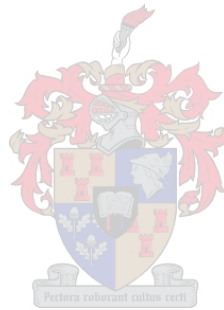


**THE SOCIO-ECONOMIC WELLBEING OF SMALL MINING TOWNS
IN THE NORTHERN CAPE**

by
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Thesis presented in fulfilment of the requirements for the degree of Master of
Arts in the Faculty of Arts and Social Sciences at Stellenbosch University.



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March 2017

DECLARATION

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ABSTRACT

With South Africa being a developing country in many respects, the management of natural resources is of high importance. It should therefore be determined how these resources are managed and what happens to the capital generated by the extraction of these resources. The resource curse hypothesis will be used as a base to understand why there are so many underdeveloped communities in places where these resources are extracted. The aim of this study was to investigate the nature and extent of the economic and social conditions of the communities of small mining towns in the Northern Cape.

The research objectives of the study were (1) to study the literature on the effects of mining on mining town communities as well as the responses to these effects on human well-being and quality of life; (2) to identify key dimensions and indicators to determine social and economic well-being; (3) to show the change in socio-economic well-being as well as demographics over a ten-year period, and identify the factors determining changes; (4) to rank these towns according to their level of socio-economic well-being; and (5) to investigate the current climate of social and economic well-being in two case study towns by conducting interviews with key stakeholder.

The study followed an exploratory sequential mixed-methods approach. Quantitative data was obtained using the census data of 2001 and 2011. A composite indicator index was then formulated to show the level of quality of life and human well-being of these towns. The towns were ranked according to this index and two case studies were done, one near the top and one near the bottom of the ranking. Data was captured and analysed using STATISTICA, Excel and ArcGIS. Perceptions on the current state of development and the impact of mining on these communities were obtained by semi-structured interviews with key stakeholders in the public and private sectors.

The findings indicate that the resource curse does exist in small mining towns in the Northern Cape, which is a frontier region. It was also found that small towns are dependent on a single industry, in this case mining and have few alternatives when it comes to diversification. It is also difficult for government to drive development since they, too, are dependent on the financial input of these mining companies. The findings in this study should assist policy-makers in government and the mining companies to identify the possible shortcoming of development strategies and plans, and in formulating these strategies and plans in accordance with the specific circumstances of each of these small towns

Keywords and phrases: Socio-economic wellbeing, quality of life, mining towns, frontier region, resource curse, resource dependence, corporate social responsibility, composite indicator index

OPSOMMING

Suid-Afrika is ‘n ontwikkelende land in baie opsigte en daarom is die bestuur van natuurlike hulpbronne van die uiterste belang. Daar moet daarom bepaal word hoe hierdie hulpbronne bestuur word en hoe die kapitaal wat deur die ontginning van hierdie hulpbronne generereer word, aangewend word. Die “hulpbronnvloek” (“resource curse”) hipotese word in hierdie studie gebruik ten einde te begryp waarom daar so baie onder-ontwikkelde gemeenskappe is in die gebiede waar hierdie hulpbronne ontgin word. Die doel van hierdie studie is om die aard en omvang van die ekonomiese en sosiale omstandighede van die gemeenskappe in klein myndorpe in die Noord-Kaap te ondersoek.

Die navorsingsoogmerke van die studie is (1) om die literatuur oor die invloed van mynbedrywighede op gemeenskappe in myndorpe, en die reaksies op hierdie invloede op menslike welstand en lewensgehalte te ondersoek; (2) om die hoof-dimensies en indikatore van sosiale en ekonomiese welstand te bepaal; (3) om die verandering in sosio-ekonomiese welstand en demografie oor ‘n tydperk van tien jaar aan te toon, en om die faktore wat verandering bepaal, te identifiseer; (4) om die dorpe volgens die vlak van sosio-ekonomiese welstand op ‘n ranglys te plaas; en (5) om die huidige klimaat van sosiale en ekonomiese welstand te ondersoek deur onderhoude met sleutel belangegroepes in twee gevallestudies te voer.

‘n Eksploratiewe sekweniële gemengde metode benadering word in die studie gebruik. Die sensusdata van 2001 en 2011 word as die kwantitatiewe data gebruik. ‘n Saamgestelde indeks van indikatore is geformuleer om die vlak van lewensgehalte en menslike welstand in die dorpe aan te toon. Die dorpe is volgens hierdie indeks op ‘n ranglys geplaas, en twee gevallestudies is gedoen., met die een dorp naby die bokant en die ander een naby die onderkant van die lys. STATISTICA, Excel en ArcGIS is gebruik om die data vas te lê en te analiseer. Persepsies van die huidige stand van ontwikkeling en die impak van mynbedrywighede op hierdie gemeenskappe is bekom deur semi-gestruktureerde onderhoude met sleutel belangegroepes in die openbare sektor en privaatsektor te voer.

Die bevindinge dui aan dat die hulpbronnvloek wel in klein myndorpe in die grensgebied van die Noord-Kaap bestaan. Daar is ook bevind dat daar beperkte opsies met betrekking tot diversifikasie bestaan in die geval van klein dorpe wat vir hulle voortbestaan van een industrie, in hierdie geval die mynbedryf, afhanklik is. Dit is moeilik vir die staat om ontwikkeling aan te voer aangesien die staat vir finansiering ook van die mynmaatskappye afhanklik is. Die bevindinge in hierdie studie behoort beleidmakers in die regering en die mynmaatskappye te help om moontlike tekortkomings van ontwikkelingstrategieë en -planne te identifiseer, en om hierdie strategieë en planne ooreekomstig die spesifieke omstandighede van elkeen van hierdie klein dorpe te formuleer.

Trefwoorde: Socio-ekonomiese welstand, lewensgehalte, myndorpe, grensgebied, hulpbronnvloek, hulpbron afhanklikheid, korporatiewe sosiale verantwoordelikheid, samgestelde indikator indeks

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Appendix A: Semi-structured interview questionnaire

ACRONYMS AND ABBREVIATIONS

DIDO	Drive-in-drive-out
FIFO	Fly-in-fly-out
GDP	Gross Domestic Product
GPI	Genuine Progress Indicator
HDI	Human Development Index
ISEW	Index of Sustainable Economic Welfare
IDP	Integrated Development Plan
OECD	Organisation for Economic Cooperation and Development
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
SPLUMA	Spatial Planning and Land Use Management Act
QoL	Quality of Life

CHAPTER 1: INTRODUCTION

This study examines the social and economic wellbeing of the communities in small mining towns in the Northern Cape. It examines the extent to which the government and mining companies are addressing these issues and if the people in these communities have a chance of economic and social betterment. This chapter starts with an overview of the Northern Cape as an economic region. Thereafter follows the aims and objectives of the study, the methodology used, and, finally comments on the structure of the thesis.

1.1 BACKGROUND

South Africa is a country known for vast quantities of natural resources. The discovery of diamonds and precious metals like gold and platinum was the main contributory factor leading to the establishment and rapid development of many South African major towns and cities; Johannesburg and Kimberley being the prime examples. The social and economic impact of mining activities on the communities in these towns and cities has consequently been the subject of many academic studies and discussions (for example Hamman & Kapelus 2004; Hanekom 1976; Marais & Cloete 2009; Marais 2013; Prinsloo 2013, Rogerson 2012). The Northern Cape is the largest province in South Africa in terms of area; it covers about thirty percent of South Africa. It is situated in the north western corner of South Africa, and is bordered on the West by the Atlantic Ocean, in the North by Namibia, in the South by the Western Cape, and to the East by the North West province, the Free State and the Eastern Cape.

South Africa is a country whose economic wellbeing is closely tied to resource extraction and the export of these raw materials. The main focus and historical drivers of the economy have been the primary production sectors, namely agriculture, energy, mining, forestry and fishing. In more developed countries these primary production sectors have taken a back seat and more growth has been seen in service sectors. In South Africa, however, the resource sector remains one of the principal sources of wealth and employment. The mining industry is an important part of the resource sector (metal and mineral extraction up to the refining and smelting stage), and a large number of small mining towns are exposed to fluctuations in global resource markets.

This study undertakes an in-depth review of the impact of the mining sector on small town mining communities in the Northern Cape to gain a better understanding of the many factors that impact on the social and economic environments of these communities.

Although mine closures are mostly seen as a problem, it can be argued that many aspects of mine closure are the same as those created by the closing of any other industrial enterprise. The principle difference between mine closures and that of the closure of an industrial enterprise is that mine closures usually occur in smaller communities which are often situated in geographically remote locations. This is the case in the Northern Cape, which is the largest province in South Africa but has the smallest population. Mine closures should not be regarded as a problem but as a natural process which results from the depletion of a finite natural resource. Mine closures and its impact should be a straightforward and anticipated event but unfortunately in most (if not all) cases it is not perceived in this way. It is perceived in an emotional way and therefore dealt with in the same way.

Due to constant fluctuations in the global demand for minerals and raw materials, the South African mining industry has gone through many cycles and will without doubt continue to do so, as is the case within the iron ore industry, and specifically the town of Kathu, at present (see Chapter 5).

1.2 RATIONALE FOR THE RESEARCH

The rationale behind the decision to research the socio-economic wellbeing of people in small mining towns in the Northern Cape, is to assist interested parties in identifying the pitfalls of the extractive industry, especially the social and economic impacts on people who physically work and live in the areas where mineral extractions occur. One of the big questions concerning the extractive industry in South Africa is who is responsible for the development of these people – should it be the government or the private companies themselves?

The other reason for the study is to evaluate whether people in these communities have a future in the towns after mining has stopped, and if there are sustainable methods of helping them where the resource curse is so apparent.

1.2.1 Research aim and objectives

The aim of this study was to investigate the nature and extent of the economic and social conditions of communities in small mining towns in the Northern Cape.

Five research objectives were identified:

1. To provide a literature review on the effects of mining on mining town communities as well as the responses to these effects on human wellbeing and quality of life
2. To identify the key indicators which determine social and economic wellbeing

3. To assess 2001 and 2011 census data of the towns to show if there was a change in social wellbeing, and to study the demographics over a ten-year period to identify the contributing factors
4. To use census data 2011 to rank each town according to level of wellbeing
5. To investigate the current climate of social and economic wellbeing in two case study towns (chosen from the composite indicator rankings) through:
 - a. Interviews with key stakeholders in the public sector concerned with mining and social development
 - b. Interviews with key stakeholders in the private sector concerned with social development programmes within these companies

1.3 METHODOLOGY AND DATA COLLECTION

Both quantitative and qualitative methods were employed to collect the primary data needed to investigate the intricacies of the socio-economic wellbeing and development of communities of small mining towns in the Northern Cape, to identify the two towns used as case studies, and to achieve the aims and objectives of this study.

