people have benefited from the downsizing of the mine closure. The economy of Matjhabeng has no fully recovered since the mine closed. A lot is yet to be done before Matjhabeng can reach its previous level of prosperity (Nel and Binns, 2002).

3. Economic Opportunity Assessment study of Arandis

The dedication to local economic development and economic stability in the small mining town called Arandis, Namibia presents numerous similarities between Botswana. Arandis I located 60km from the coastal town Swakopmund and less than 5 km from Rossing Uranium mine. The Rossing Uranium mine established the town and initially it was to accommodate mine workers. The Rossing Uranium mine developed the infrastructure, built schools and a hospital (Helmuth, 2009). The mining community. The land then became serviced with electricity and water services and was subsidised by the mine. The mine also built sport and recreational facilities. The mine

also created a vibrant recreational environment in the town by establishing sports facilities; these developments then led to high numbers of mine worker beneficiaries who were employed at the time to move into the town. As the price of Uranium decreased on the world markets in 1991, the mine became less profitable. As a result, the mine was to downsize and retrench by reducing the workforce in the mine. Five hundred and thirty workers were entrenched, followed by two hundred and seventy-five workers in 1999.

As workers got retrenched, their beneficiaries automatically forfeited the opportunity to enjoy the benefits of the developments in the town. Most of those who were retrenched resided in Arandis, as a result, most of the men moved out of the town in search of work opportunities in cities such as Swakopmund and Walvis Bay (Helmuth, 2009). In 1994, Arandis became independent with its local authority. The mine then saw fit to hand over the management and municipal services to the Arandis town council. With the Rossing mine undergoing survival challenges, the mine was unable to fund services. As a result, the town was left with the burden of finding innovative ways to manage and improve the town for the better independently in order to assure economic sustainability for the future generations (Mameja, 2003).

The Arandis town council was then able to demarcate a serviced industrial area.
Aramids stands a better chance to venture into assembling, manufacturing, food and beverage processing, repackaging storage and warehouse facilities. All these could have managed to keep the town economically competitive and active (Helmuth, 2009). In addition to boosting the economy of the town, the local manufacturers were encouraged by the Namibian government to take part in programmes that work towards boosting the exporting industry. Manufacturers were introduced to different sectors such as the agro-processing industry and mineral beneficiary storage and warehousing as a means of diversifying the economy. With the aid of governmental incentives, it was anticipated that the incentives offered to prospective investors were to be in the form of exempted corporate income tax and general sales tax amongst other incentives (Mameja, 2003).

Unfortunately, with all the promising plans put forward to prosper the economy of Aramids, the local leadership fell short in creating a sufficient and achievable vision for the town. Most planned initiatives lacked adequate advertisement. As a result, the plans never took off (Mameja, 2003). Several lessons may be learnt for the case of Jwaneng. While there are similarities in how the mining town came in existence, the lesson that stood out most from the case study of Aramids is that it is essential to follow through on plans by advertising them and making accessible for investors to invest. Besides, plans need to be feasible and achievable in order to guarantee a successful post mine closure plan. The Locals in Aramids did not have a sense of belonging and ownership of the town. As a result, they hesitated to make decisions that could strengthen the local economic development of the small mining town. Eight hundred ninety-eight houses were

put for sale, and only 385 of the 898 houses were bought, this demonstrates that the majority of the locals were not will to stay in the town post mine closure. In the case of Jwaneng, there seems to be much interest in owning property and business with no interest in paying for municipal services (Helmuth, 2009). Majority of the people staying in Aramids do not perceive the town to be home to them, rather be their workplace. As such, residents are reluctant and unwilling to take ownership of the place. As mine employees left the town, the population also reduced, leaving the town with minimal economic activity. When a large number of people left Aramids, including the local business owners, the population that remained had no financial means to take over the businesses that remained.

Entrepreneurs from other towns came in to take over the abandoned facilities. Based on this, it is evident that only those from outside benefitted from the mine closure. The lack of start-up capital and support from the government undoubtedly influences the shutdown of many businesses in Aramids. The town council of Aramids till today claims that the relocations of businesses away from Aramids is potentially due to the long distance of the town to other urban areas. This uncertainty of relocations justifies why roads that access the town are not maintained with absent road signage (Helmuth, 2009). The lack of adequate banking services, supermarkets and the high prices of local shops with insufficient availability of stock has forced residents to do their shopping in Swakopmund. The disadvantage of running a business in Arandis is the long travelling distance from the suppliers, the small local market, the lack of transport and the shortage of skilled labour (Mameja, 2002). As a result, most residents in Arandis turn to different towns for their shopping because of the low stock levels in local shops and poor product variety and costs (Mameja, 2002).

However, Jwaneng does provide all these services, but there is a significant amount of residents who leave the town to seek services I cities such as Gaborone and Kanye. While the services are available in Jwaneng, they tend to be either too slow or expensive. Similar to Aramids, Jwaneng has had a significant number of improvements in the LED perspective of the town. However, potential investors and developers have remained optimistic about the future of the town. As such, there is a need for the Jwaneng town council to make it easier for investors to invest in Jwaneng by keeping the town well managed.

5. Mine closures in Australia

In the case of Australia, a study was conducted by Laurence, (2004) to identifying the causes of mine closures in Australia and measures were used to better mitigate the negative impacts of mine closures on the local social-economic future. Trends of common reasons for mine-closure in Australia are often caused by:

- The depletion of the mineral reserves and failure to explore and discover alternative economy drivers. The rapid drop in commodity prices or the difficulty in mining production.
- The depletion of operational capital and unexpected changes in operational methods that become more expensive contributed to the unexpected mine closure.

4 Tenant Creek, Northern Territory, Australia

According to Helmuth, (2009), Tenant Creek is located in the Northern Territory in Australia. According to the 2001 census data, the town had a total population of 3185 people. The town was established in 1930 soon after gold was discovered. Different mining companies operated in the town for seventy years. In 1998, the mine then decided to close its operations and rehabilitate all its older operations as a means of using a cheaper method of operation. Mine-closure was a result of the depletion of the minerals, and the shortage of capital to extract the mineral. The mine-closure period was extended with five years. The mine closure team then developed closure plans for all site. The mine closure team consisted of numerous stakeholders such as the Government, the local community, the business community and institutional representatives. All members were to be informed about the different stages of preparing for the mine closure and what role they would play in ensuring a successful mine closure that secured a sustainable socio-economic future.

The local council played the role of making sure that the local community who have received welfare payments moved into serviced low-cost housing. This approach helped keep the town economically active, even post mine closure. The Government contributed to socio-economic sustainability by establishing the economic development committee in partnership with the private sector. From this committee, a Regional Development plan was compiled with the plan to turn the town into a service centre for the indigenous groups around
Tenant Creek (Helmuth, 2009). The Regional Development plan intended to implement and develop the construction of a railroad and prioritised the improvement of other sectors such as tourism in the town, the development of a low-security prison and an alcohol rehabilitation centre. All these plans put together were to securing socio-economic sustainability.

The current developments present in Tenant Creek include the development of a recreational park, a transport system which includes railway, road and an aeroplane, a recreational / entertainment facilities such as sporting facilities, a primary and high school. Although these proposals did not contribute to the economic performance of the town as much as the mining sector did, the developments in the town set the town up for a better Local Economic Development (Helmuth, 2009). However, post mine closure the economy began to be stagnant, and this was partially caused by the inability of local business to work towards diversification strategies that pursue socio-economic sustainability. Sustainable tourism in Tenant Creek was and still is a growing sector; as many such interventions prioritised tourism in the town as the main driver of the economy.

5.1. Alluvial Sapphire Mines, Inverell, Australia:

Inverell is a small mining town located in New South Wales, Australia. The town has a population of 9 749. The peak was experienced in 1970. During a time when the small-scale operators and public companies were mining diamonds in the Sapphire mine. During the boom phase in the 1980s, smaller companies then began to run at a slower rate while the more substantial companies prospered, while this might have had a significant contribution to the economy it negatively impacted the smaller scale businesses as they suffered financially.
Most negative impacts of the boom period in the 1980s were the increased unemployment rate as a result of the high demand for skilled workers. Although exact figured could not be acquired, demographic studies by the local council show that the mines were the largest employers in the town and a significant amount of the employees were older and reaching their retirement age. Due to the increasing unemployment rate in the mines, the younger potential employees left the town in pursuit of finding alternative job opportunities, post mine closure. Slow improvements towards boosting the economy continued and the unemployment rate remained high post mine closure, the real estate market of the town depreciated, thus leaving the town with no business activity. This Case study demonstrates the extremely adverse effects of mine closure (Helmuth, 2009).

The other adverse changes in Inverell pushed the local authorities to begin to plan for the socio-economic sustainability of the town. While this was a little too late, the local council identified economic diversification as a tool with the most potential to ensure socio-economic sustainability. The government of Inverelle realised that the operation of small scale businesses in the Alluvial Sapphire Mines was not feasible or ideal for the case of Inverell. The empowerment of small scale operators in the mine was not socially and economically sustainable for the long term as they could not fulfil the requirements of the mine as effectively as larger companies would. This approach brings conflicting views of whether small operating businesses should be empowered at the expense of maximising on returns. This empowerment is expected to benefit the country at

large or, empowering the small operating companies for the sake of supporting Small, medium enterprises whereby a smaller pool of people will be empowered (Helmuth, 2009).

The role of the government in supporting diversification programmes is of paramount importance and should, therefore, be planned for in an incremental (phases) manner as this will ensure a responsive plan to the uncertainties of a future without the natural resource commodity. The coordination between the government, business community and the mine is particularly crucial as it will help identify and implement the appropriate solutions for economic diversification.

Based on these two conflicting outcomes, it is evident that the empowerment of small scale operators as oppose to larger-scale operating companies will not be sustainable for the case of Jwaneng. Although the case of Inverell is different from that of Jwaneng, it demonstrates a few lessons that could be learnt. Jwaneng should be cautious of prioritising a smaller pool of people such the small scale businesses in Jwaneng instead of prioritising industries that will not only benefit Jwaneng but the country as a whole. The Australian case studies give insight to the importance of stakeholder consultation processes before mine closure as oppose to only planning for socio-economic sustainability and diversification when the mine is declining and facing closure. A key lesson for Jwaneng is that economic diversification should form a significant part in the mine closure plan. As such, a diversification strategy should be followed to ensure that programmes are followed. It is working on diversification in phases well in line with the operations of the mine. The inability to create mine closure plans is problematic as it leaves the town stranded with no feasible plan for the future (Helmuth, 2009).

6. Mine closures in Norway

In the case of Norway, four mining communities were examined to identifying the lessons that could be learnt from Norway. The mining towns that were selected in Norway were: Melda, Rovrvik, Verran and Folldal. Lokken in the Melda is located in a rural valley with much agricultural land in it. The mining settlement is located towards the southwestern sides of Trondheim. The mining town developed as a direct result of the discovery of copper in 1654.
The mining industry grew in the Medal province leading to the discovery of surplus production in the 20th century. The mining settlement of Lokken in Melda province experienced a decrease in the labour force during the 1960s, which was caused by the low price of copper. In 1987, the mine eventually closed.

In Folldal province, Norway, the mine within this province was founded in 1748 due to the discovery of copper. As the 1960s approach, the copper commodity began to deplete, which led to new copper deposits being discovered in different areas within the Folldal province. While the

mine in Malm, Norway started operating in 1912 shortly after the iron ore was discovered. The rural mining settlement then transformed into a mining town. During the 1970s, the mine struggled to make profitable returns. As a result, the government of Norwegian provided the mine with financial support until it reached its closure in 1989. Attempts to revitalise and reopen the mine two years later were not successful as the mine was unable to recover from bankruptcy and finally closed in 1997 (Helmuth, 2009).

In the case of Royrvik, the extracted resources were sulphur ore, copper and Zink, which quickly led to the growth, development and population increase of the mining settlement. During the 1990s the mine was unable to take returns due to the mismanagement of the resources. As a result, the profitable returns and eventually closed in 1998. In response to the closure challenges in the above mentioned Norway case studies, the stakeholders in Norway have taken the initiative to develop an essential strategy to restructure the communities of the mining mentioned above towns. This strategy was achieved by ensuring that the restructuring process of the mines was led and controlled by the Government, with the primary objective of applying a more bottom-up approach which is inclusive to other stakeholders such as trade union leaders, community leaders and the mining companies as well. The integration of the stakeholders was essential as all efforts were directed to activities that avoided job losses and a rapid population as a result of mine closure, by actively developing a Local economy that was intended to help the unemployed local provide means of survival for themselves and the local community. While this might have partially solved the problem of a declining economy by creating jobs, not enough jobs and business were created to substitute those that were previously there before closures (Helmuth, 2009).

The government of Norway has been highly supportive as it assisted in creating innovative strategies to recover the mining communities. These interventions include reducing taxes and providing incentives, which were granted to the local communities and businesses. The essence was to empower the local business and further work towards socio-economic sustainability. Additionally, the Government of Norway provided the mining communities with financial support to restructure their economy (Dale, 2002).

The mining company assisted in ensuring socio-economic sustainability and equity for all by selling the mine houses to the residents of the respective towns at lower prices.
Infrastructure within the towns such as Lokken and Malm was handed over to the local municipalities to manage and take over the management of processes used to attract investment (Dale, 2002). The government further encouraged the private sector to start small-medium manufacturing companies that are complementary and aligned with the proposed tourism post mine closure. Stakeholders were encouraged to take part in public participation which speaks to the LED and the mobilisation of local resources (Dale, 2002). In response, local groups then came

together to network and working towards the local development project and programmes that enable the establishment of small-medium firms.

Based on the Norwegian case studies, one lesson that stands out the most for the case of Jwaneng is that mining settlements can never be utterly sustainable because mining settlements are highly dependent on one commodity for the survival of their economy and the depletion of that one natural resource will leave the town stranded. The Norway case studies further demonstrate that the results of mine closure often do leave social and economic devastations regardless of how prepared and aware the mining company was of the mine is expected to close. The closure is due to the continuous trend of unguaranteed mitigation of the local economy post mine closure. Mine closure plans are not always wholly successful simply because there are not enough means to attract investors into the town.

The literature in the previous chapter demonstrates that the development of mining settlements post mine closure place much emphasis on local economic development and not on economic growth which in most instances could be the drawback of successful local economic diversification. Drawing from the Norway case studies, LED cannot be successfully implemented without institutional participation, meaning that it is more difficult for local diversification to transpire without the commitment and interest of the stakeholders. Often, this happens in mining settlements, whereby diversification of the local economy even beyond mine closure is the main priority but highly challenging to achieve. The government's role is often prospered in the development of an economic environment since it ensures that the stakeholders and all relevant institutions are involved in the processes of planning for a future post mine closure.

7. BCL Phikwe, Botswana mine closure

The Selibe Phikwe BCL mine is located in Botswana. The BCL mine was established in 1959 and it produced copper and Nickle. BCL was the second-largest private sector company employing 4200 employees. The BCL mine then faced instant closure which lacked planning and took everyone by surprise. The closure of the mine was caused due to the lack of funds to sustain the mine. As a result, the government officially closed the mine in 2016, and this negatively impacted the town as the town served as a district centre for the Bobirwa and Tswapong region (Asare, 1999).

As the BCL mine closed, jobs of over 4200 people were lost. The closure of the mine also impacted the town as some jobs were indirectly lost as subcontracted companies were left with

no other option but to close and relocate, thus leaving more people unemployed. The closure of the BCL mine significantly impacted Palapye because the Morupule coal mine depended on the wellbeing of the BCL mine for its operations because BCL mine was the largest coal mine. Sectors such as the hospitality sector in Selibe
Phikwe and Francistown suffered as many services were supported by the availability of people in the towns. Shortly after the BCL mine in Selibe Phikwe closed, the tows were left stranded with sectors such as hospitality, retail and Real estate sectors have declined to leave the town existing as a ghost town (Asare, 1999).

Economic activity in Selibe Phikwe has decreased, and this has resulted in businesses relocating and some shutting down. Transport, education and the property sectors were negatively affected by the closure of the BCL mine as many who lost their jobs left the town together with all their beneficiaries leaving the town with fewer people to support complementary sectors. The property sector was particularly affected by the closure of the BCL mine as the demand for property rentals dropped; eventually this led to property values decreasing as many are unemployed and unable to afford high rental rates. The effects of the BCL mine closure in Selibe Phikwe, Botswana are endless; they reach the extent of affecting the governmental revenues. Moreover, this is present in the reduction of the total taxes acquired from the local businesses and the daily disposable incomes of the local community. The mining sector alone contributes 35% towards the government revenue, and therefore mine closure indeed does negatively affect the government revenues. As such, priority towards mine closure should be taken seriously in order to avoid a rapid decrease in economic activity post mine closure through economic diversification and the improvement of other sectors. The liquidation report derived by the SPEDU was expected to come up with a final verdict to either completely shut down the BCL mine or to scale down the present operation and improved management of the less profitable shaft. Non-profitable shaft should then be shut down, and profitable shaft should be reopened (Asare, 1999).