1.3.1 Literature review

A literature review was conducted, focusing mainly on issues concerning the social and economic wellbeing of mining towns and issues concerning population movement in these towns. Topics were identified concerning wellbeing as a whole as well as certain phenomena that can be attributed to mining as the main economic activity, namely boom towns, resource dependence, the resource curse, corporate social responsibility, the de-industrialisation and the down-scaling of mines, and social and economic wellbeing.

1.3.2 Census data and analysis

The Northern Cape Provincial Spatial Development Framework (2012) was consulted to identify towns in the Northern Cape which base their economies on the mining of natural resources. This was an indicator of which towns' data needed to be extracted from the National Census of 2001 and 2011. The data extracted for analysis was that on the small-place level, and was accessed through a programme called SuperCROSS which is the official census interactive data program. After the data for each town was extracted, it was exported into Excel in the form of tables. The data was primarily used to gauge the economic and living conditions in the towns.

This data is the most accurate available data concerning the communities' objective level of socio-economic wellbeing. It shows certain basic trends such as population growth or decline, as well as demographics such as age, gender and race. The data also shows the household infrastructures and circumstances of individuals and communities; for example, their levels of education, income, and marital status. Labour force statistics such as employment status and levels of skill in the work place are also investigated. All census data was analysed in Excel and Statistica. All the maps were made in Arcmap 10.0.

Using the framework developed by the Organisation for Economic Co-operation and Development (see section 3.3), quality of life indicators were then identified, after which a quality of life composite indicator index was developed with the census data obtainable. This index was developed with census data only. Obtaining other data would have been too expensive and logistically too difficult for one researcher to access.

1.3.3 Interviews

Based on the analysis of the data in terms of the quality of life indicators, semi-structured interviews were set up with pre-determined stakeholders in two towns. The questionnaire contained questions concerning the relationships between the mining companies and municipalities, and how these affect the local communities of the towns. Two towns were selected as case studies.

The questions in the interviews were not personal in any way. Answers are the opinions of knowledgeable stakeholders, and no "right" or "wrong" answers were obtained. The participation in interviews was totally optional and interviewees could remain anonymous if they wanted to. Permission to record interviews was requested beforehand and if declined, notes were taken regarding key issues coming out of these informative discussions. Recorded interviews were password protected on a recording device. Stakeholders also knew that they could withdraw from the interview and retract their opinions at any time.

1.4 THE RESEARCH DESIGN

The research design was used to show the main themes of the research as well as to highlight the main methodological considerations which informed this research. The research design is in essence the overall strategy chosen to integrate various components of research study in a coherent and logical way, thereby ensuring that the research problem is effectively addressed. It also outlines the blueprint for the collection, measurement, and analysis of the said data (De Vaus 2001). Figure 1.1 illustrates the process followed for the study.

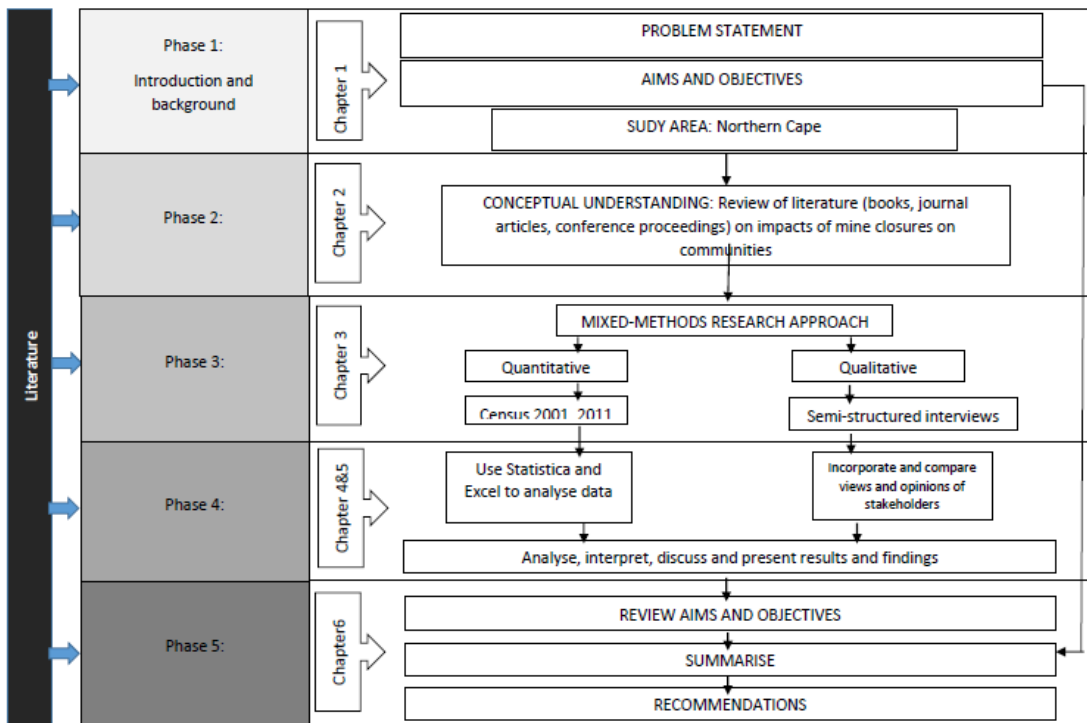


Figure 1.1 Research design for investigating the socio-economic wellbeing of small mining towns in the Northern Cape

This research and report was conducted in five phases. First, the research problem was identified which led to the development of five objectives. The second phase was the conceptual basis for the whole research. This was conducted by an in-depth overview of the issues and themes associated with mines, the possible closure of these mines, and the impacts the mining industry has on the local communities of small mining towns. The third phase included the methods selected to investigate the problem, and this phase represented when the data was collected. The fourth phase provided the platform to capture the data in Statistica and Excel, and for the recording of semi-structured interviews which would give insights into the issues and current development climate of the towns. The two sets of data were analysed in unison to give the results which were discussed. In the last phase the main findings of the study were synthesised and summarised.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the literature studied in order to understand the concepts and themes associated with the social and economic wellbeing of communities in small mining towns. What wellbeing is, is also researched as well as the phenomena that apply to mining towns specifically. The chapter starts by explaining the impacts observed in these towns due to the mineral extraction industry. In principle mining is not a sustainable economic sector because the resources are finite and if depleted, cannot be replenished. Firstly, the literature concerning the reason why towns experience rapid growth when natural resources are found, are discussed (boomtowns), after which the impacts this resource wealth has on small mining towns is investigated (resource dependence, resource curse). Next the issues concerning the responsibility of the mining companies themselves are discussed (corporate social responsibility). The deindustrialisation and downscaling of these mines and small towns will be looked at and lastly, literature on socio-economic wellbeing will be discussed.

2.2 BOOM TOWNS

The researcher started off the literature review by looking at the nature of the cycle in a mining town. The cycle starts off when the raw material is discovered underground, followed by a rush to extract this material. It follows that it is natural to investigate what happens when a mineral is found, and it is decided to set up a town for the extraction process to start. Most of the literature regarding the anatomy of boomtowns shows that with the rising prices of the commodity of the resource being mined, the first thing that happens is an effect on the size of the population within the town as well as in its economic activity (Freudenburg 1992, Halseth 1999). This is evident in the study done by Lawrie et al (2011), who investigated three Western Australian towns and compared them within the expansion of the Australian mineral sector between 1999 and 2008. They used 2001 and 2006 census data and found that towns with more resource expansion grew more in population than towns with modest expansions of resource extraction. Figure 2.1 shows the boom-bust cycle in a spiralling up vs. spiralling down process. This shows the basic cycle of what happens in certain stages of the boom-bust cycle in mining dependent towns.

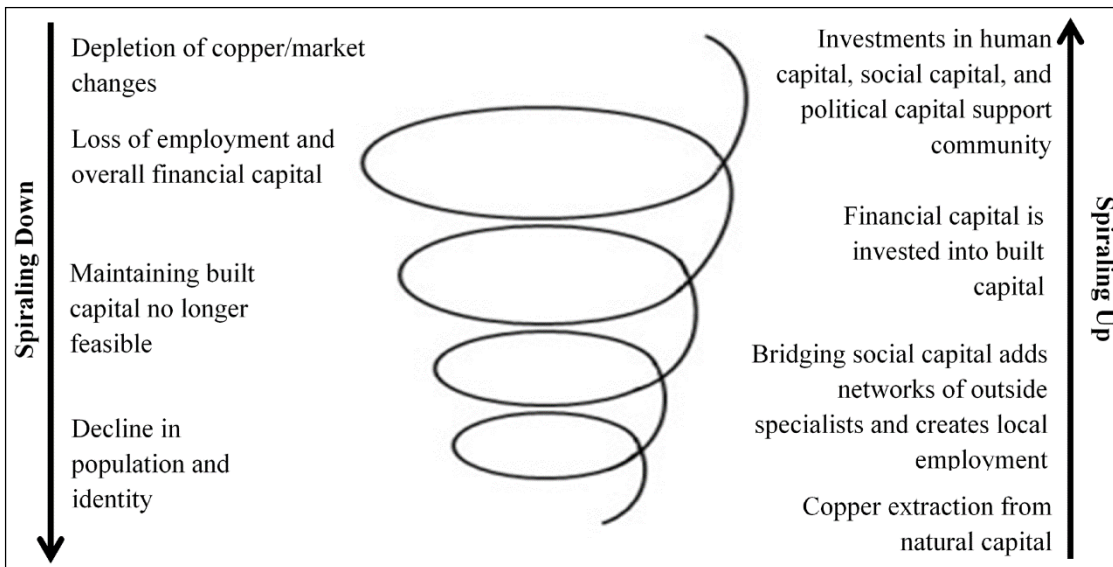


Figure 2.1 Figure demonstrates the process of “spiralling up” or “spiralling down”

Source: Winkler et al (2016)

Before the researcher could study the social and economic effects of the modern day boom town in South Africa, of which examples are relatively new, examples from abroad had to be looked at. In the North Americas, especially, extensive research on the topic has been done and certain parallels can be drawn to the South African context. Smith et al (2001) give insights into the research done on the social wellbeing of communities that live in these boom towns in America. A quick historical overview of boom town research follows.

The first boomtown scientific research was undertaken in the 1970s into the surge of domestic energy development in the United States. The first article written on the social implications of resource development in rural towns was in 1974, and the social phenomena witnessed was called the “Gillette syndrome” (Smith et al 2001). The symptoms were dramatic increases of divorce, depression, school dropout rates, attempted suicides, juvenile delinquency, criminal activity, mental disorders and other social problems. These findings and their severity sparked a serious interest from social scientists on the boomtown phenomenon plus the social and economic issues in the late 1970s and early 1980s. The social scientists in the period found that in most of these rural towns social problems became apparent because of the collapse of the informal social structures and the absence of new formal institutions to provide adequately for residents’ social integration, social control, and wellbeing. This can be correlated to the perceived situation in the Northern Cape where towns are geographically far away from big cities and informal social structures are obscured when major developments take place together with an influx of migrant workers. This then poses the question, to which the researcher wishes to find an answer, how government makes sure that structures are put in to place which can withstand the shock boom development, and what happens to the social structure of the local people after the resource has been depleted and they are in a sense left to fend for themselves.

After the findings of very negative social issues resulting from the boomtown effect, sharp criticism followed from 1980 to 1984. The criticisms were aimed at the validity of the findings and the way researchers obtained and analysed the data (Smith, Krannich & Hunter, 2001). They were accused of being biased and concluding that social disruption was present even though the data was clearly inconclusive. The reliance on single community findings was also criticised. A call for more comparative analyses over multiple communities was made, which could lead researchers away from relying on cross-sectional data and move towards the uses of more longitudinal data to track community changes over time (Smith, Krannich & Hunter, 2001:425)

After this period of critique from 1985 onwards, researchers shifted away from the assumptions, methods and conclusions which had marked the earlier phases of boomtown research. The course researchers took matches that of the broader methodological transformation of social impact assessment. Researchers were beginning to be more cautious about interpreting their findings of the social disruptions of rapid growth, and unlike researchers in the 1970's they were unwilling to accept social disruption findings without critiquing it themselves (Smith et al 2001).

Another big change was the shift away from cross-sectional data collection and analysis. Scientists now studied more than one community and moved more towards comparative analyses between communities from different towns. The conclusions from these more recent studies on the disruption of social wellbeing by boomtown effects differ from those of previous studies. According to Smith et al (2001), the findings show that rapid growth is not necessarily associated with extreme social disruption. It is more a case of mixed results; in some towns major social disruption was concluded, but in other towns the phenomenon was not as present as anticipated. On balance, according to Smith et al (2001:432), the literature seems to suggest that social disruption in boomtowns only occurs under certain circumstances, only happens in some places, during certain periods of the growth process, and only to certain groups of the population. Smith et al (2001) suggest that the existing body of literature does not address the possibility that different types of disruption can occur during post-boom periods of economic and demographic decline.

To illustrate this, Australia can be used as an example. Australia's resource boom is a recent one, this is due to Asian economies in need of raw materials to grow their own economies. This has led to major investments in the resource industry in Australia, especially in rural areas where resources are found. The main social problem in Australia's small mining towns is that of non-resident workers being flown in to work on the sites. These workers stay in work camps in close proximity to permanent residents. Carrington and Perreira (2011) link governance and policy as the main actors to better the social disruption this resource boom has caused in these communities.

In the 1970s in Australia the government gave mining leases to companies that adhered to conditions of building or financing community infrastructures such as housing, roads, transport, schools, and hospitals. The situation now has changed and companies have moved to a more expeditionary strategy for extracting resources, thus becoming more reliant on non-resident workforces. This means that workers have to be flown in and out or driven in and out (FIFO/DIDO). These workers travel great distances to the worksite and camps near the worksite for extended periods of time. When the extraction of resources is completed the workers travel back to their original homes. This has led to a minimised permanent resident workforce, which in essence counters sustainable development policies which governments put in place to uplift communities. The social and economic implications are that money is lost due to these workers only staying for a fixed period of time and not moving permanently to the towns with their families. In contrast to this, Perry and Rowe (2015) claim that some mines prefer the FIFO/DIDO method of employment because the wage differences are substantial and permanent workers demand more. It also decreases long-term dependence on mining as the only source of income. Some of the social issues that arise from these non-resident workforces are that permanent residents feel they have a commitment to the community as a whole and that they unfairly have to carry more of the burden than the non-residents who stay there. Also, a population increase in these towns can happen overnight as predominantly males move in and cause major strain on the local municipality to deliver services effectively (Carrington and Pereira 2011).

One of the main social issues that go hand-in-hand with worker camps is crime and violence. This is amplified by the roster system which mines use to operate 24 hours, seven days a week. The problem arises when mainly male occupants of the camps use alcohol excessively. This leads to violence fuelled by the inebriated punters. Some of these towns in Australia where the study was done, shows crime rates three times higher than the average for the state. The policing of these towns is also under pressure because of the lack of personnel of the police stations in these towns proportionate to the influx of non-residential workers (Carrington and Pereira 2011).

Studies have been undertaken to assess the social impacts of the resource boom on rural communities. Marais and Cloete (2009) use the extraordinary increase in the demand for housing in Kathu due to the increase in iron-ore mining since 2001 as a case study to illustrate the impact of mining activities on communities (the increase was due to the rapid growth in the Chinese economy since 2001). Although their study concentrates on housing provision, it highlights certain key factors that should be considered when looking at the boom-bust cycle of mining towns in semi-arid and arid regions. The specific socio-economic features include variability, sparse population, low productivity and remoteness. They conclude that in terms of many development indicators, these areas lag behind their

counterparts in areas with better habitable conditions. This can be illustrated by expanding on the above mentioned key factors.

Variability between rainfall and temperature leads to low levels of organic material in the soil which leads to low levels of productivity in these regions. This low level of soil quality together with low levels of available water leads to the towns in the Northern Cape to be sparsely populated. In terms of service delivery in these areas then, one might come to the conclusion that providing services in the first place might be difficult because the towns are so remote. Rendering services is also much more expensive in remote areas (Marais & Cloete 2009). Continuing with the theme of remoteness, Black, McKinnish & Sanders (2005), conclude that in remote places for every ten jobs created in mining in a mining boom, the spill-over effect is less than two jobs created in the local goods sectors of construction, retail, and services. They also conclude that although positive spill-overs of mining booms are smaller than expected, the negative spill-overs into trade sectors are also smaller than expected. The effect of a mining bust is however much more evident: for every ten jobs lost in the mining sector, three and a half jobs are lost in the construction, retail and services sectors.

With this in mind the question is: will communities still have a positive outlook in a town after a bust cycle in a resource dependent town? Brown, Dorius & Krannich (2005) answer this question by looking at the change in community satisfaction over time. They conclude that over time residents' subjective interactions with their communities improve. There is an inverse association between community satisfaction and population growth; a finding that resonates with prior literature suggesting that as communities experience rapid population growth and large influx of newcomers, social integration and community satisfaction deteriorates. The greatest increases and decreases in community satisfaction happened in time periods when population growth was reasonably stable, suggesting that community togetherness is not solely linked to population fluctuations but that many factors contribute to this.

2.3 RESOURCE DEPENDENCE

Rushen (1995), in his article about the town Flint, Michigan, in the United States, he states the danger of towns being dependent on one resource or one industry alone. Because of Flint's dependence to the automotive industry, when the motoring companies decided to close older less effective plants, the area was hit very hard and economically devastated. People in almost every sector lost their jobs due to the knock-on effect of job-losses in the automotive industry. This phenomenon can be likened to the dependence that some communities have on mining, which in essence is a finite resource; when the resource is depleted the mine closes, meaning the community or most of the people in the mining industry are left without jobs. Other people lose their jobs because people who spend money from salaries earned through mining no longer do so, firstly because they no longer have an income, or secondly because they have moved away to seek different jobs.

Tonts, Pummer & Lawrie (2011) did a study on the socio-economic wellbeing in Australian mining towns. One of the keywords they use is resource dependency. Resource dependency is the concept which defines people who live in resource dependant towns and who are economically solely dependent on the extraction of the natural resource (Freudenburg & Wilson 2002). Similarly, Hajkowicz, Heyenga & Moffat (2011) undertook an empirical study on the relationship between social wellbeing and people who live in mining towns. They found that there is also a correlation between the type of mineral being mined and the levels of wellbeing of the communities in the towns.

Freudenburg & Wilson (2002) make reference to the economic implications for towns in non-metropolitan mining areas. This can be likened to the Northern Cape with most of the towns which provide the workforce to mines and mining companies being far away from main cities and big metropolitan areas. They argue that a correlation exists between the type of mineral being mined and the socio-economic status of people. Between the 1970s and 1980s in America, the areas which extracted minerals for energy did much better in socio-economic terms than the areas that extracted iron, where the people were actually living in poverty, although both resource sectors were in the boom phase of its cycle. Although the Northern Cape is not necessarily rich in gold resources it can be likened to the recent decline in job opportunities in Orkney and Klerksdorp due to the drop in levels of gold production, which shows this relationship of dependency (Kleynhans 2012).

Wilson (2004) also did a comparative study between two mining towns – White Pine, Michigan, and Viburnum, Missouri in the United States (both are communities where mines supplied a great deal of employment). She likens the experience of being dependent on resources to being on a rollercoaster ride. Many towns experience volatile economic conditions even when they are in boom cycles, but how communities and the mine companies respond to these circumstances may alter the 'ride'; in

other words, the better the social and infrastructure development, the less exposed and vulnerable to outside forces such as global market fluctuations, the communities will feel.

Stedman, Parkins & Beckley (2004) argue that the label 'resource dependence' may obscure a great deal of variables in the relationship between particular resource industries, regions, and indicators of wellbeing. The researcher notes that this becomes apparent because most current studies see wellbeing as a unitary phenomenon, and most comparisons are made within industries (e.g. mining) rather than by comparing factors and indicators between industries (e.g. forestry versus agriculture). The researcher also acknowledges that factors will vary not only within particular industries, but also according to region, historical period, the type of resource being mined, and even the indicator chosen to represent the state of wellbeing (Stedman, Parkins & Beckley 2004:213). With this in mind the researcher has chosen a case for a single industry comparison, because of a lack of other studies at small town level in other industries to compare it with. Therefore, the researcher feels that a study of the proposed topic will strengthen future studies that will make use of this study and compare it across industries not only in the Northern Cape, but across South Africa.