The effects of mine expansion or closure on the population are demonstrated in the case studies above, which will further identify the areas of improvement for the case of Jwaneng.
A typical trend in the case studies is that towns with potential to expand at a faster pace grew more in population than towns with slower resource expansion. As the mineral loses value or depletes only then is an investment in human capital, social capital and political capital support recognised and actively planned. All case studies demonstrated that as the population declines and the town begins to lose its identity, only then do stakeholders attempt to bond on social capital, and begin to search for outside investment and only then LED become an essential factor as it seems like the easiest to achieve at that very moment (Helmuth, 2009).

The case studies above all have their unique features that carry volumes in terms of lessons to be learnt. Australian case studies demonstrated that mining towns are at most resource leaking towns, and when the resource depleted, the reality is not much activity can be done in the mining towns. Based on this reality, the best way to achieve a good mine closure process is to plan for it while there is still time actively. Good governance may not necessarily guarantee economic sustainability, but it surely may be useful in the management of resources. It is particularly important to include all relevant stakeholders in the mine closure planning process mainly because once the mineral has depleted or once the mine shaft is no longer profitable, the local economy will still be active and sustainable. Therefore there is a need to create plans based on the competitive advantage of the town beside the mining sector. The next chapter looks into the different perspective of on mine closure and how they may best guarantee economic sustainability for the small mining town of Jwaneng.

Phase 3: National Perspective Botswana Success progress

No doubt Botswana has progressed and grew economically. The country has great potential to prove that indeed, resources are not a curse; instead, they are a blessing that could ensure economic sustainability, stability and diversification. It is encouraging to know that the right choices have been made to transition the country to a new sustainable model, with more jobs and a more inclusive socio-economic future. These concerns have been raised before, and it is pleasing to know the National Development Plan 11 (NDP 11) and the Economic Diversification Drive (EDD) have actively moved towards achieving these plans.

Over the past 60 years, the economy of Botswana has become one of the most successful in the world. Botswana has proven to have the potential to be exemplary to other countries throughout the decades. Although the countries urban development seems to be growing slow, the country may be commended for its outstanding governance. The population of Botswana is small, with a population of two million two hundred and ninety-two (2 292 000) given the small population, the government of Botswana can fulfil the needs of its people. However, with an unemployment rate of 18.20%, there is a gap and a need for a provision of jobs. The jobs should either be through the diversification of sectors. Based on this, it is evident that resource-rich countries are not necessarily wealthy: poverty, unemployment and even infrastructural development/maintained are still a challenge and therefore require good use of resources and good governance (Basdevant, 2008).

As demonstrated in the figure below, Botswana's performance is particularly impressive, given its humble beginnings when the diamond commodity was not discovered yet. While some authors

argue that the social gains of Botswana from its impressive progress are limited some strongly believe that the government of Botswana makes right decisions for its people.

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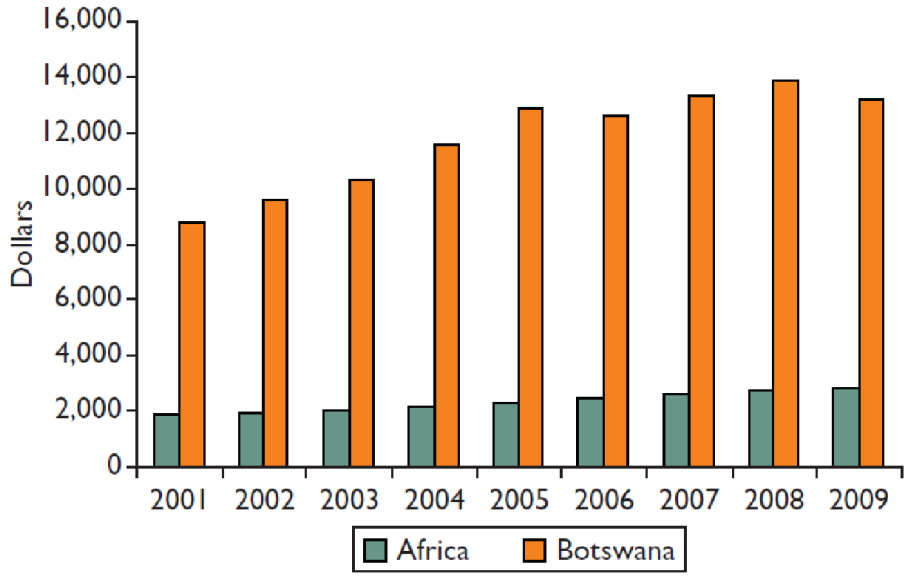
Figure 6: Average per capita in Africa and Botswana



Source: OECD n.d.
Accessed 20th October. 2018

Diamonds and development in Botswana

Surely the diamond mineral extraction was an essential element of Botswana's success story. In 1966 when Botswana gained its independence, beef was its principal export as well as its largest sector as it contributed a sum of 39% to the country's GDP. As of independence until the 1970s, Botswana survived off international aid as it dominated the government budget and was the primary source for foreign exchange. The mining sector then became the dominant sector, as the extraction of diamonds increased the income growth increased simultaneously (Acemoglu and Johnson, 2003.)

This section of the literature review argues that there is considerable disagreement over whether the discovery of diamonds generally brings the future of Botswana luck or bad luck. Looking at different African countries such as Nigeria, Zambia, the Democratic Republic of

Congo and Sierra Leone, amongst others, natural resources are facing depletion and have not been utilised to benefit the future (Basdevant, 2008) better. Natural resources are not necessarily a curse; however, one may argue that natural resources throughout most countries in Africa have not been sufficiently used as a tool after economic success and sustainability. Looking at Botswana, it is evitable that, to an extent, the discovery of diamonds in Botswana was undoubtedly a blessing and 'luck' backed up with essential elements for economic success such as good governance and sound economic management (Acemoglu and Johnson, 2003).

On the other hand, other authors such as Lewin (2015) argue that the presence of natural resources in Botswana has undoubtedly played an essential role in boosting the economy of Botswana however, this does not guarantee success. Throughout African countries, as well as other international countries around the world, natural resources have not guaranteed economic growth and development. Instead, it has left most countries stranded with a rapid decline of other sectors and poor governance. Botswana has managed to defy the odds as it used a unique strategy that worked best for it. Botswana demonstrated success by strengthening and improving its governance, developing good fiscal and monetary policies.

As a result, Botswana created foreign reserves and strived towards avoiding volatility which was the downfall of most resource-based economies. Alongside the investment of human and physical capital, the improvement of infrastructure and the securing of foreign assets in Botswana certainly raised its development and productivity. Surely these successes should fuel the transition to a more diversified economy.

Progress towards achieving the millennium development goals (MDGs)

Thus far, socio-economic development in Botswana is aligned to the Millennium Development Goals (MDGs). This is particularly necessary for the creation of global partnerships that work towards making positive changes. The Millenium Development Goals realise the importance for high-income countries to reform their domestic and international policies so that sectors such as agriculture, mining and trade. work toward creating sustainable developments and most important enrich their futures (Dileys, 2004). The MDGs further set quantitative objectives that are to be achieved and further drive the international developmental policies by merely outlining the responsibilities of rich countries to support the less fortunate countries through debt relief and \better market access. The MDGs are committed to the reduction of extreme poverty and the direct results of poverty such as high unemployment rates, lack of necessary infrastructure, environmental degradation and urban decay (Dileys, 2004).

Almost two decades ago, countries, including Botswana, signed the Millennium Declaration. The purpose of the declaration was to ensure that the respective governments achieve the development goals (NDP, 2011). The development goals include: eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality; improving maternal health; "combating HIV/AIDS, malaria and other diseases; ensuring environmental sustainability and developing global partnerships for development (UNDP 2009). The table below shows that Botswana's NDP 11 progress towards achieving the Millennium Development goals as of the end of NDP 10. The Government of Botswana made the goals part of their national agenda to alleviate extreme poverty and its related socio-economic problems (NDP, 2011).

Figure 8: SDGs and NDP 11 similarities

Goal 6: Ensure availability and sustainable management of water and sanitation for all	Social development
Goal 12: Ensure sustainable consumption and production patterns	Social development
Goal 12: Take urgent action to combat climate change and its impacts	Social development
Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	Sustainable use of natural resources

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Goal 12: Take urgent action to combat climate change and its impacts	Social development
Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	Sustainable use of natural resources
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt land degradation and halt biodiversity loss	Social development
Goal 7 Ensure access to affordable, reliable, sustainable, and modern energy for all	Diversified sources of economic growth and human capital development
Goal 8: Ensure access to affordable, reliable, sustainable economic growth, full and productive employment and decent work for all	Diversified sources of economic growth and human capital development
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation	Diversified sources of economic growth and human capital development

Source: NDP 11

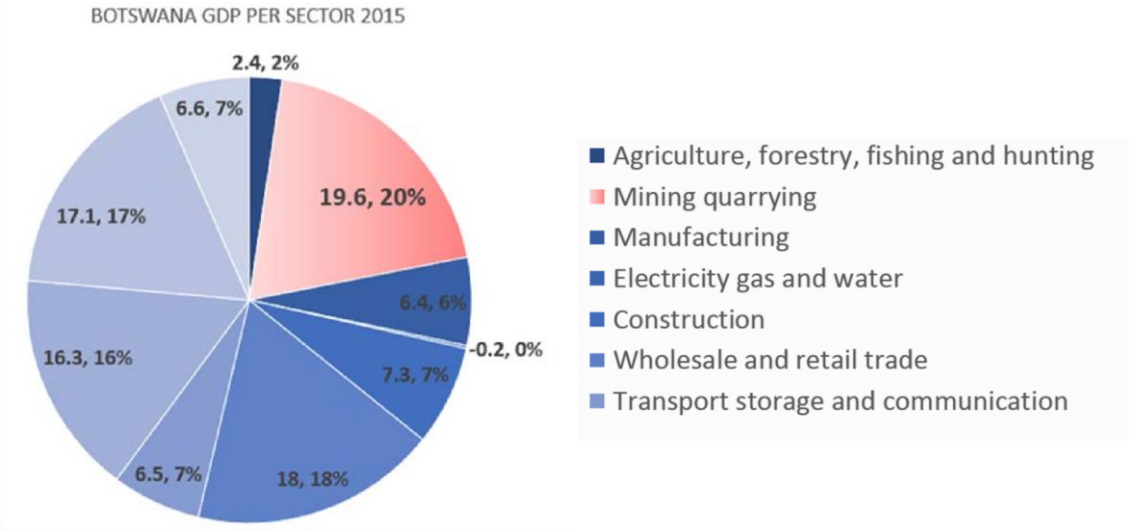
Accessed: 15 December, 2018

Sectoral Growth rates and Contribution to GDP Growth (%)

As shown in the table below, the Construction sector has computed the highest rate of growth. Although the sector's contribution to GDP has not been significant, this growth rate should be harnessed to grow the economy further. This is an opportunity to grow the economy of Botswana, considering that the country is developing (NDP, 2011).

Similarly, the Trade, Hotels and Restaurants sector has been one of the fastest-growing sectors and has significantly increased its share of contribution to total value added in the economy. It also had the highest contribution to overall growth. Therefore, improving the policy environment for the sector will provide NDP 11 with a sturdy growth pole. This sector is of great potential and could be the primary driver of the economy in the future.

Ironically, the Mining sector remains the lead contributor to the GDP; its contribution has significantly declined from a high of 32 per cent in NDP 9 (2006/07) to 23.2 per cent in 2013/14; whether this is only temporary or permanent will become more evident during NDP 11.

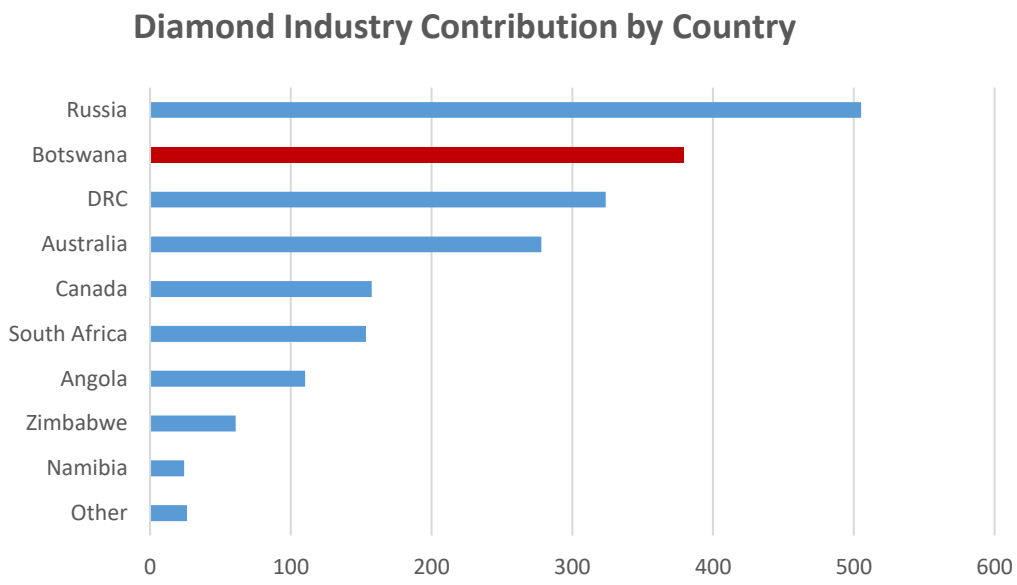


Source: https://www.indexmundi.com/botswana/gdp_per_capita.html

Obtained: 19 July 2018

The wholesale and retail trade sector's contribution to growth has remained significant as the third most important source of economic growth. If the private sector is to become the engine of growth for the economy, deliberate policy measures need to be continued in order to hive off some of the Government economic activities to the private sector.

Therefore it is essential to note that with the rates of growth by sector shown below, the Construction sector grew fastest at an average annual rate of 8.4 per cent. Trade, Hotels and Restaurants, together with Banks, Transport and Communication, were second and third at 7.8 per cent and 7.6 per cent, respectively. To the extent that this momentum will endure, these sectors have the potential to provide growth during NDP 11.



Source: https://diamondproducers.com/diamond-industry/productionstats/

Obtained: 17 July 2018

Sectors	Sector share of growth during NDP 10	Average value added Growth rate during NDP 10
Trade hotels and restaurants	37	7.8
Banks, insurance and business	23	5.9
General government	16	4.3
Construction	16	8.4
Social and personal services	8	4.3
Transport and communications	11	7.6
Mining	-15	-3.4
Manufacturing	7	4.0
Agriculture	0	0.1
Water and electricity	-4	-20.8

Source: Statistics Botswana & MFDP Actuals & Projections

Accessed: 20 December 2018

It can be concluded from the preceding analysis that NDP 10 has achieved the objective of growing the economy through the Non-Mining and Parastatal sectors. The leading sectors that contributed to this structural change of the economy were the Trade, Hotels and Restaurants and

the Finance, Insurance and Business Services sectors. The extent to which the growth of these two sectors depends on Government spending will affect the economy's dependence on Government spending. Figure 3.9 shows that, in real terms, Government spending decreased at the same time that these sectors were growing, suggesting that the growth of these sectors can be sustained without a concomitant growth of government spending.

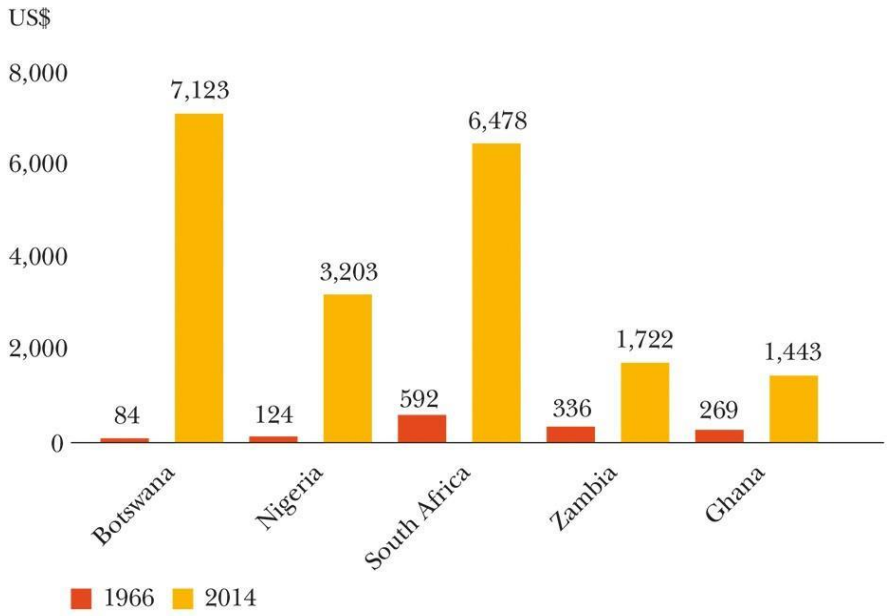
The Government of Botswana has realised that its high reliance on the diamonds and their revenues is not sustainable as it leaves the economy at risk being unstable once the mineral commodity has depleted. Since 1994, the government have put forward the notion of spending all mineral revenues on improving and expanding the economy's productive capacity. As such, measures have been taken to avoid using revenues acquired from the mining sector for consumptive purposes but rather for expanding the economy to ensure economic sustainability at both the national and the local level. The next section details the different roles played by different stakeholders in ensuring effective Local Economic Development processes.