Fischer (2001) makes a valid point by saying that with the exception of one study done in the USA, all the other studies undertaken in the USA focus on communities that are already resource dependent. These studies can tell us a lot about extreme cases, but one should keep in mind that they are less capable of explaining the relationships between resource extraction and poverty or social issues, or analysing the full range of variations in the independent variables. In the research of resource dependency, many studies focus on only one type of extraction e.g. mining, oil, forestry and fishing. Cross-sector comparisons are relatively rare. Important aspects may be missed about the relationships between poverty and resource extraction beyond the individual extraction sectors. This means that one cannot study the effect of different sectors on poverty if they are not all included in the analysis (Fischer 2001).

From a labour market dynamics angle on resource dependency, Tonts (2010) points out that there is an extensive body of literature written on the American and Canadian life cycle of employment in resource dependent communities, but stresses the lack of literature in the Australian context. This can be said for South Africa as well. Questions posed in the Tonts (2010) article have significance for the situation in the Northern Cape. Firstly, resource dependent regions and localities have specific and unique sets of circumstances. These include reliance on specific industries to drive the local economy; dependence on resources that are non-renewable most of the time; vulnerability to the global markets and resource prices, and limited choices of alternative economic opportunities (Halseth 1999:363). Tonts (2010:150) states that "while the industry has the capacity to generate enormous economic

returns, its regional employment outcomes are often unsustainable and unable to generate long-term opportunities for local residents.” This is true when looking at Australia’s tendency to use fly-in-fly-out mining workforces, which are disadvantageous to permanent residents in communities near mining operations. This shows that where people work has a direct dependence on the resources being extracted, as is the case in many small mining towns in Western Australia (Tonts, Plummer & Lawrie 2012). This then has economic as well as social effects on the people who work and live in the natural resource extraction sectors.

With some of the factors identified in the resource dependence phenomenon in the above section, it is now taken further in the next section, where the factors as well as parts of the resource curse are discussed.

2.4 RESOURCE CURSE

The concept which arises in the natural flow of the life cycle of a small town that participates in the mining sector, is that of the resource curse. This theme goes hand in hand with resource dependence as discussed in the previous section. The resource curse premise is built on, all things being equal, the assumption that natural resource abundance should increase the income per capita in a country or region where the resource is being extracted. This is the origin of the ‘resource curse hypothesis’. Why do some regions, where all the wealth is literally generated, not show signs of positive economic and social development? The resource curse hypothesis is defined by Atkinson & Hamilton (2003) as the negative relationship between natural resources and the growth rate of per capita gross domestic product. Many scholars have tried to explain why this happens and how to avoid it. Since Sachs and Warner (1995) published a paper on natural resource abundance and economic growth based on a cross-country study, there has been a lively debate around the concept of the natural resource curse. To explain it in a nutshell, what Sachs and Warner (1995) concluded in their article was that there is a negative relationship between natural resource abundance and economic growth in adjacent communities. In theory, resource rich countries should invest more of their mining profits in these communities.

Through looking at the true savings of a country one might begin to see if there might be a negative relationship between economic growth and resource abundance. This then leads to the question, under which conditions does the resource curse manifests itself (Atkinson & Hamilton 2003). Two outcomes are possible where the phenomenon is prevalent. Firstly, economic explanations for the resource curse include ‘Dutch disease’ effects. This is when a boom develops in the resource industry, which leads to an overvalued exchange rate which in turn leads to an economic decline in other sectors because of the overvalued exchange rate. This includes main sectors such as agriculture and the

manufacture of secondary goods. The second symptom of the resource curse is that with a boom in the resource industry, less capital is invested in the main commodity which drives forward development, namely human capital. Policy makers in developing countries argue that by investing in knowledge and skills it will diminish their expansion in the income generating natural resource sector.

The last reason for the resource curse is policy failure; the biggest reason for this is that governments do not reinvest the proceeds from resource extraction productively. Atkinson & Giles (2003) find that countries which have resource abundance but where governments consume the resource revenues, feel the effects of the resource curse more severely than countries which re-invest the profits in a sustainable manner.

Expanding on the abovementioned lack of investment in human capital in developing countries, due to the resource curse, Shao & Yang (2014) note that human capital plays a vital role in driving economic growth and reversing the effect of the resource curse. They argue that the resource curse has a crowding out effect of human capital development (education). The basic viewpoint of people in resource-based economies is that investment in human capital would not return expected income as compensation and thus the desire to receive education in communities in the resource based economy declines, causing a problem in the driving force of human capital (Shao & Yang 2014).

Stijns (2006) argues that the relationship between human capital and natural resource wealth is not as robust as previously believed. The rational allocation of resource rent in resource abundant countries is a prerequisite to promoting human capital betterment. Bravo-Ortega & De Gregorio (2007) empirically show that Scandinavian countries successfully evaded the resource curse by investing in a higher level of human capital and, by doing so, was able to compensate and even eradicate negative effects brought on by resource booms.

In answer to the abovementioned negative impacts that resource abundance has on growth as described by the Sachs and Warner's (1995) findings, Brunnschweiler (2008), reacts to the resource curse in two separate articles. Firstly, she criticises Sachs and Warners' chosen indicators, arguing that with different indicators and methods of measuring resource abundance, there would be more positive than negative outcomes in a cross-country study. Secondly, Brunnschweiler & Bulte (2008) critique the resource curse hypothesis by saying that institutional quality and capability play a major role in the economic performance of resource rich countries and they believe that not enough research has been done on this topic.

When investigating the critiques on the measurement of the natural resource hypothesis, it seems that most resource and growth studies focus on the effect of absolute resource abundance. Following the Sachs and Warner (1995) article, the method used focuses more on the ‘curse’ effect of natural resource abundance. In empirical analysis, the indicator used, is derived through dividing primary exports by the measure of national income. This method was used by Sachs and Warner (1995) to calculate the indicator of resource intensity, and the data is freely available. By using this calculated indicator, resource intensity, many researchers confirm a negative development path prevalent in resource rich countries. Brunnschweiler (2008) suggests that this method is unsatisfactory if natural resource abundance needs to be quantified. There are two main reasons. Firstly, the conclusion of a curse of natural resource abundance or wealth should be based on the closest possible estimate of such wealth in real terms. In other words, what is required is some measure corresponding to the most widely used indicator of economic wealth, namely income per capita (GDP). Assuming a strong positive correlation between natural resource abundance and the export of natural resources is by no means an obvious correlation. This can be proven wrong by the existence of resource rich countries with a low percentage of exports of primary natural resources. It can also be argued that the dominant share of exports in primary natural resources in the calculation of GDP can be a strong indication of an over-specialised economy. This then is a sign that the negative correlation is one of economic policy rather than one of a direct resource curse.

Secondly, in measuring the variables of exporting natural resources, it must be remembered that the variables are volatile. Variations of using resource exports as indicators to measure resource abundance, changes the outcome of specific indicators in the resource curse hypothesis. Brunnschweiler (2008) identifies these various outcomes from researchers who use different set-ups of the resource exports as indicators. Hence, as a first step in re-examining this resource curse hypothesis, it should rather be looked at from the angle of being a curse of natural resource abundance, as opposed to it being a curse of a dependence on the export of these resources, as found by much of the literature.

As far as a possible correlation between institutional quality and resource abundance is concerned, the impact of institutional channels on economic development has only become a topic for research recently. The quality of institutional channels being one the potential causes of the resource curse has been considered but this has not been verified by quantitative research. Institutional quality is measured in most cases by simply looking at corruption but there are exceptions. Bulte, Damania and Deacon (2005) found that natural resource abundance has a dual effect (positive and negative) on human development, but has a negative indirect effect on institutional quality. Still, Brunnschweiler (2008) insists that all these measures show a dependency on natural resource exports by the way it is

being measured, rather than showing a dependence or curse, because there is an abundance of the natural resource itself.

When looking at qualitative measurements, historians claim that natural resource abundance has led to rent seeking and corruption, thereby minimising the quality of government, which in turn leads to negative effects on the economy. When the institutional capacity is low it compounds the effects of the resource curse. From the literature, it can be concluded that natural resource abundance can be either positive or negative when institutional quality is included in the analysis. It can therefore be argued that the resource curse only shows itself where institutional quality is low.

2.5 CORPORATE SOCIAL RESPONSIBILITY

When discussing corporate social responsibility (CSR), the main aspect for consideration is whether multinational corporations do enough for the communities involved. Over the last 20 years the thinking on CSR has started to change. Companies across the globe have been increasingly promoting CSR across various sectors, including the environment, human rights and labour. For the purposes of this study CSR focuses on the mining industry. It must be highlighted that private corporations are not subject to international human rights and environmental treaties, which has resulted in a big push by the private sector to enter into partnership with non-governmental organisations as well as governments to promote social responsibility (Dashwood 2012). This has resulted in the mining companies struggling to improve the bad reputation, acquired through devastation caused by the destruction of natural habitats as well as social disruption through widespread community displacements. For the purposes of this study CSR is examined from a social issues angle while the researcher acknowledges the responsibility of mining companies to right the wrongs of environmental devastation caused by their extractive exploitation of natural resources.

Through the abovementioned argument of the resource curse, the question arises whether mining companies have a moral obligation to look after communities in the mining sector. One has to remember that mining is in essence the extraction of non-renewable resources. This means that when the resources are depleted, the mining company has no financial incentive to stay in the area; this phenomenon is called the shrinking city (Martinez-Fernandez 2012). One also has to remember that mining companies have to make a profit in order to keep their shareholders happy. The question arises whether a mining company has an obligation towards the left behind in the mining town after a resource has been depleted. One could argue that company do not force people to come and work on the mines. The mining company makes large investments in infrastructure while the mine is still active. People who work on the mines are well looked after - their children have free education, they have healthcare, and infrastructures. Should mining companies then continue to be involved after they have extracted the resources, or should it be the states responsibility to look after the communities left behind? The mining companies, after all, pay large amount of taxes to the state and also provide the initial capital for the building of schools, hospitals etc. It can therefore be argued that the resource curse as it is known, cannot be attributed to the mined resources but to the inability of the government to use the generated funds correctly (Lawrie, Tonts & Plummer 2011:139).

It is therefore important to consider under which conditions firms are more likely to behave in a socially responsible manner. It can be argued that mines look at the situation in a cost-benefit manner rather than a normative manner, which means that they are only looking to maximise profits to the

fullest no matter what the cost to the communities might be. The mining company sees an NGO as the normative agent in this regard, but a recent shift in strategy shows that mining companies are also playing a major role in the normative shift within the larger society. This is achieved through collaborative efforts in industry self-regulation, and can be ascribed to the interplay between strategic and normative-driven motives.

In 2012 the Northern Cape provincial government commissioned a report, the Northern Cape Provincial Spatial Development Framework(NCPSDF), to address this matter. This report is a planning strategy to implement the fundamentals of sustainable development, following global trends and applying them top-down, from the levels national, to provincial, to regional and finally to local governing bodies. This plan is a framework to make the region attractive to investors through using the guidelines of sustainable development. The PSDF also encourages mining companies to implement CSR, which means that company contributions must be positive. In other words, the mining company should plough back investment in to the community in such a manner that the negatives of their mining operation can be counterbalanced. An example of this is developing the skills of the communities involved so that they can find work in other sectors after the resource being mined is depleted (Campbell 2012; Cheshire 2010; Cheshire, Everingham & Pattenden 2011).

Following this PSDF, in an article that appeared in the *Sunday Times*, Prinsloo (2013) claimed that that towns in the Northern Cape such as Postmasburg, Kathu, Kuruman and Hotazel cannot keep up with the need for housing, due to the boom in the mining sector in that region. This article also claimed that the mines in this area were producing exponential amounts of iron ore to an Indian company called Tata. The holding company of this mine is a black consortium which champions BEE. However, none of the black partners are involved on an operational level at the mine in question. Also, the main problem was the lack of secondary production in these mining towns. Another problem was the fate of the coloured people within these mining towns. Because of a strict BEE policy in most of these towns, black shareholders got preference. The researcher feels that it would be relevant to understand the dynamics of why secondary production is hard to establish, and to investigate the views people hold on the status of coloured communities in these towns.

Campbell (2012) tries to redefine the roles and responsibilities of the public and the private sector in relation to mining in Africa. In attempting to explain the disappointing impacts of mining on social and economic wellbeing, much attention has been paid to ineffective administrative and political processes in the government structures on the African continent. CSR frameworks have been used to remedy the “governance gaps” that exist in these government institutions in order to reduce the levels of poverty and inequality.

CSR also addresses the following issues and sectors: the environment, social and community development, employment and labour rights, and human rights (UNECA 2010). CSR has been redefined over the years. Most companies have lately accepted that there is a strong case for CSR - it is a sound business strategy in the sense that corporations can benefit in multiple ways by operating in long-term sustainable ways, in contrast to short-term profit and extraction driven methods.

Solomon, Katz & Lovel (2008) investigate the mineral industry in Australia, and many parallels can be drawn to the situation in the Northern Cape as far as different social dimensions are concerned. Seven thematic categories can be identified where corporate companies can make a difference. The first theme is the implications of the resource boom on company structures, and the fact that mining companies become multinational with a resultant centralising of decision making in globalised company structures. There is also a tendency to portray the mining industry as homogenous, but this does not portray the full complexity of company structures in decision making (Heiler, Pickersgill & Briggs 2000).

The second theme is governance and regulation. This refers to the increasing influence of stakeholders on the environment that regulates the CSR of companies, with increased emphasis on reporting on environmental as well as social issues. This is coupled with the emergence of new forms of regulation through certification schemes and voluntary initiatives that companies can be part of.

The third theme relates to the perspectives of the developers as well as the indigenous communities in the area of operations on CSR. This theme refers to the relative power of developers and local communities, and the current literature indicates that there has been a greater emphasis on the employment and training of indigenous people.

The fourth theme is that of title and agreements with indigenous communities, with specific emphasis on the legal context. This requires that direct agreement negotiations with indigenous people who hold titles and have claims to the land being mined. Policy makers should look at the complexities of implementing these agreements, with particular focus on contributions to regional development. Communities should also give free consent, and this consent should be a decision informed by background information provided by companies.

Fifthly, communities, community development, and especially community engagement should be integrated in business planning. Companies should use social impact assessments in which the importance of the relationships between the companies and communities should be clarified and simplified (Kemp 2005).

The sixth theme is the way companies interpret sustainable development, and in this regard their social licences to operate should be clearly defined because the interpretation of licenses seems to differ from stakeholder to stakeholder.

Lastly: the theme of labour relations, management, industry culture (long working hours, rosters and shifts), and internal governance should be considered and analysed to assess the impact on communities. As in Australia, companies should perhaps start looking at the possibility of fly-in-fly-out/drive-in-drive-out (FIFO/DIDO) labour, and the impacts thereof. In addition, the struggles associated with the labour regulations should be simplified and streamlined.

The abovementioned identified themes will help companies set up the CSR strategies. It must be remembered that these issues have a bigger scope than just the communities in question, and interpretations can be debated. It is important not to generalise the findings but to view them in the context of particular sites; it should be kept in mind that the mined minerals have context-specific impacts (Solomon, Katz & Lovel 2008).

2.5.1 Stakeholder views on corporate social responsibility

The question should be asked what a stakeholder is. A stakeholder is a person who has an interest in the activity of an organisation or company, and this person is affected by the operations of the organisation (Crowther 2008). This implies that owners, employees, investors in a company as well as its customers and suppliers can all be seen as stakeholders. Not only these groups, but also the communities or citizens that live close to the location of the companies' operations, as well as government at national and local levels are also stakeholders. It can also be argued that the same applies to groups such as trade unions and civic societies such as NGOs.

Stakeholder theory is therefore based on the notion that an identified group has vested interest in a corporation because there is some risk attached to the activities of that corporation. One can accordingly identify two groups of stakeholders by the type of interests they have in the corporation. The two types are those who are voluntary stakeholders and choose to deal with the corporation, and involuntary stakeholders who do not have a choice to enter or withdraw from a relationship with the corporation. The idea of stakeholder theory is based on the social contract between an organisation and the society, and is based on the principle that if the organisation affects a stakeholder, it also has a responsibility towards that stakeholder. Stakeholder theory has to do with the two opposing forces of business interest on the one hand, and social or moral interest on the other. Managers in business therefore need to follow certain frameworks to reach goals in a manner where trade-offs are made

between economic goals, and acting in socially or moral responsible ways which affect stakeholders positively.

2.5.2 Stakeholder perspectives on organisational performance

Crowther & Rayman-Bacchus (2004) explain that an organisation is a composite entity consisting of a group of individuals, each working towards a common goal of shared purpose. Real life situations differ from this in the sense that common purposes are not clearly identified and stipulated. This leads to a situation where individuals do not necessarily work towards a common purpose, especially when the purpose clashes or moves in a direction different from that of individual agendas and objectives. This is found to be apparent where individuals are considered in the context of a stakeholder community because different stakeholder groupings have different desires and motivations which are often in conflict with those of stakeholders in the broader community (Crowther & Rayman-Bacchus 2004).

The measurement of a company on stakeholder performance is more problematic than that of the measurement of a company's financial performance. Stakeholder performance in annual reports is frequently not objectively reported which leads researchers to look elsewhere. In the examples used by Crowther (2008), the United Kingdom includes such measures in 'most admired company surveys'. Measures which provide a reputation rating in the following nine categories are added up to provide a score at the end. The categories are: quality of management, quality of goods and services, capacity to innovate, quality of marketing, ability to retain top talent, community and environmental responsibility, financial soundness, value as long term investment, and the use of corporate assets. With these objectives in mind it is important to gauge what a stakeholder is. Numerous definitions of a stakeholder are provided in the literature. Sternberg (1997) give the following definitions: 'those groups without whose support the organisation would cease to exist' (in Freeman 1984:31) and 'any group or individual who can affect or is affected by the achievement of the organisation's objectives' (in Freeman 1984:46). A stakeholder management approach can be said to exist when an organisation thinks about the impact of its decisions and operations on stakeholders before making final decisions (Crowther 2004).

Donaldson & Preston (1995) put forward three arguments for the use of stakeholder theory in the operations of companies. The first is that it is a good description of how the management of the company works. This implies that all management is a form of stakeholder management where the different stakeholder interests are all considered.

The second and third arguments for using stakeholder management actually conflict. The second argument is that it is ethically and morally more correct for companies to consider the broad spectrum of stakeholder needs, rather than the needs of only one group. Thus, by accepting a stakeholder approach, companies inherently say that their primary goal is to become more socially and ethically correct. The third argument is that the reason for managing your stakeholders is actually to create shareholder wealth. It suggests that the reason for correctly managing stakeholders is to create shareholder wealth and is therefore considered to have instrumental power. However, Evan & Freeman (1988) argue that it is unethical to manage stakeholders so that shareholders can receive better profits. Both of these views suggest that stakeholder management is a way of achieving company objectives, but the question is whether this should be financial performance or social performance.

Even though CSR is seen as a viable method to solve poverty and eradicate social exclusion and environmental harm, conflicts still arise which hamper mining development (Marrewijk 2003). Several tensions exist when it comes to extractive industries such as unequal distribution of benefits accrued through CSR (Kapelus 2002), the unevenness in power relations between mining corporations and community members which has an effect on the collective and individual rights of the community, and the absence of accountability measures (Hamman & Kapelus 2004).

In compliance with stakeholder management, CSR programmes may enable companies to go beyond their legal obligations, but on the other hand this may also be a ploy to secure profits.

2.5.3 Corporate social responsibility in the South African mining context

When investigating CSR in South Africa, the context and political economy must be understood. Historically, CSR in South Africa has been restricted to gift-giving and making charitable donations to organisations as well as securing the blessing of traditional chiefs, literally by giving them bottles of whiskey (Kapelus 2002). After the fall of apartheid in the 1990s the old norms and rules started to change, with a change from racial capitalism in which policies were based on race, to a type of social capitalism which were policies based on a development ideology. Since 1994, legislation has forced business to move from corporate giving to a more encompassing social and political strategy. This entailed new labour relations, environmental management, and black empowerment and corporate governance. Business had to rethink their strategies and were pressurised to align themselves with the norms of international standards. The focus on CSR in the mining sector in South Africa has been impressive, although perhaps not impressive enough in relation to the profits generated by these companies.

According to Kapelus (2002), Anglo American and De Beers were frontrunners in setting up funds to address these issues. The funds were subject to an interactive partnership approach and policies of ‘choice’ and ‘ownership’ by communities. BHP Billiton adopted another strategy, namely setting up a development trust. This trust however is not the implementing agent of development, but it makes itself available as catalyst and facilitator for development to take place, for example Billiton provides funds to NGOs, who then in turn assist communities with social issues such as women’s rights (Kapelus 2002). These types of social interventions through CSR have always been a part of the mining industry in South Africa, but it seems to be the case that initiatives have only been geared towards mining communities in the immediate vicinity of the mines (mine employees and their families). This can be critiqued on the basis of the underlying racial preferences which govern and regulated social infrastructures, housing, transport, and education. However, this was the situation before the 1994 elections; after these elections the Reconstruction and Development Programme came into being and the government attempted to lay foundations for poverty alleviation. This became the programme to which businesses quickly attached themselves because of the government’s active encouragement for the private sector to do so. It prompted a shift from the heavy-handed approach which was very rigid to a more multi-stakeholder approach in which stakeholders had different interests. Official commitment from the private sector came in 1997 when they pledged allegiance to community development in parliament (Kapelus 2002).