Planning for a future without minerals

Given that Botswana has a mineral-based economy, the country has not succeeded in significantly diversifying its economy; on the brighter side the government of Botswana has had sensible and practical policies which take into consideration the saving and investment which have left the country in a relatively safe position to facilitate the development and economic needs of the country (Government of Botswana, 2008). Turning mineral wealth into a diverse and highly competitive economy is difficult to fulfil. Very few countries have managed to break away from overly depending on their primary exports. In the short term, the government of Botswana encourages businesses through the transfer of technology and skills. The creation of new industries and the improvement of other industries such as tourism and agriculture are a first step towards planning for economic sustainability.

Botswana has a relationship between business, organised labour and the government, which has benefited the wellbeing of the country's economy (Government of Botswana, 2008). The unique structure of the governance and shared ownership of the Debswana mine has indeed worked in favour of the country. A 50 / 50 joint venture between De Beers and the government has created a significant level of stability. Surely this has given the government a better foundation to plan for a future without the diamond commodity (Government of Botswana, 2008).

Figure 9: Contributions of mining manufacturing and agriculture



Source: The World Bank 2015

Accessed: 20 December 2018

Based on this data, moving towards poverty eluviation employment has been created through different sectors such as the mining sector, the Trade, hotels and restaurants sector, the construction sector, the agriculture sector, the manufacturing sector. As a result, there has been growth in the economy through ensuring access to affordable, reliable, sustainable economic growth and human capital development. The government has realised that there is a need for Sustainable use of natural resources and minerals as they are depleting goods. Therefore, this calls for the need to develop different sectors as significant drivers of the economy not only at the national level but at the local level as well (NDP, 11). Local economic development for Jwaneng relies highly on the implantation of the MDGs and SDGs as they focus on poverty eluviation and planning tools for future generations.

Phase 4: Case study, Jwaneng Botswana

A case study, according to Yin, (2013) is an empirical inquiry which investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between

phenomenon and context are not evident. In this research report, the uncertainty of the future of Jwaneng is unclear; as such, the findings in this report intend to question what has been done in ensuring the socio-economic future of Jwaneng.

Introduction

The objective of this research report is to propose alternative ways to achieve economic sustainability of Jwaneng and whether this may protect the socio-economic future of Jwaneng. This research also intends to identify the opportunities and challenges of achieving economic sustainability for Jwaneng and how economic sustainability may protect the socio-economic future of Jwaneng. This section of the case study chapter intends to give a brief description of the context of Jwaneng explaining the physical form of the town, its demographics and the most dominant sector. This chapter also intends to highlight the challenges faced by Jwaneng and state how these challenges have been addressed. A full description of the spatial performance of Jwaneng to determine if there has been any progress in facilitating economic sustainability and economic stability even post mine closure is made. The outlined challenges in this section will, in turn, form the intervention strategies contained in the Jwaneng Urban development plan 4, (2017).

The Context of Jwaneng, Botswana

Jwaneng is a small mining town located in the southern district of Botswana. The discovery of diamonds led to the development of the town in 1982. According to the CUT 8 project, the lifespan of the Jwaneng Debswana mine was intended to last 24 years which is from 2002 to 2026 and the next CUT 9 project to extend the lifespan of the mine to 2052 (JUDP4, 2017).

The town lies along the Trans-Kalahari Highway which links Maputo, Mozambique, Durban, South Africa to and Windhoek, Namibia. The Trans Kalahari highway is a significant development as it creates access to all the settlements along with it such as Kanye, Jwaneng and Sekoma. Jwaneng is, however, the last urban settlement when going toward the north-western side of Botswana and further Namibia. Therefore, a positive aspect of the town as it serves as a node that provides services to those travelling along Trans Kalahari. Given the location of Jwaneng, the town should be providing higher-order services which are unavailable in its neighbouring settlements. Also, given that tourism is concentrated in the north, Jwaneng is located on the transit route that leads to the north. As such, Jwaneng stands a better chance to utilise maximum benefit from the people that pass through it daily. Jwaneng has the locational benefit as it is conveniently located along this corridor which should be exploited (JUDP4, 2017

Figure 11: Location of Jwaneng, Botswana



Source: https://hubpages.com/education/Jwaneng-Diamond-MineThe-Richest-DiamondMine-in-the-World

Accessed: 26 December, 2018)



Picture 1: Jwaneng Galaxy stadium



Picture 2:Ariel photo of Jwaneng CBD



Picture 3: Jwaneng Galaxy soccer game.



Picture 4: Jwaneng Mine

As depicted in figure 12, the planning area for Jwaneng is divided into state-owned land and mine owned land. The total land within the Jwaneng planning areas is 434 820 hectares approximately 34 820 of which 7 998 is owned by the mine and 26 822 hectors are state-owned. Since Jwaneng is s a small mining town, the town council is responsible for the management and governance over the area.

Figure 12: The general land use distribution and ownership within the Jwaneng Planning area

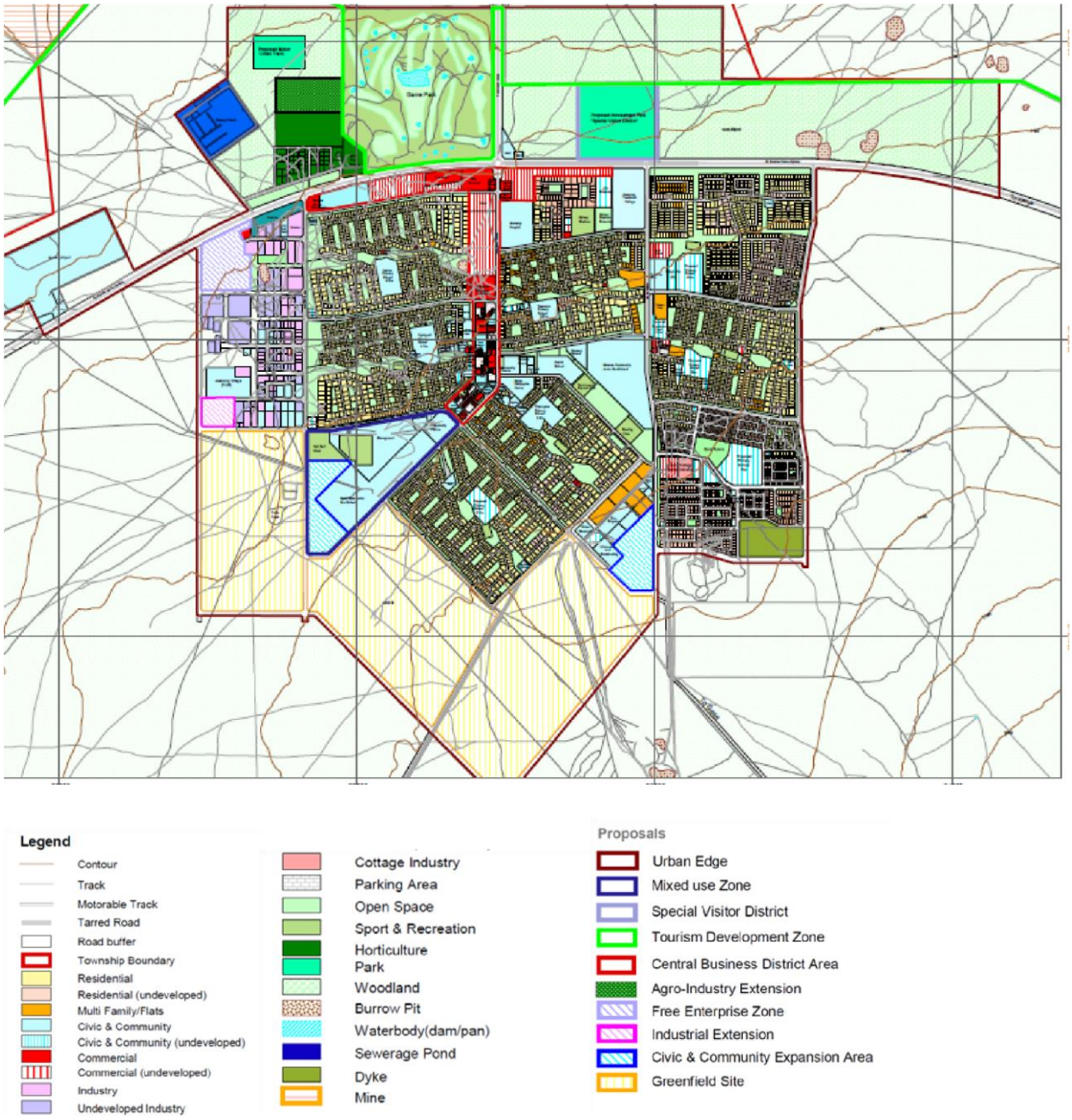
Land Use Category	Area (hectares)	Percentage (%)
State Land (Township Area)	9 237	26.5
Mine Lease Area	7 998	23
State Land (outside the Township Area)	16 413	47.1
Built up Area (within township area)	1 172	3.4
Total	**34 820**	**100**

Source: Department of Town and country planning and Jwaneng Town Council Field Survey
Accessed: 26 January 2019

Land Use in Jwaneng

As shown in figure 13, Jwaneng has various land uses such as residential, civic, and community, commercial, agricultural, open space and industrial. The industrial area is located on the west of the town while the commercial is strategically located at the centre of the town leading to the mine. The civic and community land uses are distributed around the town. The residential zones are divided into 11 units, of which only seven are fully developed, and unit 8 is progressively developing while the rest are not developed yet. Each unit has open spaces and recreational spaces. Residential units 1 – 7 are dominated by mine housing with few private-owned housing while private owned houses dominate unit eight and Botswana Housing Corporation (BHC) owned houses. Based on this, the town has the opportunity to expand, given that the population of the town increases. An increase in population as a project by the housing census department (2011) will require an expansion of and diversification of the economy in order to sustain the increasing population. As the town of Jwaneng increases, so will the need to provide more housing and infrastructure development in the town (JUDP 4, 2017).

Figure 13: The land use distribution of Jwaneng



Source: Jwaneng Urban Development plan 4

Accessed: 29 November 2018

Demographics of Jwaneng

Figure 14: Projected populations

Year	2017	2018	2019	2020	2021	2022
Projected population	19 973	20 259	20543	20826	21105	21381

Source: Cities and towns and housing census 2011

Accessed: 29 November 2018

The population of Jwaneng was analysed in 2011 by the housing census department to produce a realistic development plan. An analysis of the population is particularly critical as it will determine the future population distribution and growth trends and densities of the town. All this will be of great importance when planning for the socio-economic wellbeing, sustainable developments and service provision of Jwaneng. The 2011 population and housing census revealed that 18008 people were residing in Jwaneng (JUDP 4, 2017). Also, the population is estimated to increase over the years, as shown in the population projections table. As demonstrated in the table, the planning period of 2017 – 2022 shows that the population is estimated to increase from 19973 – 21381 which represents a growth rate of 7.04% (JUDP 4, 2017).

Minerals

According to the Jwaneng Urban Development Plan 4 (2013), Botswana was a direct result of the Debswana Jwaneng mine in 1982. The life of the mine was estimated to end in 2026 post the CUT 8 project. Now the new estimated life span is to expand to 2052 during the CUT 9 project. Jwaneng Mine is still the largest producing mine in Botswana, and worldwide, it produces the most expensive diamond (JUDP 4, 2017). As the new CUT 9 project starts, this will directly result in an increase in the local population of the town as a high net inflow of migrants is expected (JUDP 4, 2017). A diverse range of migrants will be coming from all parts of the world and some from within the country with the mutual reason of seeking job opportunities offered by the mine itself and other complementary industries in Jwaneng. The development of social services and an improving local economy makes the town to be more desirable to live. The prolonged drought and shortage of water in the neighbouring rural areas will also lead to an increase in migration into the town. Based on this finding, the Jwaneng township area will experience migration depending mostly on the various mining operations

and projects. These fluctuations may be expected at times when big projects such as CUT 8 and CUT 9 occur (JUDP 4, 2017).

Employment in Jwaneng:

Similar to the rest of the country of Botswana, Jwaneng has a high unemployment rate, this is mainly due to the high influx of people in search of job opportunities. According to the 2011 census, the employment in Jwaneng in 2011 was 10.6% while the unemployment rate was 12.7%. The demographics show that the females have a higher unemployment rate as compared to the males who have an unemployment rate of 10.9%. This is mainly because jobs in the Jwaneng Debswana mine are at most awarded to the males particularly for their physical ability to work under pressure. Institutions that have employed the most employees include The Jwaneng Debswana mine, sub-contractors and the government institutions. The CUT 9 project that recently started is expected to improve the employment status of the town as well as the newly proposed economic stimulus programme. Although all these projects are at most construction-oriented, they bring forth an increased labour force. The local economic drive is also likely to increase employment opportunities with the Jwaneng Township. To be more specific, the Local economic drive will be improved by encouraging both the locals and those from outside to partake in Small-medium enterprises and the informal street trading activities within Jwaneng such as agriculture.

Figure 14: Employed population of Jwaneng by Industry and sex

INDUSTRY	SEX		
	Male	Female	Total
Agriculture	100	62	162
Mining and Quarrying	2156	371	2527
Manufacturing	111	55	166
Electricity & water	36	10	46
Construction	1670	158	1828
Wholesale & Retail Trade	383	504	887
Hotels and Restaurant	85	194	279
Transport & Communication	77	19	93
Finance	23	70	96
Real Estate	408	350	93
Public Administration	233	253	758
Local Government	274	366	486
Education	137	294	640
Health	63	146	431
Other Community	111	98	209
Private Households	27	448	475
Total	**5894**	**3398**	**9292**

Source: Botswana 2011 Population and housing Accessed 28 January 2019.

The labour force in this research refers to the population aged between 15 and 64. Looking at cities and towns in Botswana Jwaneng has an outstanding 73, 8% labour force which makes it the second-highest after Gaborone, which has a labour force of 77.0%. Indeed employability in Jwaneng is of great significance. This is advantageous as it is reflected in the economic achievements of Jwaneng. The most tangible achievements are evident in the economy as well as in the employment rate of Jwaneng, as four out of seven projects have been approved and implemented in Jwaneng. These projects include the CUT 8 project, the most recent CUT 9 project, the newly proposed and implemented Economic stimulus Program.

Economy of Jwaneng

According to the 2011 census the economy of Jwaneng has been dominated by the mining sector, as it accounted for 31% of the total formal employment in the town, while other sectors such as the administration sector account for 13.5% of the total formal employment in the town, while the construction sector accounts for 13.1 %. These figures have increased gradually over the years, and the mining sector has remained dominant. With regards to the enhancement of the economy and sustainable employment creation in Jwaneng, the Jwaneng Urban development plan four intended to proposed and implement several projects, programs and strategies which seek to create a desirable environment for businesses to operate in Jwaneng (JUDP 4, 2017).

The Southern District has improved in terms of its economic progress; this was mainly because of the success of numerous infrastructure projects, programmes and business reengineering reform implementations. Projects with the potential to boost the tourism sector in the Southern district such as the implemented amusement park which started its operation in 2016 are expected to respond to the shortage of recreational activities in the town. The informal street trading stalls and the Jwaneng Bus Terminal were strategically developed to create easy access to the town and to empower informal trading. The development of the Jwaneng bus terminal has benefited the town as it has stimulated the informal and formal economic activities in Jwaneng attracting a number of traders and those who board the buses (JUDP 4, 2017).

The space economies of Jwaneng

The space economies of Jwaneng show that commercial trading activities a-0re at most located along Teemane Avenue in the area zoned as the CBD. While retail shops are well distributed within the units in Jwaneng, pockets of businesses activity are also found in the industrial area, which is located on the western side of the town. Factors such as easy accessibility to trading precincts such as the CBD as well as less zoning restrictions in the industrial area has a direct influence on the economic activities to agglomerate at the most accessible areas provided the zoning restrictions make trading easier (JUDP 4, 2017). Understanding the current space economies of Jwaneng is particularly essential when looking to expand the economic sustainability of the town through the increase of LED and SMMEs. It is also vital to understand the space economics of Jwaneng to avoid better locating trading spaces where there is poor accessibility and where population densities are low as this will lead to businesses receiving less support due to inconveniencing locations (JUDP 4, 2017).

As one moves further away from the CBD, trade and investment tends to reduce. The rest of the town is undergoing stagnancy and contributes less to the economic structure and stability of Jwaneng. Areas outside the CBD are residential units with little to no economic activity; this could be due to the urban form, which does not accommodate economic activity (JUDP 4, 2017).

. For this reason, the town is currently fragmented as different units exist independently with no relationship between them. It is evident in the structure in which the units are developed. All units are built using a structure that separates them as oppose to integrating them.

The secondary roads that divide the units act as barriers that leave no opportunity for continuing any positive economic opportunities that may boost the local economy in the units (JUDP 4, 2017). Note that, direct access into the units is not necessarily prohibited, instead it reduces the opportunity of using the routes as integrating elements between the units where trading and LED could be increased. The spatial structure of Jwaneng limits the town from exploiting the potential economic benefits caused by the high influx of people passing through Sir Seretse highway leading to Mozambique. Therefore, in order for environment economic opportunities and activities to be created there is a need to reconsider the urban form of the town

In 2012, only 56 industrial plots out of 112 were developed, and this has remained the same since 2004. The reason behind industrial development stagnancy should be interrogated with the sole reason of solving the major problem as opposed to just repossessing the land without being guaranteed of an improved development rate (JUDP 4, 2017). Reasons such as a low market threshold for business in Jwaneng are to be considered as the real reason for stagnancy. As such, the real reasons behind developmental stagnation in Jwaneng are to be identified with the sole reason to help create meaningful solutions that work towards achieving, job creation, economic diversification and sustainability.

When looking into the land allocated for commercial use, only 41 of the demarcated 143 plots have been developed while the rest are undeveloped. Once again, it is crucial to interrogate the reasons behind the developmental stagnancy in order for economic activity to take up the demarcated spaces in Jwaneng (JUDP 4, 2017). A large portion of the land demarcated for commercial use in CBD, and till 2019 a large portion of the CBD has remained undeveloped (JUDP 4, 2017).

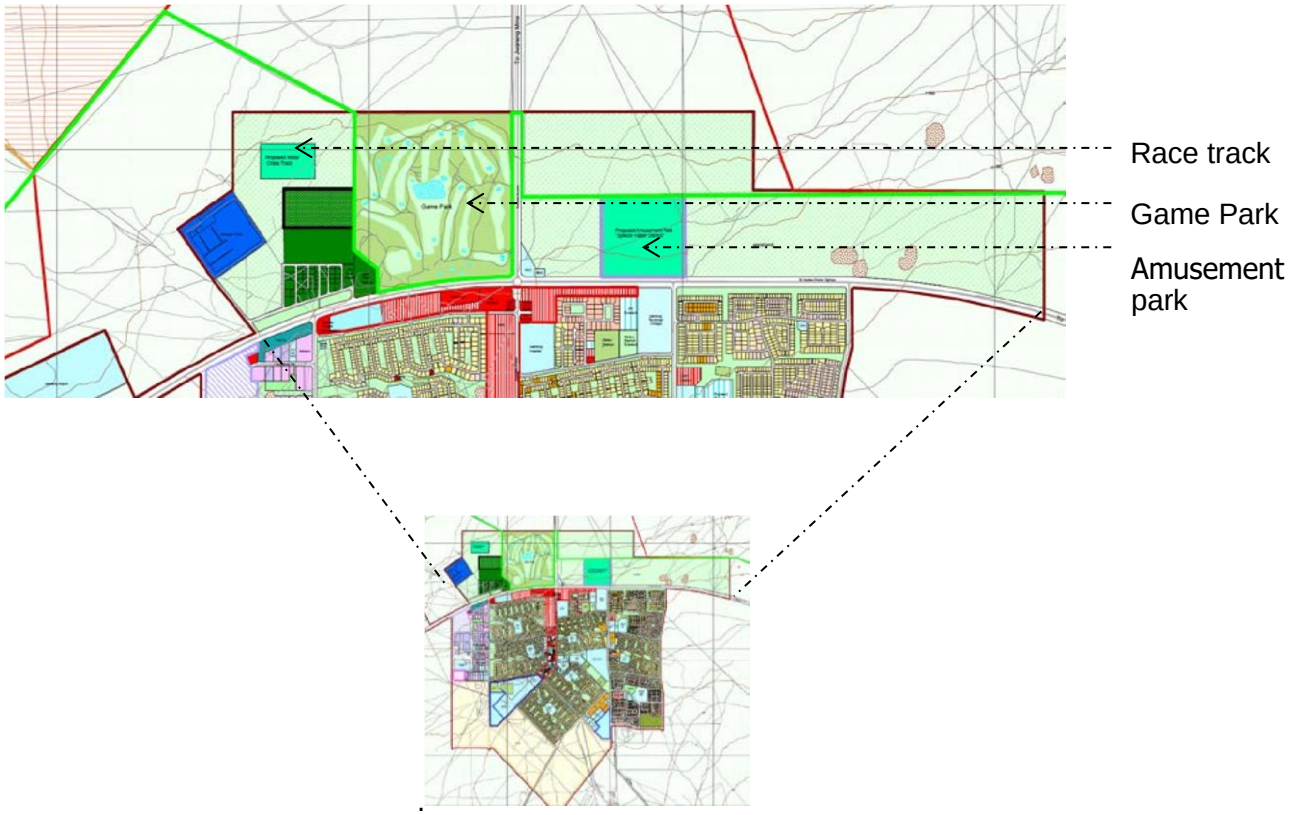
The town council physical planning unit strongly believes that the main reason behind the lack of development in the rest of the CBD is precisely due to the lack of detailed and feasible plan and the lack of services in that particular portion (JUDP 4, 2017). In order to speed up the process of developing the undeveloped portion of the CBD, it may be necessary to allocate the potential investors and developers (JUDP 4, 2017). This precinct, is the most accessible and as such, this portion of land should be a priority when seeking to create an environment conducive for active economic activity, job creation and vital commercial investments. Not only is this site accessible, but it all also has the highest influx of people passing by it either as pedestrians or by vehicle. This precinct is of great potential and should be considered shortly (JUDP 4, 2017).

The availability of vacant land allows attracting more investment further. The undeveloped vacant land in the Jwaneng CBD has remained vacant since the commissioning of the 1980 Jwaneng Development plan. As of 2019, the land still not found any potential investors with the ability to change the economic structure and employment of Jwaneng for the better. (JUDP 4, 2017). While some parts of the CBD are currently undergoing urban decay, the need to redevelop and renovate some buildings in the CBD is essential as most buildings are still single storey and poorly maintained. Based on all of the above, in order to address the critical concerns of this research mainly for the case study of Jwaneng, a detailed urban

design for the Jwaneng Inner city/ CBD is of great importance as the first step towards sustainable development and economic sustainability (JUDP 4, 2017).

Informal business activities in Jwaneng play a vital role in the economic structure of the town as they are a more important provider of employment and income opportunities. The informal sector in Jwaneng has expanded, and although there are no exact figures of how much the informal sector has contributed to the GDP and the extent to which it has elevated poverty, the sector continues to keep the unemployed from poverty. The formal sector, on the other hand, has a potential labour force, which was 77.3% of the population. Based on these statistics, one may argue that the population of Jwaneng increases as job opportunities or businesses increase (JUDP 4, 2017).

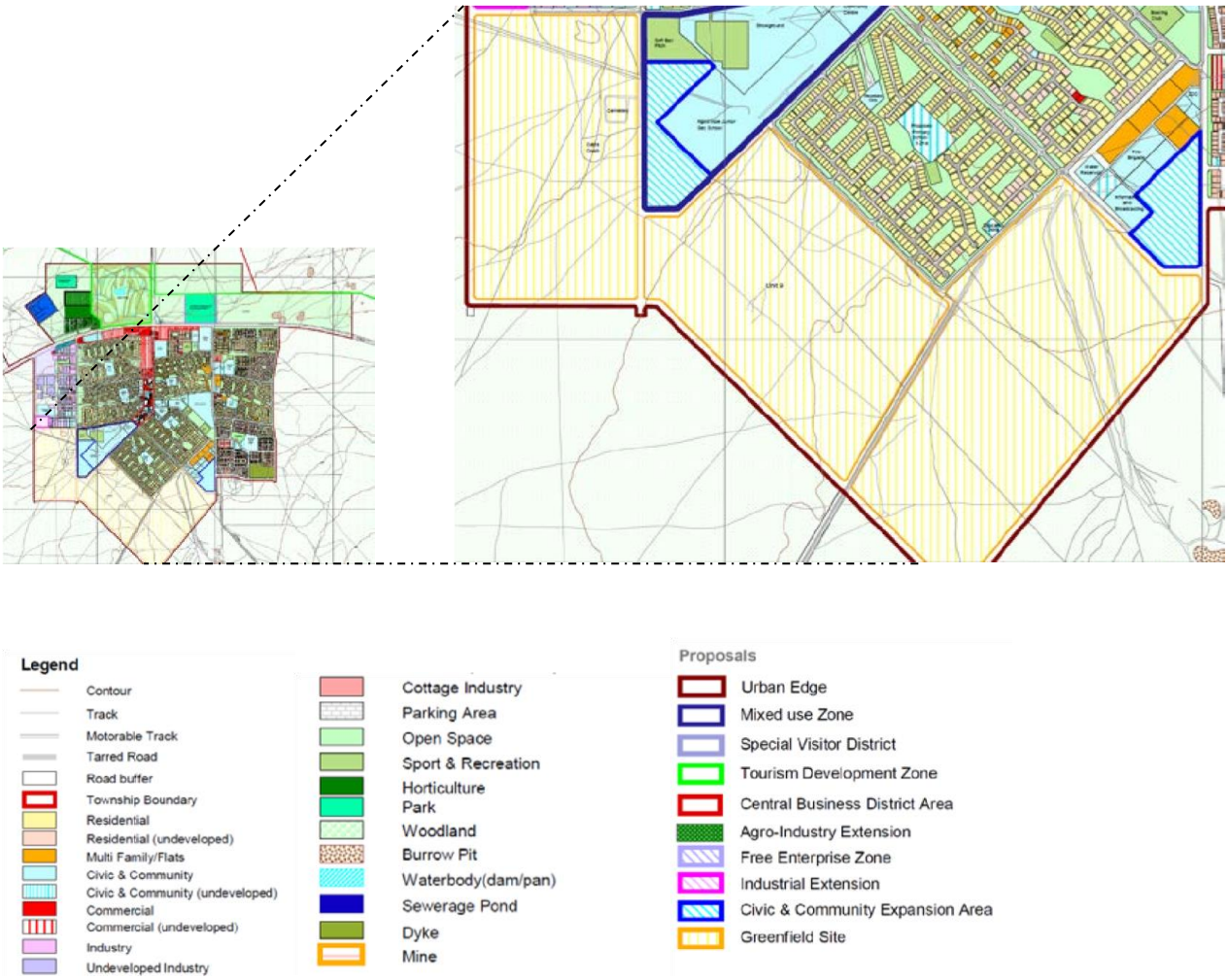
Figure 15: Proposed recreational plans for Jwaneng



Source: Jwaneng Urban Development Framework 4

Accessed: 22 February 2019

Figure 16: Proposed Residential plans for Jwaneng



Source: Jwaneng Urban Development Framework 4

Accessed: 22 February 2019

Figure 15: Proposed l CBD expansion



Source: Jwaneng Urban Development Framework 4

Accessed: 22 February 2019



Source: Jwaneng Urban Development Framework 4

Accessed: 22 February 2019

Key Challenges and constraints:

1. *Shortage of land:* The shortage of serviced land in Jwaneng for commercial land use remains a challenge in the Southern district. Areas with potential to drive the economy of Jwaneng such as the Jwaneng industrial area remain underdeveloped and as a result, are unable to attract potential foreign investors. It is important to note that the land policy has not been effectively implemented in Jwaneng as a result of this, plots located in fully serviced areas are still underdeveloped, the challenge of such an instance arises when the land remains underdeveloped for a long time the land may end up repossessed or reallocated to developers who are willing to develop the land faster (JUDP 4, 2017).

2. *Unavailability of Serviced Land*: Although the citizens of Botswana have the advantage to register and later be allocated for only one free business and residential plot, the lack of funds to finance access to serviced commercial, residential and industrial land remains a challenge in Jwaneng. This is mainly because the process of land servicing is slow, and this often has delayed the allocation process of land (JUDP 4, 2017). This could potentially be caused by the failure of the Government to recover costs for implementing certain public services. This means that cost overruns in governmental projects limit the funds reserved for economic activities are used to complete ongoing projects. This then demonstrates a shift in priorities, while the city prioritises completing projects; essential challenges such as the lack of serviced land remain unsolved (JUDP 4, 2017).

3. *Unemployment:* The unemployment rate in Jwaneng has remained high and is currently at a rate of 12, 7%. This is precisely because of the limited employment opportunities and the overreliance of the economy in the mining sector. This high unemployment is also influenced by the migration of people into the town with the hope of finding employment and end up not finding any jobs (JUDP 4, 2017). The employment rate in Jwaneng only drops when big projects such as CUT 8 and CUT 9 are implemented and running.

4. *Lack of funds to implement projects:* Some small scale projects outside of the mine which were proposed for implementation in the Jwaneng Urban Development Plan 3 still have not been approved due to the lack of funds. Finding alternative measures to finance these projects has remained a challenge; Public-private partnerships are highly scarce as

investors do not trust that the rate of return on these projects will be beneficial. Only three out of a total of 7 projects were successfully approved and implemented (JUDP 4, 2017). Although these projects only create temporary employment, the outcome of their existence is to boost the economy of the town and further diversify the economy of Jwaneng. The lack of funds to implement the remaining four projects is a challenge.

Advantages of Economy diversification in Jwaneng:

The mining sector in Jwaneng has continued to be dominant; this has been the case at the national level as well. This, therefore, calls for the need to diversify the economy and start improving production in other sectors such as the retail, tourism, agricultural and the manufacturing sector. The need to diversify the economy is particularly urgent in order for the Jwaneng Township to survive post-mining closure. In this section, sectors with the potential of expanding and further diversifying the economy are as follows:

Location and demographics of Jwaneng: In the case of Jwaneng there is a great potential to grow the retail sector for the specific reason that, the town is the last economic node along the Trans Kalahari route. This, therefore, qualifies the town to be a commercial destination in the Southern Kgalagadi District (JUDP 4, 2017).

Looking at the increase in population, the UDP3, proposed the upgrading of the Sese – Jwaneng road. Sese is a neighbouring village that developed as a solution that seeks to address the issue of shortage of accommodation in Jwaneng, Sese currently exists as a dormitory settlement that accommodates the employees of Jwaneng. The Sese road has been in poor condition that has left the population discouraged to a resident in Sese where accommodation is cheaper. As a result, rent in Jwaneng has increased rapidly (JUDP 4, 2017).

Urban tourism: Urban tourism and local tourism in Jwaneng have the potential to provide services such as hospitality, and this may be best provided through the implementation of the proposed amusement park, while this proposal is still underdeveloped in Jwaneng. This proposal has much potential to diversify the economy of Jwaneng, being well located and along the Trans Kalahari highway creates much potential for a sustainable and stable economy (JUDP 4, 2017).

Agriculture:

Agriculture is one potential area, in which the township residents could invest to diversify the economy. This is more do validated by the strategic location of Jwaneng in the Southern District. It is surrounded by agricultural land parcels and communal grazing area suitable for agricultural production and situated where farmers can have access to farming inputs with relative ease (JUDP 4, 2017).

Although the agriculture sector is identified as one of the sectors with the most potential to diversify and keep the economy stable and sustainable, this sector has remained unexplored. The constraint of expanding agriculture is that there is a shortage of available agricultural land. Also, the township has a very restrictive planning boundary which should not be exceeded. Given the restrictive nature of the Jwaneng planning boundary, land for larger-scale farming is unavailable (JUDP 4, 2017).

Overview of Southern District Goals

The goals relate to what the District desires to achieve during the implementation of UDP4. The Goals are further elaborated by specific objectives which address specific issues in table 4.1 below. The town intends to establish Tourism facilities such as the Game Park which do intend to diversify the economy of Jwaneng (JUDP 4, 2016). This will, in turn, create employment opportunities for the local community and the citizens of the Republic of Botswana. This proposal is set to enable five hotels and conference facilities to be developed in the town. Besides, Agro-processing has been identified by the local council to be a sector that has much potential to grow in the town (JUDP 4, 2016).