Mining companies in South Africa also realised that there was legitimacy to be gained from getting involved in CSR which promotes the social and economic reconstruction of the country, but these incentives have come from government in a call for greater collaboration in public-private partnerships. Historically speaking, mining companies have found the process difficult and have not prioritised participation or upheld the ideologies in question. The companies have more often than not had all the power to implement community development policies which allowed them to get on with their main objective, namely to generate profits for their shareholders.

However this has changed in recent times and mining companies are undertaking a more participatory democratic approach to community development. As a result of trying different models, they have adopted a more professional and consultative approach. Three different general models are used by mining companies to implement CSR. Some companies have started independent funding, some have employed non-profit organisations to manage their CSR profile, and some companies retain CSR within their own company structures. According to Kapelus (2002) the basis for deciding which model to use is not clear, nor are the factors that determine the performance of CSR.

2.6 MINE CLOSURE AND DOWNSCALING OF MINING TOWNS

The next question is what happens to these small mining towns after the boom have happened, the mining companies have left, all the resources have been extracted, and the minerals depleted.

This question has two parts. The first part seeks to understand the factors which influence the way people that are affected by mine closures and downscaling, and the second part is to examine the successes of different attempts to address this issue by looking at different types of situations. Certain conclusions can be drawn and on the basis of these, and one can make policy recommendations that are applicable to different social, economic and geographical contexts (Neil et al 1992).

As discussed previously the boom and bust cycles of extractive industries are inherent to the mining industry. Mining as a whole is very sensitive to global demands and price fluctuations. This is aggravated by the business cycles of the global market. Mining in countries such as Australia and Canada, which like South Africa are export driven, has been particularly exposed to notions of world commodity prices and the way that global markets have changed in structure.

2.6.1 The responses of the actors in mine closure or downscaling

Various actors are involved in the process of mine closure and downscaling. The attitudes of various actors are briefly discussed to give context to the impact their attitudes have on mine closure and downscaling, as are each actor's experiences when a mine downscales or closes.

2.6.1.1 The company

The distinctive styles of behaviour towards mine closures of trans-national companies are gradually evolving and starting to show similar characteristics. This behaviour is steered by global markets and opportunities regardless of ownership structures or the company's country of origin. In some areas state intervention may be strong or the mines even owned solely by the state. In such cases, as discussed by Tykkylainen (1992) and Liljenas (1992), trade unions can also own shares, and representatives of the miners or members of the trade union can be on the executive committees of state-owned companies. However, the behaviour of these companies does not differ from that of privately owned enterprises. They share the same idea of being part of an international network of mining industries, they all try to expand abroad, and they introduce trans-national labour policies into their operations. It can therefore be argued that professional management practices of mining companies seem not to be dependent on what entity owns them. On the other hand, factors which influence policy differences are the amount of available money for investments, and differences in structure, which include differences in the size of the company and whether the company is trans-national or not.

Due to differences in size not all mining companies have the same policies concerning production and investment decisions such as policies on labour recruitment, town administration, the use of mining infrastructure by outsiders, and the amount of time which should be given as early warning in the event of mine closure or downscaling. Neil et al (1992) argue that policies implemented when mining operations start and what actually happens when a mine closes, reveal the conflict of interests between communities and the mining companies. This leads to the argument that trans-national companies particular should not decide on mine closure policies because they inherently do not have the interests of local regions at heart. The most important aspect for companies to understand is that there are divergent outcomes for the same company policies in different contexts. When companies keep this in mind, they will be able to understand the impacts of their policies, and governments can guide companies to adopt adequate production as well as investment policies which will not generate unwanted community problems in the event of closure. For example, a mining company can push for diversification in the local economy to increase the multiplier effect, but when the mine eventually closes, the industries which are dependent on mining will naturally also fail since they will have no economic base.

2.6.1.2 The State

The state has assisted the development and growth of mining companies in a variety of ways. This includes the flow of capital and migrants into areas where companies have decided to establish their operations. This is done by providing industrial infrastructures, promoting the expansion of investment in resource industries and in resource towns, and providing direct aid through tax grants or advice in setting up resource towns (Bradbury 1979). Neil et al (1992) use the example of Scandinavian governments where branches of government promote resource-based and scattered development. This is done by changing their policies to foster diversification of peripheral economies into manufacturing and placing state agencies in the middle of community centres to assist in the establishment of peripheral economies. Due to this initial help of government, both local or national, communities feel that the state should subsidise mining operations if its starts to decline, or to induce a new industry near that mine (Neil et al 1992).

When looking at government responses to the problems of mine downscaling or closure, certain examples can be given to show these responses. In this case, Scandinavian countries will be compared with Australia and Canada. There are major differences in terms of national economic development planning. In Scandinavia there has actually been a concerted effort in regional policy planning to assist regions to achieve diversification in the local economy. In Canada, in contrast, ad hoc attempts have been made to direct investments through government incentives to develop particular regions,

but no formal regional planning policy has come to fruition as in Scandinavia. In Australia there is a different approach to this problem. There they implement an economic regeneration approach through coordination at local levels. Here the government tries to bring together entrepreneurs, trade unions, local government, and other interests to initiate development (Heledd 2004).

Concerning policies that address unemployment, countries such as Norway and Sweden have maintained low unemployment through their policies on the principle of full employment, and have managed to maintain this through the political and economic system since the 1960s. Canada, on the other hand, is not committed to the full employment principle; the government has put in place measures for redundant mineworkers to be assisted in securing alternative employment. Australia has tried sporadically to introduce agencies to help mine workers to find alternative jobs. When it comes to income maintenance of redundant mineworkers, Canada and Scandinavia have implemented some sort of maintenance plan which gives miners some time to adapt without economic pressures. Sometimes this backfires, like in Sweden, where some miners fail to find new employment because they feel comfortable receiving this assistance, which is 90% of their normal salaries (Neil et al 1992). In this regard it must be mentioned that certain problems can arise in the case of differences between national, provincial and local governments. In Australia, for example, a lack of inter-governmental coordination processes, as well economic and financial decision-making, have led to systematic mismanagement of resource development activity. Another impediment to planning for mine closure is that of confusion over government responsibility in the process.

2.6.1.3 The local employees

Neil et al (1992) remind us that the traditional profile of a mine worker has changed over time. Historically the mineworker was seen as someone with a strong occupational and working-class sense of solidarity, a commitment to his trade and dependence on cooperation from his fellow work mates. This is evidently not so in modern times due to dramatic restructuring. This has been happening because of the employment of non-miners in the industry. For example, in Northern Finland mining companies have been offering jobs since they underwent severe restructuring of their economy due to the mechanisation of forestry and the rationalisation of agriculture (Neil et al 1992). The traditional model of work for miners is further changed by the tendency of mining companies to subcontract work to small transport and quarrying companies. Neil et al (1992) use Australia as an example of where open cast mining companies have hired workers directly from the city who are often only temporary residents of the mining community and only in the industry to make enough money to reach a particular target (buying a business, becoming self-employed etc.). The changing working

environment is not solely due to non-miners being employed in the industry; the biggest change agents are rationalisation, specialisation and mechanisation.

There is, however, reason to surmise that certain characteristics of mining communities may aggravate the problems local residents face when coping with these problems. Firstly, the literature suggests that the availability of particular forms of social support may either reduce the psychological vulnerability of certain groups in the community or act as a buffer between major life events, such as unemployment. When a mine closes or downscales, a significant number of community members departs from the town, and the loss of social networks is more often than not a problem because they could have helped in coping with the stress of unemployment. This is a particular problem in mining communities which are well established and less likely to have such connections outside of the community.

Marais (2013) explains the process which should happen in the South African situation, especially in the Free State Goldfields. New legislation passed in 2002 makes provision for private as well as public entities to plan practises in such a way that communities develop in a sustainable manner. This links in with corporate social responsibility. Planning phases should therefore include pre-mining impact assessments, regular monitoring of the community, planning for viable economic activities, utilising the infrastructures developed by the mines themselves, providing land to generate alternatives, carrying out environmental planning, and integrating the mining companies' own objectives with those of the government (Hilson & Murck 2000:227; Warhurst & Noronha 2000:153). Marais (2013) also makes the point in his study on the Free State Goldfields that a long history of role players in the development of mines had an effect on the development path in the region. This went through five different phases with different role players, each era having a different developmental path with different outcomes, some more positive than others. There are various reasons for these role players, such as development forums, not reaching their desired outcomes. Firstly, many of the plans were only wish-lists and were made on the premise that many of the towns were growing in population; and predictions were consequently made on this. The opposite actually happened: the populations in these small towns declined and growth objectives were never reached. Secondly, many of the social responsibility plans never had desired outcomes because of the inability of the local government to work together with the mining companies. This may be due to corruption or just lack of knowledge and skills. The problem with the new legislation of 2002, which orders mining companies to have social and labour plan projects, is that most of these can be seen as glorified social responsibility programmes (Marais 2013). He argues that most of the mining companies see these projects as a way to get around the law; they actually invest in short-term unsustainable projects in which communities see immediate effects rather than long-term sustainable effects.

Marais & Cloete (2009) give insight into the interrelationship between mine closures, service delivery and public finance in a South African context. They argue that mine closures have a severe impact on the finances of local government, as well as their ability to provide services to local households. This, in turn, leads to an ever-rising level of dependence in these areas. This can be attributed to the remoteness of the towns and the fact that most of them are dependent on mining as a mono-industry, whereas towns in Gauteng could in a sense move away from mining as a mono-industry towards secondary industries such as production and the service industry. Marais & Cloete (2009) confirm the researcher's notion that people in small towns in remote areas struggle to diversify their economies because there is an outflow of skilled people as well as declining agricultural output in the surrounding areas. This leads to many of these towns being subsidised by government grants. The development options of small towns extremely limited.

2.7 SOCIAL AND ECONOMIC WELLBEING AND QUALITY OF LIFE

After understanding and defining resource dependence of communities in mining towns, in sections 2.3 to 2.6, the issue of wellbeing comes to mind. Wellbeing is no longer seen solely in terms of material standards and quantitative growth; the dimension of social progress has also come into play, as well as structural policies and public awareness (Bohnke 2005). However, the literature suggests that a defining and measuring wellbeing is not a simple matter. Although there is a widespread adoption of policies aimed at improving prosperity, at the same time it is not exactly clear what wellbeing is, for the individual as well as society as a whole. This situation causes a paradoxical situation (Ivkovic et al 2014).