Development as an economic centre has been identified as an opportunity to create sustainable development that will enable economic diversification to operate (JUDP 4, 2016). There is a large portion of land in the Jwaneng CBD and in the Industrial Area that is still undeveloped, this creates an opportunity for the town to attract meaningful investments into the town. The availability of this land is undoubtedly an advantage (JUDP 4, 2016).

The JUDP 4, (2017) has proposed a public-private initiative which altogether seeks to create a strong relationship between the two. This was mainly done so that

investments may be done based on trust and based on the main objective, which is the economic sustainability of Jwaneng.

Figure 18: Jwaneng Objectives and goals towards achieving economic sustainability

Goals	Objectives	Expected Output	Target	Indicator
Diversified economy and sustainable economic activities	Establishment of Tourism facilities; Agro-Industries and Manufacturing industries.	Employment opportunities Citizen empowerment	Development of 2 Hotels and conference facility; Agro-processing plant and Market	No. of jobs created. No of Investors attracted.
	Development of Jwaneng as economic centre for the Western Region	Increased and diversified economic activities	Full development of CBD and Industrial area	No. of commercial and industrial plots developed
	Implement Private Public Partnership initiative	Access to services	Development of 2nd Phase of Amusement Park; Truck Inn	No of effectively implemented partnership.

Goals	Objectives	Expected Output	Target	Indicator
Poverty Eradication	To improve the welfare of the vulnerable and the under privileged.	Improved livelihoods.	100% 10%	% of beneficiaries assisted. % of beneficiaries exiting the programme.
Improved impact on environmental health	Reduction in environmental pollution	Pollution free environment	100%	% reduction of pollutants in the environment.
Strengthen local governance	Effective and responsive local governance	Efficient local governance	100%	Number of effective governance structures

Source: Southern district goal and objectives

Accessed: 26 January 2019

Conclusion

The chosen case study of Jwaneng has proven to be actively planning for mine closure. The town produces the most expensive diamond in the world and has undoubtedly played the most critical role in the contribution to the country's GDP. Although not much planning has been implemented. The town has taken a few steps in the right direction. The newly started CUT 9 project will surely boost the economy of the town even further. However, it believed that the town needs to identify a specific LED strategy that is present and not plan and speak of it in the JUDP 4 only. The town seems to have a definite locational advantage as such; this should be used to its best potential while the proposed projects such as the race track, amusement park and a game reserve will undoubtedly boost the recreational activities and the LED of the town. Given the current state of the town, the next chapter will look into detailing out the possible dangers of mine closure which the Local council, local community and local businesses of Jwaneng may need to be aware. Australian, Norwegian, and several African case studies are reviewed to derive several lessons relevant to the case of Jwaneng.

Chapter 3: Research Methods

Introduction

The research method in this research report was steered by the conceptual framework, which facilitated linkages of critical concepts derived from the literature review. The research question informing the methods is:

Which possible measures could be taken in order to ensure economic sustainability in Jwaneng even after the mine closure?

The conceptual framework generally intended to integrate the process of collecting data collection solutions to the identified problem statement. Through the formulation of research design, this chapter looks into the issues of the primary methods used for the collection of data.

In this section, the research design is broadly focused on, as it details how the research was conducted and what each phase comprised. Milondzo (2003:27) states that ''there is no single and perfect method of obtaining data.'' Given his then led to his argument that data should be collected in different ways in order to obtain the correct required results. This chapter will explain further the research design, and it will explain the specific methods and procedures that were used for the collection and analysis of the necessary data. Case studies will be examined to derive several lessons that apply to the case of Jwaneng. Both international and African case studies will be examined in order to obtain a variety of views on the subject matter of economic sustainability post mine closure.

Research design and data requirement

The research design gave direction and a clear path of how the study should be structured. It shows the guidelines of how the different phases of this research should collaborate in order to achieve the objectives of this study and address the identified study problems. As such, this research is divided into 6 phases that are responsive to the problem statement and work towards achieving the objectives of this study.

Phase I: Background Analysis

The first phase of the research design started with the study problem identification, study justification, the study background analysis on the mining sector in Botswana. The first phase also looks into the existing literature and similar case studies on the economic sustainability of small mining towns. The first phase is highly reliant on the literature, findings from the desktop study and the linkage of the context of Jwaneng to Namibia and Australian case studies. It was certainly important to look

into the existing literature written on the socio-economic sustainability of Botswana. Therefore at most included the collection, interpretation and analysis of secondary data. Secondary data collection in the form of statistics, government documentation, media reports, corporate publications and local and national policies were used (Anand & Sen, 2000).

Phase II: Research Method Preparation and literature review

According to Milondzo (2003), research can either be quantitative research, where the data is collected by simply being observant and analysing the data, observing the conditions and trends and drawing a conclusion from what they see. Secondly, the researcher could collect data in a qualitative manner, where the researcher communicates with the participants about the sub-topics of the research (Mabayani 2017). Information is often gathered from interviews, questionnaires and surveys to understand the details behind specific issues. In this study, the researcher used qualitative methods in the form of Semi-structured interviews and a desktop study on previous research finding to gain a broader understanding of the subject matter. In this research, the researcher used a desktop quantitative research method and qualitative research method to collect and understand the different perspectives on the current economic stability of small mining towns. It was of paramount importance for the researcher to obtain different perspectives on the alternatives to the economic sustainability of small mining towns. The desktop quantitative research methodology used in this research report was not all about collecting data; instead, it was based on reviewing previous research findings to gain a broad understanding of the socio-economic future of small mining towns post-mine-closure.

Phase III: Data collection

The data collection phase (Phase III) took place in the form of semi-structured interviews and desktop quantitative research methods which were divided into four different sections which were:

1. Understanding their background, their role/job description in their respective organisations and their take on the mine closure.
2. To gain an understanding of Jwaneng's physical planning and proposed future development.
3. An understanding of Global perspectives of post mine closure impacts on the economy.

4. The use of case studies will introduce as they will, in turn, caution the does and don'ts for the economic sustainability of Jwaneng.

Phase IV: Data Analysis

Phase IV of the research design is highly involved in the analysis of the data. As the data collection phase was divided into three sections, the data analysis phase will look into synthesising the collected data. A qualitative analysis will be used in order to understand the different perspectives on the socio-economic sustainability of Jwaneng.

This analysis tool is essential to determine how the economic development of small mining towns should be in order to maintain economic stability and attract investment in Jwaneng, Botswana. This analysis will depict the direction which Jwaneng is headed in terms of a future without Diamonds. This section of the research design is vital as it should give a wakeup call and encourage action towards economic sustainability and stability.

Note that the usage of both qualitative and quantitative data was particularly important to have a better understanding of the research problem (Yin, 1994). The two different methods used to collect data were necessary to provide a broader understanding and validation of the research (Hoggard, 2002). The qualitative data acquired from phase III explained the different perspectives to the nature of the problem through: defining the different experiences, attitudes and perspective on the future socio-economic conditions of Jwaneng, Botswana. The desktop study was then reviewed to have a broad understanding of the subject matter. In this research, this was recognised as very important because, mining settlements should not be perceived to be exclusively homogenous communities, but instead they should be perceived to be different communities that form a part of a socio-economical biome. Different backgrounds and approaches demonstrated that there are lessons to be learnt from other case studies.

Phase V: Interpretation and review of data

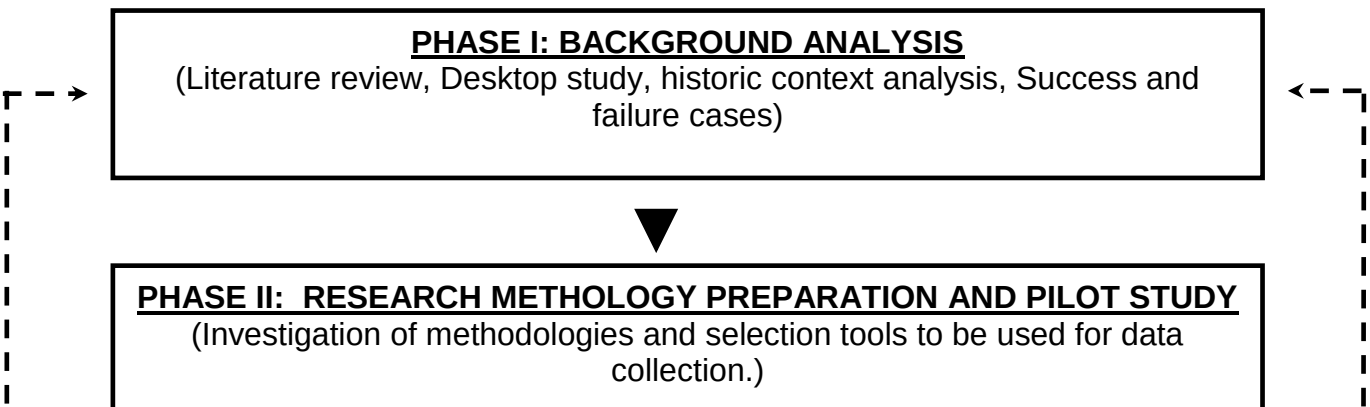
The acquired qualitative data from phase III were transcribed and analysed to derive useful information for the next phase, phase V. In phase V the Interpretation and review of the collected data was done in order to explain the patterns of the problem formation of the socio-economic sustainability of small mining towns. Phase V covers the acquired background knowledge and always relates phase IV

(Data analysis) and Phase I (Background analysis). The interpreted data in phase V will be used in the prospect formation of the proceeding phase. It will lead to deliberative and strategic thinking towards recommendations. Phase V linked the acquired data to the literature review and helped develop an argument and recommendations for this report. In the later stages of this research report, a review of the relevant literature was detailed out in order to highlight the importance of economic sustainability in small mining towns.

Phase VI: Recommendations and Conclusion

The two methods used to collect and analyse data made the recommendation and synthesis of this report clearer. Based on the interpretations from Phase V, the research was then able to recommend responsive solutions to the problems of this research. As a result, recommendations for Jwaneng and Botswana as a whole were made in order to keep the economy of the country stable and sustainable even post mine closure.

Figure__: Research design



3.2. Stakeholder selection

- ***Government institutions***

  - Ministry of investment and trade
  - Town planner from Jwaneng Town Council
  - President of the Republic of Botswana

- ***Debswana Mine***

  - Mineworkers
  - Department of Mine closure

The significance of this research necessitated the need for a selection of critical stakeholders that would be an accurate representation of a large population (Mabayani, 2017). The participant selection criterion was derived from the target population that were identified as the main categories that could contribute to the economic sustainability prospects of the town. The selection of interviewees was determined by the roles that the selected participants played at their workplaces. Note that the Mineworkers were not interviewed as a representative of the mine, but rather as individuals. Semi-structured interviews commenced after participants have consented and confirmed that they would be available and only after an appropriate appointment was made and a short discussion held regarding the research. Jwaneng mine workers and the different ministries were considered for this study, as they are in a position to initiate and commit resources that could have an impact on the town's development Bogdan and Biklen (1982: 145) defines qualitative analysis as "working with data, organising it into manageable units, synthesising it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others". The process of analysis consisted of a process of organising the data into categories, resulting in data being grouped based on themes, concepts and similar features. The information from the interviews is to be then compared to the international literature, to identify international lessons for Jwaneng.

The researcher conducted the qualitative fieldwork, and a total of 11 in-depth interviews were conducted. Interviews were recorded utilising a tape recorder only when the participant permitted the researcher to do so (Milondzo 2003). Data was collected through a variety of means, which included: Analysis of Spatial maps of the town, semi-structured interviews, presentations, documents and reports were reviewed.

The interview process was anticipated to take the form of open-ended questions as this enabled the researcher to understand and capture the points of view of other people (stakeholders) without predetermining those points of view through priority selection of Interview questions (Patton, 1990: 24).

3.3 Expected findings before starting fieldwork

In the case of Jwaneng, mixed and conflicting responses were expected with regards to the future of the town, due to no definite confirmation could be provided on the duration of the mining operations in Jwaneng. The study was expected to outline the possible stakeholders' interventions which could minimise or prevent the possible economic challenges, which could arise if mining activity ends due to the depleting mineral. The study is also to outline the possible economic opportunities that stakeholders could engage in, to optimally benefit from existing or future economic opportunities, which exist in the town.

3.4 Possible Limitations of the study

Key challenge expectations that were encountered during the study include:

- Unavailability of representatives from key stakeholder organisations, which could result in their views not being considered for this research.
- Due to the location of Jwaneng, the researcher did not spend enough time in the town, to interview more residents. The researcher could only visit Jwaneng once, for one full month.
- Most of the interviews could be conducted telephonically or via email, which might result in less personal contact and the unwillingness of interviewees to confide their personal views to the researcher via email.

3.5. Ethical considerations

Ethical Considerations include that the researcher is to be cognizant of the fact that an element of subjectivity is going to influence the results. An objective approach with regards to the views of the stakeholders is to be adopted (Milondzo 2003). The researcher is to make strenuous efforts to remain as objective and value-neutral as possible, but a degree of subjectivity is to be inevitable, particularly in the drafting of possible recommendations. The exercise of triangulation is also vital to confirm the researcher's conclusion that a critical ethical consideration is that, the researcher needs to guarantee all participants of confidentiality and anonymity. This means that the identity of all participants is to remain confidential through the report unless the participant permits the researcher to do so (Milondzo 2003). In order to guarantee the participants of confidentiality, participant identities were kept anonymous unless the participant sat otherwise.

Chapter 4: Findings and Analysis

Introduction

Critical issues that triggered the necessity to carry out this study is the uncertainty of when the Jwaneng mine will close. Furthermore, what will happen to the town economically post mine closure? This uncertainty is precisely due to the variables that determine the operations of the mine itself. The objectives of this study are to identify the challenges of achieving economic sustainability for Jwaneng and how economic sustainability may protect the socioeconomic future of Jwaneng. This study expects mixed and conflicting responses on the future of Jwaneng. As such; the data collection expects no accurate confirmation on the lifespan of the mine as such information is highly confidential. Instead, it focuses on progressively planning for mine closure and ensuring economic sustainability and diversity as tools for a stable future.

This chapter intends to outline the concerns of different stakeholders in Jwaneng, and further identify the possible measures that could be used for the town to succeed such as the Local Economic Development (LED) initiative as a tool used to achieve economic sustainability post mine closure. A sample of thirteen participants who represented critical stakeholders in this research took part in semi-structured interviews. Ten mine worker participants were interviewed, a representative from the Ministry of Investment Trade and Industry, a representative from the Ministry of Presidential Affairs (Office of the President), a representative from the Jwaneng Town Council, and a representative from the Department of Town and Country Planning. Confidentiality and anonymity are maintained for some participants who asked that their identity must be kept anonymous.

As shown in the annexures, the questions asked in the interviews were all along the lines of unpacking the economic sustainability of Jwaneng and the socioeconomic future of Jwaneng post-mine closure.

4.1. Mineworkers background

All interviewed mine workers are permanent workers in the mine and started working in different years, while some started in 2009, some started later on in 2014 and others in 2013.

Their Job description differs, and all do have permanent roles until the worker reaches 60 unless they resign. Most participants came with their skills already acquired and expanded them while working in the mine. Based on this, the mine surely has played a considerable role in the employment and poverty alleviation of Botswana. The mine does take its workers for short courses to sharpen their skills so they can better function in the mining environment. The workers may benefit from these skills in different sectors outside of the mining sector post-mine-closure. So far, workers have benefited a comfortable salary, and free accommodation, education incentives for mine worker beneficiaries and other benefits are in the form of exposure.

Working in the mine exposes workers to a different working environment, especially in terms of the safety culture and just having the worker open their minds to other available opportunities. The mineworkers do greatly benefit from exposure in the industry and workers tend to become more marketable. The mineworkers also get to engage with different professions such as housing officials, construction managers, Safety health and environmental protection units, engineers and project managers. As a result, it has diversified the workers' background and experience. However, the mine does not provide any post mine closure benefit. Just like any other employee in a different sector once the contract ends, there will be no benefits post-retirement.

There is no certainty and no set date of when the mine will close, the mine is anticipated to continue operating even beyond 2050. Challenges that may be faced by the mine are the rise of competing markets. What could be a threat is the rise of synthetic diamonds and the extraction of better diamonds from different countries. The competing and rather pressurising markets from Angola and Rwanda could cause the value of diamonds in Botswana to be more expensive to extract as the diamonds are more on the surface and faster to extract as compared to Botswana. The consumers themselves seem to find more interest in the competing markets. The challenges mentioned above could cause the country to experience another credit crunch just as it did in 2008, where consumers cannot afford to purchase the diamonds. As a result, the prices of diamonds dropped drastically.

These are the things that could cause the mine to close earlier. As for the benefits, just like any other contract, workers will be given one month notice, and they will part ways. The Phikwe, copper and nickel mine in Botswana has recently experienced this. The mine closed earlier than expected due to pressures in the market and the shortage of funds to mine.

4.2 Mineworkers personal take on the mine closure.

Although the details of mine closure policy are highly confidential, the interview question sought for the participants' understanding and perspective of the reality that diamonds are a depleting resource and how they have personally planned for it. It is a rather scary reality that diamonds are depleting; it is a reality that causes some concerns. In as much as some individuals may be financially stable post mine closure, one cannot be entirely economically stable in an economy that is not stable and sustainable.

Looking at the case of Botswana as a whole, the economy is highly reliant on the mining industry as the main driver of the economy. If the diamond extraction comes to an end, this will cause us to live in old places. Given this worst possible scenario, prices of goods and services, as well as tax, are expected to increase. "As citizens, we can only vote for the one who promises us a better-diversified economy that incorporates agriculture, tourism and construction." Local Community Participant (2018). What is strikingly a setback is that the population itself does not support the initiative to look into other sectors as the population is only 2 million people.

4.3. Mineworkers Response:

Participant 1: Stagnancy in developing the town is evident as there has been slow development in the town for over a decade. “The lack of foreign investment in Jwaneng is precisely due to the limited ease of entry for foreign investors to operate in Jwaneng; this is certainly a threat.” The absence of adequate investment in the development of Jwaneng has resulted in the town not growing. Therefore, the economic future of Jwaneng is uncertain, which implies that the town may not survive post mine closure.

Participant 1 (2018) expressed that “if the diamond mine closes, the town will become a ghost town". The respondent strongly felt that most of the people currently living in Jwaneng would leave the town once the mine closes. If the mine closed and alternative jobs besides the jobs offered at the mine are unavailable, then people will return to their hometowns or to towns/cities where there are job opportunities. Another reason is that most people do not intend to permanently establish themselves in the town, as most of their family members are staying in different

towns/cities. This alone is a reality; there is a need for us to begin to work collectively to ensure that the town remains economically and socially active post – closure.

Participant 2: Participant 2 highlighted that the availability of existing infrastructure for business development is a severe problem in Jwaneng. The current infrastructure for business expansion or the establishment of new businesses is a concern because most land is undeveloped yet privately owned. This cross-cutting issue calls for the need to ensure that all land, particularly near the Jwaneng Central Business District, is developed and not left vacant for an extended period particularly near the Shell Garage as shown in the map below. All landowners within Jwaneng should be given a period in which their land parcels should be developed.

Figure 20: Undeveloped potential land near the city centre



Source: Google maps

Accessed 18 January 2019

Respondent indicated that the cost of living in Jwaneng is not economically viable. Goods and services in Jwaneng are expensive because of numerous reasons such as the lack of competition and the assumption that all residents in the town can afford an expansive lifestyle because they work for the mine.

Participant 3: Participant 3 mentioned that the expensive pricing and unavailability of goods in Jwaneng have resulted in people travelling to Gaborone and Kanye for goods and services. This, on its own, is a clear indicator of what will happen to Jwaneng post mine closure. Majority of the people in Jwaneng opt to travel to other towns and cities for goods and services, as opposed to staying in Jwaneng for them. This cross-cutting issue demonstrates that post mine closure, people will leave Jwaneng since they show dissatisfied in the quality of goods and the efficiency of services provided in Jwaneng. Surely this should be looked into; if we are to keep people and investors in Jwaneng in the long run, then we should solve this issue.

Another concern raised by Participant 3 was the availability of accommodation. There is a shortage of accommodation to rent in Jwaneng. Currently, available accommodation is for the Debswana mine employees, and private individuals struggle to obtain accommodation to rent. There are low-income houses at the heart of mining town, while the rest of the town has privately-owned housing and medium scale housing for rent. Properties to rent are scarce; hence, why people have started developing residential units in a neighbouring village by the name Sese.

Participant 4: Participant 4 indicated that the future economic strength of Jwaneng relies on implementing the secondary sector of diamond mining activities as an alternative to achieving economic sustainability. There is a need to look into keeping the process of manufacturing diamonds within the country instead of exporting raw diamonds to international markets. Looking at the supply chain of the diamond industry, the end-user who is often retailer sells jewellery and gains more returns than the one who extracts the mineral. It is high time we, as a nation, look into the secondary and tertiary sectors of diamond production.

Participants generally mentioned that the development of Jwaneng as a more economically active town could lead to the creation of business and employment opportunities in Jwaneng. Predictably, these opportunities will attract a high influx of people into the town for different reasons other than working for the mine.

Participant 5: Participant 5 indicated that there is room for infrastructure in Jwaneng to be improved. Additionally, there is sufficient land available for future developments such as roads, immigration offices, retail shops, recreational facilities, schools, clinics and hospitals. Also, the development of agriculture sector because food production projects are a possible solution to the uncertain future of Jwaneng. While there is small-medium scale agriculture on the outskirts of Jwaneng, there is still an opportunity for large scale commercial agriculture to take place in the outskirts of Jwaneng.

Reflecting on the findings collected from the mineworkers, the participants generally felt that the uncertain future of Jwaneng had hindered the development of the town. From the findings it is noted that, only a few participants think about the future without diamonds, and in thinking about the future they are grateful for the exposure that they have received from the mine as this has awarded them the opportunity to work in different countries, and with a variety of different people as well. The efforts of the mine are evitable since the mine owns, a private school in Jwaneng, a local game reserve, a local stadium and hospital. However, these efforts are not enough to drive socio-economic wellbeing post – closure.

Most mine worker participants are strictly staying in Jwaneng for working purposes and intend to move out of the town as soon as their contracts end. The participants revealed that their investments in property and businesses are all outside of Jwaneng and further added on to say the town is at most populated by mine owned properties and is highly limited to diversity. As such, the interviewed participants believe there is nothing that could bind them to Jwaneng beside their jobs in the mine.

4.4. Mine Approach

According to an online publication by DeBeers Group (2017), the overall purpose is to transform the diamond mineral into an extended-lasting reality. Therefore safety and sustainable measures have been put forward to make the most of the mineral and to leave communities dignified and empowered. Post-Mine closure Plans, intend to leave mining communities with a sustainable future. While the mine is operational, its social and environmental performance should be aligned to the implementation of a mine closure plan.

The mine has demonstrated a very sustainable manner of post mine closure planning. It is commendable that the mine works towards addressing the poverty and socioeconomic aspects that impact many of the communities in which it operates. The mine has helped the government to achieve some of Jwaneng's long term goals. However, there is currently a need to run training,

job creation and shared decision making with the primary goal of implementing programmes that build the competences of the Batswana citizens.

Closure plans are developed in partnership with local stakeholders and tend to become more detailed as it reaches the final plan. Note that all closure plans are to address environmental and social issues. While these plans are still in the early stages, not much implementation has been done mainly because mine closure is decades away. There has been uncertainty on the actual closing date of the mine that is mainly due to the confidentiality of disclosing such information to the public. However, it is too early to tell and to an extent, misleading. Mine closure is not always the only solution; it is essential to know that possibilities to extend the mine life could be through selling it as an asset to other technical and financial experts. As a result of such an instance, socioeconomic benefits for the community can still be prolonged, such as employment. A similar situation happened in Kimberly, South Africa.

Sustainable Development through Partnership

DeBeers as an organisation is or operating towards the goals of sustainable development. As a result, consideration and responsibility for long term socioeconomic implications for the decisions made currently do not just serve the mine, but they serve the societies in which mining operations occur, in this instance, Jwaneng. In partnership with the government, DeBeers intends to ensure that diamonds which are finite resource are transformed into economic wealth and improve the quality of life even post mine closure.

Transferring town management

Jwaneng was developed to serve the mining operations and throughout its life has been managed by the mine. As closure approaches, it would be recommendable for managerial roles of infrastructure and public services to be transferred from the mining company to the relevant government authorities such as the town council and the different ministries.

Examples of a case study where transferring town management was successful are Namaqualand, South Africa, which was a previously privately owned by Koingnaas. In 2016, the mine was handed over to the local municipality. Currently, the local municipality operates all the public assets such as schools, hospitals and residential infrastructure. All the De Beers Group employees were transferred to the local municipality. This shows a strategic manner of handling mine closure that still guarantees economic stability for its workers and demonstrates sustainable measures that have been taken to ensure socioeconomic stability even post mine closure. Jwaneng town council has also transferred its managerial role of infrastructure from the mining

company to the town council and transferred Namdeb property ownership into private property ownership.

In the case of Botswana, plans towards economic diversification in collaboration with the local and national governing bodies are put forward. These plans intend to fulfil the development priorities of the Botswana government. Besides, these plans are to detail the long term vision of the mining towns and focusing much on tourism, light industry and agricultural opportunities in the mining towns.

Town Council Response

From the Jwaneng Town Council, this research intends to explore the current plans that have been put forward for Jwaneng looking closely at the proposals that may affect Jwaneng's future economy, its development and the social aspects that may directly affect the people of Jwaneng.

A representative from the Jwaneng Town Council shared some thoughts concerning the future of the town. While others might have lost hope in the future of Jwaneneng, the representative from the town council believes that the Jwaneng is a district centre as it will continue to be economically stable post mine closure. His overall role in the Jwaneng town council is to look into issues of land management and development control and enforcement/ implementation of Jwaneng. His role is to also join and with other departments to ensure sustainable settle planning which highly focuses on the plans of Jwaneng.

Fifty-plus years from now, the town council are currently working on plans that intend to best the town economically. The town council is currently at the draft stage of plans that serve Local economic development. While coming up with plans, developers are encouraged to come up with long term developments that will not only serve Jwaneng but the neighbouring villages close to the town. The only developments that have attracted investment and people are commercial and retail development and Industries such as the mine and construction firms (Participant1, 2018.

The town council, therefore, encourages developers to have sustainable developments that will exist post mine closure. This mainly because the town has the potential to exists as a functional regional centre post mine closure which has high potential to be strengthened by the industrial and commercial/ retail sectors. Developers are encouraged to develop long term developments that wi sinkholes. Based on this, although the mining company developed the town and played a role in ensuring LED transformation, the mining company has had negative impacts on the environment and the safety of the local community.

Mine closure in Koffiefontein in 1982 left the town economically stagnant, and businesses declined while in Carletonville businesses shut down. From these two case studies, a few lessons could be learnt for Botswana's very own copper and nickel mine in Selibe Phikwe.
The closure of the BCL mine led to the economic stagnation of the town, and later businesses shut down. The effect of mine closure became the primary catalyst to Local Economic Development. The implementation of the LED through the empowerment of small businesses in the agriculture sectors in Carletonville did not necessarily guarantee economic stability and sustainability. Instead, it seemed like it is the most straightforward approach to keeping the town economically active, even post mine closure (Helmuth, 2009). While the solution to economic decline, may seem to be mine closure policies and LED programmes it is important to note that the lack of mutual co-operation, exchange of ideas and close collaboration between the local government and the local mining industry. Long term planning pre-mine closure is the cure or solution to maintaining economic stability and sustainability post mine closure (Van Eerden, 1996).

The current projects implemented developments whereby partnerships with the private sector to develop n tourist / economic route, which takes advantage of the A2 / Trans Kalahari highway which passes through Jwaneng and further links to the Kalahari, Namibia and Maun. The location of Jwaneng presents an opportunity to expand the tourism sector. The town council is yet to benchmark the tourism sector on the Southern side of Botswana. The tourism sector has the potential to expand in Jwaneng in post mine closure given that the game reserve is already in existence. Given the provision of plans, the mine could exist as a tourist attraction. Currently, plans are not at an advanced level as yet. For confidentiality purposes, the mine has not shared some of the plans with the town council.

Looking at the current progress of socioeconomic progress, Jwaneng does not have any hope of expanding and being economically stable. The Jwaneng mine produces the most expansive diamonds worldwide. That is why the town is functional currently. Although competitive markets exist such as the Chinese Synthetic diamonds, the town and country are still very reliant on diamonds. Indeed the diamond has kept the country economically stable.

Post mine closure plans are still at a conceptual level. Until progressive and incremental post mine closure plans have been done and shared with the town council, only then could we assured of economic stability. The relationship between the mine and the town council is not necessarily close. However, they do engage when they require a service. The Urban

Development Committee has been working on development plans, projects and issues relating to service delivery. Their relationship is at most based on reports on projects, constraints and specific community projects all concerning the development of Jwaneng. Most engagements are

about the objectives of the Jwaneng development framework. The Jwaneng Urban Development Framework is a five-year plan that guides the development of Jwaneng in collaboration with the mine. Botswana does have much potential to develop; however, the government needs to give Batswana more opportunities to invest and develop small towns such as Jwaneng through speedy land allocation. There are plans put forward, such as the industrial development plan as well as the amusement park and Game Park; these plans will surely boost the economy of Jwaneng and create a lively socioeconomic atmosphere.

Department of Town and Country Planning

Ooke, (2018) from the Department of Town and Country Planning strongly agrees with the reality that Diamonds are a depleting resource and one day they will be no more. As such, this calls for us to identify what Batswana are knowledgeable in truly. As a country, our motto is to be a knowledge-based economy, however Batswana particularly those residing in Jwaneng are highly knowledgeable in Agricultural practices. It would be of great benefit to the people of Jwaneng if Climate-smart agricultural methods were implemented and brought to the people. It is also questionable why Gaborone is branded the diamond city. Jwaneng is the fair settlement that should be regenerated and developed to better suit the ‘’ diamond city’’ brand.

Looking at the current economy in Jwaneng, it is dominated by the primary sector, which only extracts the mineral. The extraction of diamonds is costly and to an extent, underprized. It is high time we keep all the supply chain steps in the Jwaneng and only export out a finished product as opposed to exporting raw material.

Moving forward, it is recommendable that the Mine shares with the town council their post mine closure plan for Jwaneng. Likewise, the town council should share the development plan with the mine. This will, in turn, keep both parties aware of the future of Jwaneng and work towards a frequent target.

Jwaneng should be a city mainly because it is home to the most productive diamond mine in the world. The Jwaneng mine is the fair settlement that should be branded as the ‘’Diamond city” instead of Gaborone. Gaborone is not located in an ideal geographical location to be branded ‘Diamond city” mainly because there are no mines in Gaborone. This unique characterise of the Jwaneng mine should be utilised to its full potential to benefit the people Jwaneng better. The unique character of Jwaneng gives way for the town to be developed and turned into a city. The town is currently a service centre. All neighbouring settlements get their services from Jwaneng, some of which are not efficient and satisfactory to the people using them. In the past decade,

there has been a rise in the development of Sese (a village 30 km from Jwaneng), the village is developing rapidly. The development of Sese is an indicator that Jwaneng is getting congested and people opt to build in Sese. Therefore, it is highly recommendable to turn Jwaneng in a Smart Diamond city that is socio-economically stable.

As shown in the map below, Jwaneng (the town) is segregated from the mine. There is no sign of integration between the two. This alone should hint what will happen post-mine-closure. The mine is located about 10 kilometres from the town, and it is strictly accessible to mineworkers only. Ideally, the mine should invest in Jwaneng, what has been done thus far is barely enough for the town to grow and attract the right investor.

Map 19: No integration between the town and the mine.



Source: https://en.wikipedia.org/wiki/Jwaneng_diamond_mine#/media/File:Jwaneng_mine.jpg

Accessed 24 January 2019

Thirty to fifty years from now, Jwaneng could be a Smart city with green technologies. However, there is no visible progress in Jwaneng. The town has remained stagnant with investment and urban development. Based on this, the mine needs to be more transparent and inclusive to working with other stakeholders, particularly the Jwaneng town council. There is a need for Iconic Developments. However, the budget put aside for developing Jwaneng is only P500 000.00,

which is barely enough. As such, the Government of Botswana needs to consider the development of mining towns in its budget.