Stiglitz et al (2009) challenge the viewpoint that wellbeing is a multi-dimensional phenomenon. They argue that the following key dimensions should be taken into account simultaneously as one dimension: material living standards such as income and consumption, health, education, personal activities such as work, political say, social connections and the environment. Michaelson et al (2009) state that a higher level of wellbeing allows people to react more ably to adverse or difficult circumstances, to innovate, and to work with the people around them. Figure 2.2 illustrates that the wellbeing of a society can be defined as:

“...the benefit for all people in the society, implying accomplishment of adequate economic development (the objective dimension of well-being) and the resulting positive perception of people towards the proper stage in society, i.e. the quality of life (the subjective dimension of well-being) (Ivkovic et al. 2014:2)”

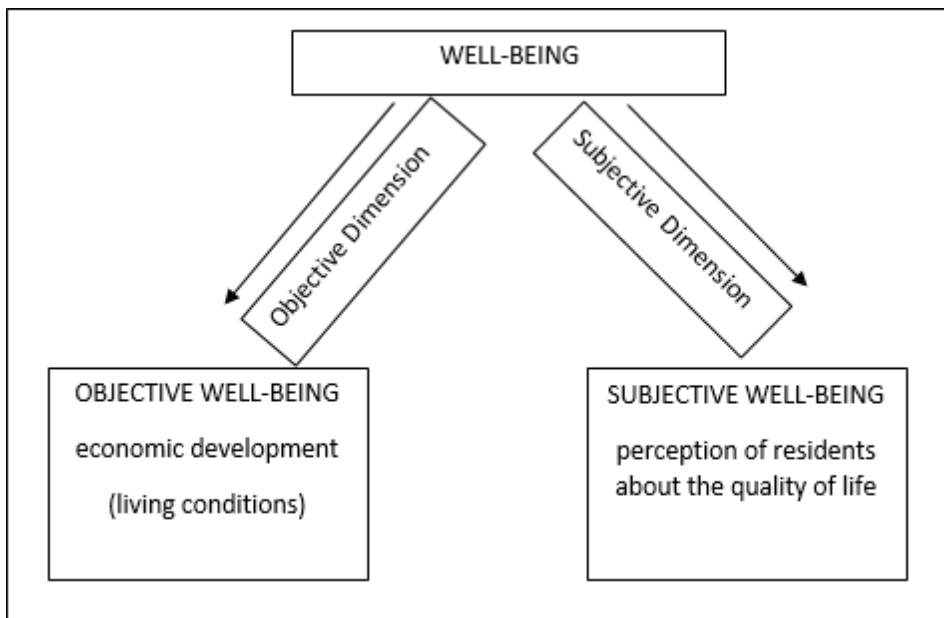


Figure 2.2 The dimensions of wellbeing

Source: Ivkovic et al (2014)

Therefore, the objective wellbeing of a society can be viewed as a consequence and function of actual living conditions and these conditions are the result of the perspective of an individual or observed level of that community. The effects of these conditions in the community on individuals depend on how individuals perceive them (subjective wellbeing).

The terms quality of life and wellbeing have been loosely used. Firstly, in describing the conditions in which people and communities live, (water and air pollution for example), and secondly to describe the status of people, for example health status, employment status, and levels of education. Developed countries have realised that this measurement is a very complex undertaking; it is not just a simple function of material wealth (Pacione 2003).

Defining social and economic wellbeing is crucial to the researcher's study to be effective. Policy makers concerned with modern development thinking are always interested in measuring the quality of life of communities and individuals. It is difficult to estimate the wellbeing that exists in a certain community because it is a complex task. This can be attributed to the concept of wellbeing being multifaceted, and most of these facets are difficult to quantify. The elements that make up wellbeing are subjective in its essence and therefore depends mostly on individual perceptions. In the past purely economic wellbeing indicators such as per capita GDP were used to measure the state of wellbeing in a community. This type of measurement, however, is too shallow to grasp the full extent of a community's wellbeing. Murias (2006) argues that national accounts may be incomplete in the sense that they do not reflect the majority of economic activities within the marketplace, therefore only giving us a biased perspective on the wellbeing in a community. He suggests that we must evaluate

factors beyond just economic measures and also consider other factors which might affect standards of living.

Talberth et al (2006) put forward the Genuine Progress Indicator (GPI) as a tool for measuring economic wellbeing from the sustainable development perspective. Talberth et al (2006) also agree with the notion that the GDP fails as a true measure of economic welfare. GDP is just a gross tally of everything (products and services) produced within a country. Furthermore, there is little or even no consensus on how wellbeing should really be measured and whether quantitative measurements can be made at all. The GPI is a variant of the Index of Sustainable Economic Welfare (ISEW) first proposed by Daly and Cobb in 1989. The GPI and ISEW use the same personal consumption data as the GDP but also take into account data in respect of income inequalities, cost of crime and environmental degradation amongst others (Talberth et al 2006). The GPI and other such instruments are designed to measure sustainable economic wellbeing rather than economic activity alone by differentiating between economic activity and activities which diminish both natural and social capital.

Talberth et al (2006) explain the shortcomings of GDP to measure progress. GDP was used during World War II to measure wartime production capacity. GDP is just a gross tally of all products and services bought and sold, with no distinction between what adds to the wellbeing of a community, and what subtracts from it. GDP assumes that every monetary action adds to social wellbeing. The types of costs that GDP ignores is for example the following: expenditure caused by crime and accidents, toxic waste that needs to be cleaned up, prisons, and corporate fraud. These costs weigh the same as socially productive costs such as investments in housing, education, healthcare, sanitation, and mass transportation. One practical example of how GDP does not distinguish between a transaction which diminishes social wellbeing and one that enhances social wellbeing, is crime. Expenditure on damaged property, locks, alarms and security systems is measured by the GDP method as economic gain. In essence it is then implied that crime is good for the economy and leads to growth. Another drawback of using the GDP is that it counts conspicuous consumption of the wealthy. In essence, the GDP might grow even if all of the expenditure is that of the wealthy on luxury goods.

As far as social wellbeing is concerned, Keyes (1998) explains that the self, namely the individual, is both a private product and a result of social processes. As persons age, they encounter tasks that force them to adapt, either through their own will or through social pressure. This then is the challenge for a person: to decide if he or she has lived a worthwhile life, knowing that he or she have chosen to adapt through their own free will, or through social pressures. Although there are distinctions between

public and private life, the literature tends to suggest that social wellbeing is primarily a private function of the self. Clinically speaking, wellbeing can be measured through depression, distress, anxiety, or substance abuse. Therefore, Keyes (1998: 121) defines wellbeing as follows: “Wellbeing therefore is the absence of negative conditions and feelings, the result of adjustment and adaption to a hazardous world.”

Psychologically speaking, wellbeing is a subjective evaluation of life via satisfaction and effect. According to this view, emotional wellbeing is an excess of positive over negative feelings; personal psychological functioning is the presence of more positive than negative perceived self attributes such as personal growth. Existing models emphasise the private side of wellbeing, but it has to be noted that individuals remain linked to social structures and communities where they face social tasks and challenges in their everyday of their lives.

Wellbeing is not the same as happiness. Happiness refers to how people feel on a moment-to-moment basis. This does not show how people feel about their lives as a whole (although sometimes it can). Happiness also does not give an idea of how people function in the world. Wellbeing therefore is a much broader concept than moment-to-moment happiness. Wellbeing includes happiness, but also other things such as how satisfied people are with their lives as a whole, how much control people have over their lives (autonomy), or having a sense of purpose in life (Keyes 1998).

Keyes (1998) proposes multiple dimensions of social wellness. They are: social integration, social acceptance, social contribution, social actualisation and social coherence.

- Social integration is the evaluation of the quality of one’s relationship to society and community.
- Social acceptance is the acceptance of the character and qualities of other people around you as a generalised category. Individuals in the community who show social acceptance are the ones who trust others, think that others are capable of kindness, and believe that people can be hardworking.
- Social contribution is the evaluation of one’s social value. It is the belief that the individual contributes to the greater good of the community and is a vital member thereof. This means that people yearn for the opportunity to be responsible for the good of the community.
- Social actualisation is the evaluation of the potential of the society or community to grow in an upward curve. This is the belief that the community can move forward through its

institutions and the people making up that community Healthier people are optimistic about the future and the potential of the community to move forward.

- Social coherence is the perception by the individual of how the social world is organised and how it operates. People who have a positive state of wellbeing not only care about the world they live in but also understands what is happening around them. Through this they realise that they do not live in a perfect world.

Social wellbeing is affected by the social structures. Therefore, the perceptions the individual has of himself or herself can be influenced by certain factors such as education. Education launches certain individuals into certain occupations and affect what they earn in terms of monetary value. The monetary values they earn determine in which neighbourhoods they can live.

To understand how to measure wellbeing, the researcher has to explain why wellbeing and progress must be measured. There is an increasing realisation that macro-economic statistics, especially GDP, do not provide an accurate and detailed picture of the living standards and conditions that ordinary people experience, and the economic meltdown in recent times has further highlighted the fact that indicators such as GDP alone cannot measure the full human costs of the crisis (OECD 2012). Through this realisation it has become important to develop statistics that can better reflect the sophisticated factors that matter to people and their wellbeing. This is where the “household perspective” is of high importance for public policy makers to align policy with the end goal of democracy, namely “a better life for all” (OECD 2012).

To understand the concept of progress, a simple definition can be given: “Progress is about improvements in the well-being of people and households” (OECD 2011:4). This includes looking at the diverse experiences and living conditions of people, as well as the functioning of the economic system. To measure this the OECD framework can be used. This framework for measuring wellbeing and progress is based on the recommendations made by the Stiglitz-Sen-Fitoussi commission which focused on the measurement of economic performance and social progress. The framework is built on three conceptual pillars: material conditions, quality of life and sustainability. Each of these pillars has relevant sub-dimensions.

The three pillars need to be explained in detail to understand why indicators need to be used in order to measure levels of wellbeing and progress.

The first of the three pillars is material conditions, in other words, a command over physical commodities. Measuring this phenomenon requires measuring people’s income, assets and

consumption, as well as how these economic resources are distributed among different people and population groups (OECD 2012).