National Government official's response: Action towards achieving Economic Diversification:

In the case of Botswana, the negative impacts of mine closure are experienced in Selibe Phikwe. Post-mine closure, Selibe Phikwe town was left with devastating impacts; as a result towns such as Francistown, Palapye and neighbouring villages such as Molalatau were significantly impacted by the closure of the BCL mine. Property prices began to drop, and small businesses began to struggle financially. Based on this, a country cannot rely on only one commodity in order to keep a sustainable economy. The term economic sustainability refers to the use of various strategies and interventions that seek to utilise existing resources in a socially, financially and environmentally feasible and beneficial manner. Economic sustainability refers to practices that support long-term economic growth without negatively impacting the social, environmental, and cultural aspects of the community. Economic Diversification Drive is a policy that intends to safeguards the future economy through prioritising diversification stability and growth. Before the independence of Botswana, agriculture was the most dominant sector then soon after the diamonds were discovered in Botswana; there was a shift from agriculture to the mineral mining industry. The only mistake that led to the stagnancy of the agriculture sector was that the sector was not given any insurance of improvement to other sectors (Participant 1, 2018)

In Botswana, the government has been actively working on the Economic diversification drive, which is a policy that was created in 2010. This diversification initiative which has identified the priority sectors such as the beef cluster, the tourism cluster, the finance cluster and the mining industry cluster. These priority areas have been identified as the main areas of focus in Botswana that will increase the employment rate a help eradicate poverty (Participant 2, 2018)

The beef industry is big in Botswana; however, the industry has not been utilised to reach its full potential. The beef industry currently slaughters beef and exports it to the European Union (EU); the commodity is just sold as a raw resource. It is worth mentioning that the beef industry could initiate other industries, also known as downstream industries such as the leather industry which also has the potential to create jobs. Tourism is another industry that has much potential to expand; however, the sector is currently foreign-dominated, particularly in the Chobe area in the Okavango Delta. The government has, therefore, come up with policies to ensure meaningful participation of citizens in the tourism sector. These initiative are to ensure that the diversification of sectors is backed up by policies. These policies must be driven by the National Strategy Office, which is highly involved in the implementation of the cluster development model of service centres. The sectors mentioned above are a part of this cluster since they have the most

significant potential to create employment and safeguard economic sustainability (Participant 3, 2018).

The appointed president has been travelling around the world and interacting with his counterpart in other countries with the primary aim of attracting foreign direct investment. Foreign direct investment is significant when speaking about job creation, coupled with that, the government of Botswana has recognised that it may be useful to make changes in policies to encourage ease of doing business in Botswana. Ease of investors to come and invest in Botswana is ideal. The visa regime was the first most considered change, in the past it was tough for investors to come to Botswana precisely due to the immigration policies, but now it is made more accessible for people to come to Botswana and to acquire issued visas at the point of entry, whether it is at the airports or the borders. The ease of doing business reforms have been proposed, where ministries and departments are involved in attracting businesses. There is going to be a one-stop service centre where investors will submit the necessary documents in order to acquire: residency/work permits, immigration services, licenses and business registration. Ideally, ease of doing business intends to work towards economic stability. The purpose of ease of entry is particularly crucial for luring potential investors. However, resources such as water are scarce in Botswana, Note that ease of doing business may attract an influx of people into Botswana; thus potentially stressing resource availability.

Minimal planning is done at the national level of governance to the economic sustainability of small mining towns. The participants stated that ‘'When speaking about foreign direct investment and coming up with policies that will make it easy for investors to invest we are looking at the whole country without explicitly looking at Jwaneng, as such our believe as government is to ensure that each place has its unique features which may be suitable for the production of certain commodities. For instance, when speaking of clusters, places such as the Kgalagadi are suitable for livestock production. Jwaneng forms as a part of the Kgalagadi. So if we are dangerous in terms of promoting the cluster development model, places such as Jwaneng are suitable for agriculture, particularly livestock both beef and poultry farming. The people/ farmers in Jwaneng should be encouraged to participate in such an economic activity such that when the mine reaches its lifespan, at least other economic activities that can support the small town of Jwaneng. So based on this it is essential to note that economic diversification in a broader sense covers the whole country and therefore small towns such as Jwaneng and Orapa may only benefit if the Economic Diversification Drive (EDD) succeeds (Participant 3, 2018).

Participant 6 (2018) from the Ministry of Investment, trade and Industry stated that, “We have been relying on diamonds for the longest time because they have been our main source of

revenue and that has caused problems for the country because in the extreme case of diamond depletion, then we will be serious trouble because the economy of the country will suffer".

Agriculture used to be the main contributor towards the GDP over the years, before the discovery of mineral. However, the agriculture sector was surpassed by the diamond industry, which had more significant revenue and contribution to GDP. For the simple fact that traditionally the farming industry has been at a subsistent level, it has never been commercialised. Commercial agriculture in Botswana is at a small scale level. That is why mineral and services sectors are contributing significantly to GDP. However, from the agricultural sector, because of its nature of production, its contribution is minimal precisely because a majority of farmers in Botswana are subsistence farmers who produce for their families and not necessarily for the markets. As such, that is why, over the years, the most contribution has come from the mining sector. Therefore it is worth noticing that it is not necessarily because the production has gone down, but it is because of the production method that leads to the level of output a sector may produce. The agricultural sector is stagnant mainly because the method of production never changed; that is why its contribution. The beef industry has a lot of potential because many countries from the Middle East are willing to import beef from Botswana. As such, it is a matter of commercialising beef such that we produce enough livestock in order for beef to be sold in larger quantities.

Although the economy of Botswana has been growing at a fast rate for the past forty years, the economy still struggles to be diversified. The economy is still highly driven by the primary sector whit minerals and resources such as diamonds, copper/Nickle and beef being the main drivers of the economy. In 2010 the government of Botswana tried, by all means, to encourage the different ministries and all stakeholders to prioritised economic diversity aggressively in all the respective organisations and institutions. As stipulated in the Economic Diversification Drive (EDD) short term and medium-term strategies, the government encourages the promotion of local production and consumption through the citizen economic empowerment strategy. EDD intended to achieve positive, responsive and speedy outcomes on the competitive and efficient nature of local economies.

It is worth recognising that the above mentioned EDD short-term strategies are not necessarily sustainable for the prosperity of economic diversification in Botswana. As such, the Medium long term strategy interventions seek to diversify the economy through the development of a competitive economy at a global scale. Ultimately the goal is to diversify the economy to a point where different sectors may continue to grow eve post-mineral depletion. Surely is economically sustainability as this primary goal enables the development of goods and services that are in line with both the local and global standards, thus giving precedence to entrepreneurship and a good business culture that enhances citizen participation in the development of the economy.

Participant 7 (2018) from the Office of the President stated that "many challenges and priorities have been experienced in Botswana, however since independence, the government of Botswana has been investing in human capital and the physical infrastructure rather than on the improvement of other sectors besides the mining sector. Therefore it is just a matter of time before the population of Botswana may enjoy the benefits of being a resource-rich country. However, this is done at the expense of prospering other sectors."

Participant 7(2018) mentioned that "there are no policies for Jwaneng which specifically talk to the process of economic diversification and economic sustainability, which altogether is setting us up for a disaster. The recently closed Selibe Phikwe mine had a policy which focused much on the economic diversification process of the town. Pity the town never implemented any diversification actions hence why the town is moving towards being a ghost town." The lack of integration between shows that there is a failure to follow through and implement our policies. The Jwaneng Urban development Plan is not enough to guide the economic diversification process. As such, much work is yet to be done. The reality is that although it may seem as if we have defied the odds and managed to avoid the resource curse, it is a little too soon to tell. Currently, diamonds are, no doubt a blessing to Botswana as they have managed to boost the economy. However, the management of resources and revenues while the commodity is still in existence is what will determine if the commodity is a blessing or a curse post mine closure.

Conclusion:

The research findings discussed above have shown that in Jwaneng, there is an overdependence on mining companies to sustain the local economy and the livelihoods of employees. The findings from the Jwaneng Town Council show that there is minimal preparation done for when the Jwaneng mine closes, as such this sets the town up for difficulty to establish a sustainable post mine economy.

The present policy frameworks, which are the Jwaneng Urban Development Plan, seem to support sustainable developments in Jwaneng, this is demonstrated through the diverse proposals that intend to trigger socio-economic upliftment post mine closure further. The Jwaneng Urban Development Plan uses Local Economic Development (LED) as a priority that intends uplift the socio-economic nature of Jwaneng post-mine-closure. From the findings attained from the Town Council, LED is indeed a collaborative process that depends on the local partnerships and support from national and regional structures. Given this, the findings from managed to show that the national and regional structures have had minimal planning for small mining towns in general. Findings from the Ministry of presidential affairs and the Ministry of Investment, Trade and Industry

showed that indeed much planning had been done for the socioeconomic future of Botswana as a whole while almost no planning has been done individually for Jwaneng.

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Chapter 5: Reflection

Introduction

This chapter aims to respond to the central question in this research report which is: What are the possible measures that could be taken in order to ensure economic sustainability in Jwaneng even after the mine closure?

This chapter also aims to report back on the different responses from different participants. From the literature review and the findings, it is evident that the mining sector in Botswana has provided jobs and kept the economy of the country stable. However, newspaper articles done by (Shantyaei, 2017) demonstrate that the country is enthusiastically looking to diversify its economy through the empowerment and improvement of other sectors such as sustainable tourism. This is mainly to maintain the country's high standard of living, even post mine closures (Shantyaei, 2017).

Reflection on literature and findings

The literature and derived findings have revealed that resource-rich countries often grow at a prolonged rate than resource scares countries. The rate of growth in resource-rich countries is precisely due to numerous reasons such as conflicts and discords on the use and management of resources which is commonly known as the Dutch disease. Eventually, nations realise that there is a need to diversify the economy as a strategy to avoid over-relying on one commodity (Shantyaei, 2017). Botswana has defied the odds; it has demonstrated that a resource-rich country can manage its mining industry revenues well using the good-governance tool as a way of managing its commodities.

The lack of planning for economic sustainability before mine closure by creating plans that realise that the availability of natural resources should have a positive effect on economic growth surely is the downfall of many small mining towns. This realisation seems to avoid the resource curse, and best ensures sufficient use of resources and improved economic infrastructure (Shantyaei, 2017). The role of the government should further entail good governance, particularly for effective regulation, anti-corruption and a good representation of the public (Shantyaei, 2017). However, it is essential to note that although good governance is crucial for the management of resources, one may argue that good governance is not necessarily a cure for the unsustainable closure of mines. Rather good governance is a useful tool that avoids corruption and effectively manages resources.

Given the findings and different perspectives from the participants it is evident that current mine closure planning for the town of Jwaneng has only been done at the local level of government (Town council) while at the national level of government, broader planning for the economic sustainability of Botswana as a whole is currently a priority. The Jwaneng Urban development plan 2012, demonstrates detailed proposals that indeed move towards economic sustainability while at national scale the Economic Development Drive plans for the economic diversification and sustainability of the whole country using the development clustering model.

From the literature, it is evident that Botswana has benefited tremendously from good governance. The discovery of diamonds in Botswana is no doubt what transformed the country from being one of the poorest countries to the forth wealthiest country on the continent (NDP 11). However, it not sustainable, nor is it safe for the whole country to rely on the diamond commodity. As such, the government of Botswana have come to realise that although the diamond industry is doing well and contributing significantly to the GDP, Diamonds are a depleting mineral and will one day be no more (Shantyaei, 2017). There needs to be less reliance on just one sector, which is the mining sector and more priority towards diversification of the economy. The growing fear that diamonds are a depleting resource which is estimated to deplete within the next few decades indeed is a wake-up call. Shantyaei (2017) further mentions that just like other commodities and minerals, diamonds worldwide are experiencing a decline in their international demand, which means that Botswana directly affected by such fluctuations. Contrastingly, there have been uncertainties with this as some strongly believe that as soon as the diamond mineral depletes, the diamond producers will pack and leave, with a possibility of this happening the country has resorted to capitalising the second-best performing sector which is tourism (NDP, 11).

According to the National development plan of Botswana, the country receives a significant amount of 1.6 million visitors and tourists in the year 2015, thus accumulating a significant sum. Although this only contributes 3.3 per cent to the GDP, it has created a sum of 140 000 jobs. Based on the statistics, the tourism sector is indeed a sector with the most potential after the mining sector to stabilise the economy of Botswana (NDP, 2011).

Intending to expand the tourism sector as a means to diversify the economy, the government of Botswana have begun to plan and implement different tourism models which include, urban, cultural adventure business and most importantly sustainable tourism. The Okavango Delta is recognised as one of the UNESCO world heritage sites, and this recognition presents various opportunities to expand (NDP 11). The Okavango Delta covers an area of about 15000 to 20 000 kilometres squared and has numerous herds of zebras and a pride of lions and is home to the world's largest herds of elephants. Based on this, it is highly evident that this sector indeed has much potential to contribute significantly to the economy of Botswana.

- *However, the question that remains to date is, whether Botswana can survive on just tourism post mine closure?*

- *Moreover, how will this empowerment of the tourism sector keep the economy of small mining towns stable even post mine closure?*

These are the questions that have remained unanswered and therefore need to be addressed through policy. The government of the Republic of Botswana has taken into their hands the decision and responsibility to boost the eco-tourism (Minister Khama, 2017). Although tourism will not contribute to the economy as diamonds have presently or in the short run, there is a need to manage expectations, more especially for the coming generations. There is, therefore, a need to be innovative; it is necessary to think beyond the Okavango Delta and the Chobe. There is a need for more tourist attraction areas around the country. Perhaps turn closed mine pits into tourist attraction areas (NDP, 11).

There is a need to be a lot more innovative. Although this is a challenge in itself, there is a need to change the people's perception and make it known that Botswana is a tourist attraction country. The idea of sustainable tourism is not just about boosting economic development and reducing unemployment. It is also about the inclusion of communities. Such innovative ways of economic development should primarily speak to economic sustainability. Botswana is currently looking into boosting trade with neighbouring countries through the development of transportation routes; this is one of the initiatives that have been put in place to improve trading between Botswana and its neighbouring countries. Diamonds indeed have been a breakthrough for the success of Botswana, but there is a need for diversification.

Challenges of achieving economic sustainability in Jwaneng

The main challenges are concerning the shift in the investor's sentiment could particularly have an impact on the market economies. Theorist such as Alexeev and Condras, (2009) argue that good governance guarantees economic sustainability and economic stability, theorist such as Chatham House (2016) argue that good governance alone may never solve the dynamic challenges faced by mining depletion. Based on this, it is evident that good governance on its own may not cure the resource curse. Economic sustainability requires different stakeholders to work towards strengthening LED and specific planning at different spheres of government. This research certainly brought to light the need to avoid the Dutch disease by diversifying the

economy of Botswana through the improvement of other sectors (Torvik, 2004). Drawing from the findings, much concern and planning for the future of Jwaneng is at most done by the Town Council, the community and to an extent the Debswana diamond mine. The mine closure department at the Debswana mine has shown dedication to the wellbeing of Jwaneng Post mine closure. Although this department seeks to prolong the life span of the mine and does not guarantee the exact date and year of when the mineral will deplete, it shows commitment to planning for a sustainable future.

From the interviews, points that were picked up is that proactive planning and dedication to working towards economic sustainability for Jwaneng is at most the responsibility of the local government and less planning at the national level of government. The ministry of Investment Trade and Industry disclosed that local governance and small-medium enterprise empowerment of local communities of any town are to be governed by the local town council following the EDD and NDP. Only when necessary does the national government intervene in the local governance. While findings from the Local Jwaneng town council disclose that, there is a need for more involvement of the National government in ensuring the economic sustainability of small mining town such as Jwaneng. Resources are leaking out of Jwaneng, leaving the town with no financial means to achieve all the proposed plans for the town

From the above findings, it is evident that indeed, mine closure is a threat not only for Jwaneng but for Botswana as well. Although not much planning for Jwaneng has been done at the National level of governance, more detailed planning has been done at the local scale of governance. The lack of planning for small mining towns seems to be a deliberate action as the national government believes that governance of the LED processes of towns is the responsibility of the local town council. The non-integrated planning approach identified in the findings is problematic. The cause of this is because decision-making powers and influence comes from the national government. Therefore, the collaboration between the two with regards to local economic diversification and economic diversification need to be visible. Based on the findings, the next chapter seeks to analyse the findings further.
This chapter aims to respond to the central question in this research report which is:

What are the possible measures that could be taken in order to ensure economic sustainability in Jwaneng even after the mine closure?

This chapter has reported back on the different responses from different participants. From the literature review, it is evident that the mining sector in Botswana has provided jobs and kept the economy of the country stable. However, newspaper articles done by (Shantyaei, 2017) demonstrate that the country is desperately looking to diversify its economy through the

empowerment and improvement of other sectors, such as sustainable tourism. The improvement of other sectors is mainly to maintain the country's excellent standard of living, even post mine closures (Shantyaei, 2017).

Jwaneng faces some challenges in the form of a lack of investment. Investors seem not to place any trust in the town to remain economically functional post mine closure. The different stakeholders, particularly the business community and the local town council, have failed to advertise the areas of potential to the investor. There is a need to adequately advertise proposed plans in order to attract investment into the town. With little to no advertisement, the investors and developers are reluctant to place trust in investing their money.

Chapter 6: Recommendations and Conclusion

The closure of mines is often nerve-wracking since they occur in small communities /towns which are usually located in geographically isolated areas such as Jwaneng, Botswana. The reality that diamonds are a depleting resource is wake call for the country as a whole, mainly because they contribute significantly to the economy of the country. More-over, mine closure planning should be a well-thought process as the local community in mining settlements are the most affected. As such, mine closures should be regarded as a natural course which is a direct result of the depletion or the effect of an unprofitable mining shaft (Grainier, 2017). Mine closures together with their short term and long term impacts should be expected and mitigated to maintain

economic sustainability. However, this has been an overlooked phenomenon and should be planned progressively over time.

There has been a perception that, although the country has experienced rapid growth, it still has not experienced recent traditional growth. Modern traditional growth is about structural changes in social and political institutions. Therefore recommendations in this chapter look into different dimensions that have the potential to promote economic growth and diversity in Jwaneng.

1. Private sector

The first dimension is the role played by the private sector; The private sector could potentially grow in Jwaneng. As highlighted in the Jwaneng Urban Development Plan, it is crucial to take into consideration that there is much opportunity for economic diversification in sectors with a significant export and employment potential. In Jwaneng, there is potential for secondary and tertiary sectors. The supply chain of the natural diamond resource could be all done in Jwaneng. Meaning that there is much potential to extract the raw material from the ground, treat, polish and cut the mineral and eventually sell the complete product. This will, in turn, encourage the private sector to invest in Jwaneng, thus keeping the town economically functional. Once this field is diversified in this manner, it will be easier for the town to grow into a city which may be branded the ''Diamond city".

The tourism sector also has the potential to grow and expand even post-mine closure. To be highly influential in the diversification and growth of the economy. Although these two sectors have great potential, there is a need for fewer barriers of entry into their market and more market-friendly solutions. This may be addressed by removing monopolies to enable competition, improving air transportation and tourism infrastructure as well as easier visa processing thus attracting more tourists and investors to the town. Jwaneng could potentially be an international tourist destination. The town is home to the world's most productive diamond mine which produces the most "gem diamonds", this unique characteristic could unlock the development of Jwaneng and strengthen other sectors. As a result, the future of Jwaneng will be economically stable and socially integrated.

There is, therefore, a need for locally raised revenue Councils to have statutory powers to collect individual taxes, levies and fees to cover their operating expenses. Local sources of revenue include rates, service levies and user charges including abattoir fees, trade licences, beer levy, and interest on investments, housing rents, and any other sources of revenue as determined from time to time. Since 2012, property tax and business tax are applicable in both urban and district councils.

2. Detailed long term priorities and plans for Jwaneng.

From the interviews conducted with the Jwaneng Town Council representative, it is evident that town councils have statutory powers to collect individual taxes, levies and fees to cover operational expenses. Although this may not necessarily drive the economy of Jwaneng, it is essential as local development, and the local council covers the cost of maintenance of public spaces and infrastructure. To an extent, strengthening this is important because the town will not exist as a ghost town post-mine-closure if revenues are managed well. Revenue collected by the Jwaneng town council may be used to consult the local and neighbouring villages to know what developments they wish to see in Jwaneng post-mine-closure. So they may begin to plan for the future of Jwaneng post-mine-closure. Once the desires are captured, then a long term plan for the town may be done.

Based on the findings, a few thoughts in the light of economic sustainable do call for a need to develop long term goals which are specific to economic sustainability, diversification and stability and these three components may lead to the development of mining towns. These plans will not only curb a more definite future but also prioritise and address the problems of today without compromising those of the future.

3. Resource utilisation

This recommendation is triggered by the thought that, when trying to diversifying the economy, consideration should be given to sectors with significant export and employment potentials, such as beef and tourism. Nevertheless, unlocking the potentials of these two sectors requires removing distortions and promoting market-friendly solutions (Carley, 2004). This implies the removal monopolies to enable competition, improving air transportation and tourism infrastructure and facilitating visa processes. Much capital is spent on the export bill mainly because we are highly reliant on our neighbours and less on utilising our resources. This can best be addressed by attracting investors to invest in Jwaneng, particularly in areas/ sectors where much potential is seen (Carley, 2004).

4. Job creation:

Clearly, creating jobs requires a willingness to hire. Nevertheless, it also requires a well-trained labour force. Here, well-executed education reforms, a focus on vocational training, and opening the process of work permits and visas for foreign workers are essential.
Understandably, the latter aspects may be somewhat debatable. And this is critical to upgrade the skill set of local workers. Botswana surely has actively played a significant role in educating its population through free education and employs the Directorate of Public Service Management (DPSM) whereby after university graduates apply for a job, internship and volunteer work placements. This indeed has played a role in the job creation of youth in Jwaneng (Carley, 2004).

5. Public sector

The fourth dimension involves the public sector and its role in this new growth model. As the private sector develops, the public sector should step back and refocus its objectives (MMSD, 2002.) This means providing high quality and cost-effective public services, including infrastructure in Jwaneng. It also means divesting state-owned enterprise and consolidation of parastatals where appropriate (MMSD, 2002). At the same time, fiscal policy could play a more significant role in reducing income inequality. So far, the country did very well in reducing poverty. However, improving equity may require revisiting the system of social subsidies and their targeting. The public sector needs to be highly involved in the rejuvenation of the economy of Botswana, as such Town Councils in partnership with the vital ministries such as the ministry of trade, investment and industry. Lengthy trading processes could be discouraging to the foreign investor or trader (MMSD, 2002). This ease will undoubtedly attract more investors and further keeping this country economically stable.

6. Socio-economic measures.

Mine closure could suggest a socio-economic impact that needs to plan for carefully (Molefe et al., 2006). The Phikwe Copper mine not only implemented such plans a few years and this eventually left the Town in poor condition it is in currently were not only the fled from the town but the economic activity in Phikwe dropped. This, therefore, calls for action to be made now while there is still time instead of later when there is no capital and time to revive the economy of an ex-mining town (Molefe et al., 2006). Managing socio-economic impacts is an essential aspect that should be used as part of planning for closure, alternative sources of employment for mine employees and the local community post mine closure should be carefully considered. When looking at other social groups, it is recommendable for the members of indigenous groups to go through retraining and to reskill in order to help them participate in the transformation and closure

of the mine. Moreover, perhaps be marketable for different jobs outside of the mining sector (Molefe et al., 2006).

7. Effective Natural resource management

Effective natural resource management can be best achieved by increasing transparency, accountability and predictability in natural resource management (Iimi, 2006). For this to be effective, there is a need to establish an independent mineral regulatory agency and to monitor mineral extraction and revenue sharing continuously. The mine closure governance system in Jwaneng comes across as robust; therefore, there is a need for a more transparent regulatory agency which in turn will fuel-efficient integration between the Jwaneng mine and the local town council. Based on the above, it is evident that there is a need for a more direct and competitive policy which speaks to mine-closure planning, resource management and the negative impacts that mineral depletion may have on the socio-economic sustainability of the Jwaneng. Anti-corruption policies need to be further strengthened and developed as they too play a useful role in proper resource management and proactive approach to mine closure planning (MMSD, 2002).

Conclusion

Landlocked Botswana seems to have defied the odds by beating the resource curse and creating a stable economy. The productivity of the diamond mines in Botswana, particularly the Jwaneng mine has helped alleviate poverty and has encouraged education across the whole country. This chapter aims to recommend different dimensions that have the potential to promote economic growth and sustainability in Jwaneng. The recommendations have brought to light how Jwaneng should develop long-term plans for growth and long term development priorities? In the case of Jwaneng, the key to successfully harnessing natural resources is to maintain good governance and sound policies that represent the desires of the local communities. Botswana has been mostly free of civil conflict; and has maintained a transparent, law-abiding government; and it has implemented good policies. However, such policies need to be developed for small mining towns such as Jwaneng.

The main aim of this research was to bring to light the reality that diamonds are a depleting resource. Given the cross-cutting issue, this research brings to light the need to start planning for the economic sustainability of Jwaneng. Different case studies on the impacts of mine closure were reviewed to extract lessons to be learnt. Indeed mine closures commonly have harmed the socio-economic sustainability of small mining towns. In the case of Jwaneng, economic sustainability has been a challenging objective precisely because the town lacks investment and grows/sprawls at a slow rate. These issues demonstrate that little effort has been put in the socio-economic growth in Jwaneng. The different case studies that were reviewed in this research demonstrated that mine closures lead to rapid demographic decreases and economic stagnancy. As such, it is evident that if mine closure is not managed and effectively controlled, it may leave the economy, the local and national government with challenges of regaining economic stability — mine closure whether temporary or permanent needs to be planned for with caution and responsibility. Sustainable development is a necessary tool to ensure that future generations also benefit from sustainable mine closure plans.

The main research question was ‘’*what possible measures could be taken to ensure economic sustainability in Jwaneng even after the mine closes?”* Based on all of this, this research has proved that economic sustainability in the case of Jwaneng may be achieved through a sound collaboration between all affected stakeholders with the primary objective of promoting LED, diversifying the economy of Jwaneng and finally attracting foreign investment (Limi, 2006). Avoiding the resource curse, the governance curse and the Dutch Disease is an excellent tool to move towards economic sustainability. The small town of Jwaneng has defied the odds by putting forwards good plans that could set the town up for an economically stable future. However, this research report recommends that the town council, the mine closure unit and the community make a long term priority plan which details out the long term economic sustainability goals of Jwaneng.

From this research, the literature review revealed that the typical results of mineral depletion are” Ghost towns” appeared to be the most common result of poorly planned mine closures. Mine closure at times is caused by the resource curse and governance curse which influence one another. However, it is essential to note that poor governance may lead to the resource curse even though this does not mean that good governance will cure the resource curse. Avoiding the resource curse requires a partnership between different stakeholders to part take in thorough mine closure planning. In order to respond to the research findings, the following recommendations have been made to create economic sustainability.

The research further attempted to explore the different measures that could be taken towards the sustainable future of Jwaneng. This was done through the review of the JUDP 4 and the findings from the different semi-structured interview participants. Given all the perspectives, much

planning has been done at the local level while minimal planning has been done individually for Jwaneng at the national level of government. The proposed amusement park and Game Park are undoubtedly a great start to an economically vibrant town. The Jwaneng mine should consider developing more detailed contingency plans that help reduce the negative consequences of mine closure. This is particularly important as the contingency plan will guarantee resilience and responsiveness to the changing livelihoods of mine workers (Twigg & Bottomley 2011). It has been proven that the lack of participation is a setback towards the involvement of all stakeholders in mine closure planning as such a more bottom-up approach is required for planning for economic sustainability.

This research has identified that there is a need to plan for economic sustainability in mineral led economies actively. The research successfully gave a better understanding of the impacts that mineral depletion and economic decline and most importantly, how they may be avoided through the review of different case studies. The semi-structured interviews revealed that most mine workers stay in Jwaneng strictly for work purposes, and once the mine closes, they will flee the town. Jwaneng has a great potential to expand and grow as a “smart – diamond city”.

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The progress made towards achieving economic sustainability in Jwaneng is as follows:

There are no policies for Jwaneng, which specifically talk to the process of economic diversification and economic sustainability, which altogether is setting us up for a disaster. This is a wakeup call, in order for Jwaneng reach its full potential, there is a need to realise that little to no adequate long term planning has been done. The recently closed Selibe Phikwe mine had a policy which focused much on the economic diversification process of the town. Pity the town never implemented any diversification actions hence why the town is moving towards being a ghost town today." The lack of integration between stakeholders shows that there is a failure to follow through and implement our policies. The Jwaneng Urban development Plan is not enough to guide the economic diversification process. As such, much work is yet to be done. The reality is that although it may seem as if we have defied the odds and managed to avoid the resource curse, it is a little too soon to tell. Currently, diamonds are, with no doubt a blessing to Botswana as they have managed to boost the economy. However, the management of resources and revenues while the commodity is still in existence is what will determine if the commodity is a blessing or a curse post mine closure.

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Appendix

SCHOOL OF ARCHITECTURE AND PLANNING
HUMAN RESERCH ETHICS COMMITTEE

SCHOOL OF ARCHITECTURE & PLANNING

CLEARANCE CERTIFICATE
PROTOCOL NUMBER: SOAP076/09/2018

PROJECT TITLE:	The economic sustainability of Small mining towns: The case of Jwaneng, Botswana
INVESTIGATOR/S:	Taboka Mabayani (Student No: 812688)
SCHOOL:	Architecture and Planning
DEGREE PROGRAMME:	Masters of Science in Development Planning (MScDP)
DATE CONSIDERED:	31 October 2018
EXPIRY DATE:	31 October 2019
DECISION OF THE COMMITTEE:	Approved

CHAIRPERSON _____
(Professor Daniel Irurah)

DATE: 31-10-2018

cc: Supervisor/s: Brian Boshoff

DECLARATION OF INVESTIGATORS
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to endure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Signature _____ **Date** 26 November 2018

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MINISTRY OF MINERAL RESOURCES, GREEN TECHNOLOGY AND ENERGY SECURITY

REF: MMGE 1/17/2 I (50) 12 November 2018

Taboka Mabayani
P O Box 47
Jwaneng

Dear Madam

RE: RESEARCH PERMIT- THE ECONOMIC SUSTAINABILITY OF SMALL MINING TOWN: THE CASE OF JWANENG

1. Reference is made to your application of the 24th October 2018 in which you seek a research permit to conduct research entitled "The sustainability of small towns: the case of Jwaneng".

2. Permission is hereby granted, subject to the following conditions;

   i. Copies of reports produced as a result of the research are directly deposited with the following institutions:

      - Ministry of Minerals Resources, Green Technology and Energy Security, Private Bag 0018, Gaborone, Botswana
      - Department of National Library Services, Private Bag 0036, Gaborone, Botswana

   ii. This permit does not give authority to enter premises, private establishments or protected areas, permission for such entry should be negotiated with the owners or those in charge.

   iii. The study is conducted according to the particulars furnished in the approved application, taking into account the above conditions.

Yours faithfully

N. C. Mmolawa
Acting PERMANENT SECRETARY

All Correspondence
be addressed to:
TOWN CLERK
Telegraphic Add:

JWANENG TOWN COUNCIL

Private Bag 01
JWANENG, Botswana
Tel: 5880303
JWATCO
Fax No: 5881395/5882609

In reply please quote:

Ref No: JTC/1/3/43 I (64)

Date: 18th December 2018

TO WHOM IT MAY CONCERN

CONSENT FOR INTERVIEW

This letter serves to confirm that I have agreed to be interviewed by Taboka Mabayani who is a full time Master's student in Development planning at the University of Witwatersrand.

The interview on her research topic: "*The economic sustainability of small mining towns: the case of Jwaneng Botswana*" was structured well and the questions were clearly asked. No unethical contributions were added to this research. The student researcher was professional in her approach and some of the issues raised were of significant note.

Thankyou

T. A. Matong
Senior Physical Planner
For/Town Clerk

DEBSWANA

Classification: Confidential

Dear Taboka Mabayani

RE: Participation in the research project 'ECONOMIC SUSTAINABILITY FOR SMALL MINING TOWNS: THE CASE OF JWANENG, BOTSWANA'

This letter serves to inform you and your institution, the University of Witwatersrand that I am willing to get involved, and I am giving you permission and consent to conduct a research and data collection on the abovementioned project at Debswana Jwaneng Mine.

In conducting your research, please be aware that no unethical or any other issues that are against company's confidentiality policy will be discussed in all engagements.

Also, on compiling your reports you must share the contents with me for review to ensure there is no breach in company policy, and all data obtained from me should only be used for your educational purposes, specifically for this research project as stated in your letter of consent.

Yours sincerely,

30/10/18

Kagiso Magwadi
Project Manager – Mine Closure Planning
Tel: +267 580 5186

TELEPHONE: 3601200
TELEFAX: 3971539/3913209
EMAIL: mitipru@gov.bw
WEBSITE: www.miti.gov.bw
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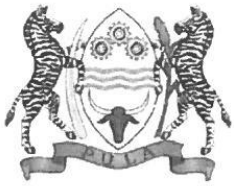

PRIVATE BAG 004
GABORONE
BOTSWANA

REPUBLIC OF BOTSWANA
Ministry of Investment, Trade and Industry

REF: TI 1/21/1 XII (16)

31st October 2018

Dr Brian Boshoff
University of Witwatersrand
Republic of South Africa

Dear Sir

RE: CONSENT FOR INTERVIEW - TABOKA MABAYANI

This serves to confirm that I have consented to be interviewed by the above named who is a full time student studying towards a Master of Science Degree in Development Planning in the School of Architecture and Planning at the University of Witwatersrand.

The interview which was conducted in an ethical and professional manner was on "economic sustainability of small mining towns: the case of Jwaneng Mining Town - Botswana".

I found Taboka to be highly professional in the conduct and manner in which she had structured her questions and I have no doubt that she will do well in her studies.

Thank you.

Yours faithfully,

.....

Moiseraele Master Goya
Assistant Minister of Investment, Trade and Industry