The second pillar is quality of life. This pillar focuses on indicators other than those related to material conditions. Economic resources are important but it is not all that matters in measuring people's wellbeing. These quality of life indicators include: education, human contact, health status, environmental quality, jobs, governance, security and civic engagement. Measuring people's subjective experiences is also important in gauging levels of wellbeing of a community. All of the following factors are important when measuring quality of life: economic and non-economic, subjective and objective indicators, and disparities and similarities between different population groups (OECD 2012).

The final pillar of measuring well-being is sustainability. Assessing sustainability over time is not easy and offers many challenges. Future wellbeing cannot be measured and predicted in the present, due to changes in taste and the day-to-day advancements in technology (OECD 2012). It is however possible to measure current levels of resources that shape wellbeing in communities, and to monitor how these resources are being managed for future generations (OECD 2012). Sustainability can therefore be measured in the following four resources or 'capitals' that will matter for future wellbeing: economic, natural, human and social capitals. The levels of these resources may not be the only determinants of wellbeing over time but they offer a quantitative means of measuring and examining the link between the present situation and the future.

Natural capital is the level of natural resource stocks. It is important to measure these stocks in monetary values. While having records of natural resources and pollutant levels is important, it is also important to know how these resources are affected by consumption patterns in countries other than where the primary production takes place. An example of this is the global climate system which is greatly affected by emissions of greenhouse gasses which are by-products of the production and consumption of goods (OECD 2012).

Measuring human capital is part of measuring the changes in resources of a country; it is the level of competencies, skills and knowledge that people have. Human capital can be measured by the years of schooling within a community as well as competencies of the workforce.

Social capital, on the other hand, is more difficult to measure but can be conceptualised and measured according to the following categories. The first category personal relationships, which are measured in accordance with people's social networks and behaviour that contribute to maintaining these social bonds, such as exchanging news and views via communication. The second one is the social network

support, which is a direct outcome of people's relationships with one another. Civic engagement, which is the third category, which refers to the manner in which people contribute to community life. This includes activities such as volunteering, political activities, being a member of a group, and different forms of community action. The last category is trust in cooperative norms; this is the trust in the institution that governs the whole process of the community, for example the shared value system of the community which ensures that the society functions in a mutually beneficial manner.

2.7.1 The objective approach to measuring Quality of Life

In the field of human geography, urban and regional studies, regional science and regional economics as well as empirical studies have concentrated on where people live and why. Historically, most studies focused on measuring the QoL and wellbeing of communities objectively using certain indicators. These indicators include: income, consumption, residential land, wages, rents, local amenities, natural environment and environmental pollution, to name a few. They are observed and measured, and cities as well as regions are then ranked accordingly (Ballas 2013).

The study of social geography encompasses many facets. The study of the person – environment relationship is at the core of the study of social geography. To measure this relationship, geographers have introduced territorial social indicators to identify and analyse socio-spatial variations in quality of life in different geographical spheres, ranging from global to local contexts. Most of the research done on these social indicators has been done with the focus on objective methods to analyse these conditions. These are usually derived from census data sets. In contrast, Pacione (1990, 1993) discusses the subjective method of analysis and calls it the concept of urban liveability. Urban liveability, in contrast to objective methods, measures social wellbeing in a community in more relative rather the absolute terms, and the meaning of the measurement depends on the time, place, and purpose of the assessment. It also depends on the value system of the assessor. Pacione contends that both methods must be used to gain a better understanding of the wellbeing of communities. In his words: “we must consider both the *city on the ground* and the *city in the mind*.” (Pacione 2003:20)

It is important to understand key conceptual and methodological concepts in the objective measurement of wellbeing, these concepts were identified by Pacione (2003) and will only be briefly discussed below.

2.7.1.1 Choice of indicator type

To define quality of life, two fundamental elements must be examined - how people feel about their circumstances and the factors influencing these feelings. There are two types of social indicators which measure community wellbeing. The first set of indicators is objective and measures the

environments in which people live and work. These are factors such as income, health care, education, crime and housing. The second set of indicators is subjective and these indicators measure the feelings and perceptions people and communities have about the conditions they find themselves in.

The relationship between subjective and objective indicators can be described in terms of health care. The subjective analysis of how people perceive their own status of health, health care provision, or the services available to them can complement the objective set of indicators pertaining to health care.

There are a few factors that influence this objective-subjective relationship. These include education, age, income, and health status, and they influence the objective world and the individual's evaluation of it. It acts as a filter which distorts objective perceptions of an objective situation. It can thus be said that a universal objective situation can be narrowed down to a very intricate individualistic subjective interpretation thereof and can be linked to personal experience. An example of this is true for a victim of crime. The person will perceive crime as a major issue, irrespective of the levels of crime in that neighbourhood or community (Pacione 2003).

2.7.1.2 Indicator specificity

Apart from the abovementioned objective-versus-subjective distinction between social indicators, the latter can also be classified according to how general or specific they are. Subjective indicators, as already mentioned, can be explained in terms of which indicator is relevant to the specific life sector of the person. In other words, one indicator may be relevant to the local transport service while another indicator may be relevant in a more general way, such as the overall satisfaction of the community. These indicators may be relevant on a more specific or general level, with an individual's perception of his overall life quality being the most general one (Pacione 2003).

2.7.1.3 Scale of analysis

Scale of analysis refers to the scale on which the indicators are applied. This simply means that geographers should not get carried away with national averages when looking at indicators but rather try and look at a local situation where real human-scale problems are apparent (Pacione 2003).

2.7.1.4 The dimension of social groups

In addition to the other dimensions of indicators, the geographer has to keep in mind that different social groups experience life differently in the same community. This is especially true in the South African situation, with its legacy of apartheid. The social divisions include class, age, lifestyle, gender

and ethnicity (Pacione 2001). Pacione (2001) also distinguishes between different groupings based on behaviour (for example, public transport users) and common interest groups (for example, people that live in estates). For research to be of real value, QoL studies have to be based on the appropriate social groups.

2.7.1.5 The composition of life quality

According to Pacione (2003), earlier studies concerning QoL concentrated on defining the concept whereas recent studies have advanced from just a general study of the definition of QoL to a more in-depth identification of its major elements. Three methods of determining the elements of QoL have been used. The first one is extracting them from a theory from another discipline, for example from psychology or sociology. The draw-back of this method is that there is no universal or generally accepted theory that precisely defines the conditions of measuring wellbeing along with the relative weight of each indicator. The second method is of a subjective kind. This entails direct questioning about how people view their own state of wellbeing. Although much research has been done on monitoring QoL through surveys, no definitive set of indicators and criteria has emerged.

A third method contrary to the two mentioned above is referring to the opinions and judgements of experts such as scientists or public representatives. The major problem with this is that these people can be influenced by politics and it is yet to be proven that expert views are the same as those of the general public. It can be concluded that a guide needs to be compiled which contains a set of indicators broad enough to include all the most important wellbeing indicators for the community concerned. The most important indicators are those that are relevant to an individual's immediate personal life. The sum of all these indicators add up to the level of a person's wellbeing, but it must be remembered that the weight of the indicators will vary between social groups and from individual to individual.

2.7.1.6 The measurement conundrum

There is a problem with the measuring of QoL, and this problem is that of the measurement itself. According to Pacione (2003), many researchers feel that the concept of QoL can be regarded as an instrument for policy-making, but policy makers do not feel the same way. They argue that research bias may play a role and render the results unsuitable for public planning, and that results must be confined to academic purposes such as testing the conceptual models of QoL. Recognition must be given to the following factors that may influence the results of such studies: the selection of indicators, the method of aggregating indicators to one element, the weighting or non-weighting of indicators, and the type of measurement technique employed (Pacione 1982; 1995).

2.7.1.7 Structural models of life quality

Measuring people's life concerns and their reactions to them may be combined to measure people's overall sense of wellbeing. This normally happens in a framework within a broader conceptual structure. Pacione (2003) proposes that there are several structural models which can be used. The most basic model states that satisfaction with life is a weighted sum according to different domains of life, for example job happiness. These domains are the sum of satisfiers and dissatisfiers within each of these domains. Maslow (1954) developed a more complex theory called a hierarchy of needs. This states that certain needs are more basic than others and before these can be satisfied other concerns have little effect on overall satisfaction. These different models have certain attractive features, but geographers in general like to use a simpler aggregative linear model. This model works with the notion that people add up their joys and sorrows about certain issues to arrive at an overall state of wellbeing. This is based on the presumption that positives in one area of an individual's life compensates for disadvantages in other areas. The approach to measuring the problem of the contribution of each domain to overall wellbeing is a step-by-step multiple regression analysis. Geographers however make one common mistake when they use this technique, namely the absence of measurement error. The importance of this factor is important to measuring QoL (Pacione 2003).

2.7.1.8 Theories of urban impact

The following section of urban impact may not be very important for the study on the mining towns in the Northern Cape because of its rural locality, but certain lessons can be learnt to understand the underlying factors that influence individuals lives, even in rural settings. Pacione (2003) explains that theories of urban impact are based on the following principles: human ecology, subcultures, environmental load, behavioural constraints, and behaviour settings. The theoretical perspectives on QoL can be integrated into a model that shows the impact of stressors on individual perceptions of wellbeing. This stress model shows the perception of the city by the individual through a joint function of the objective environmental factors (for example population density, pollution levels, and temperature.) as well as the individual characteristics of the person himself or herself (for example. previous experiences, adaptation levels or time spent in a town or city). If the environment in question is outside the individual's optimal range (for example contains too many stressors or is over-stimulating or offers insufficient resources), this leads to the individual experiencing stress which in turns activates the individual's coping mechanisms. If these coping mechanisms are successful, the person adapts to the environment or habituation occurs. The after-effects of this may be fatigue and reduced capabilities to cope with the next stressor. Positive effects may be that the person learns how to cope with the next undesirable situation.

The evolution of quality of life (QoL) is an extremely complex subject and has provoked a considerable amount of academic and public debate as far as its definition and measurement are concerned. This has been discussed under previous headings such as social indicators research, level of living or wellbeing research. No matter under which heading it has been discussed, historically no agreement exists over the types of indicators to be used or the criteria to be incorporated at any particular scale of study (Rogerson et al 1989). This can be attributed to a separatist approach by academia the fields of economics, sociology, and geography in the past. The development and use of indicators for planning and assessment is more a function of the shortage of a clear conceptual framework for the subject, rather than a lack of interdisciplinary research.

Cutter (1985) introduced a conceptual model to try and solve this problem. She suggested that studies of QoL should incorporate objective as well as subjective indicators on a number of different dimensions.

It is therefore notable that the concept of wellbeing in the 21st century has moved beyond the traditional and purely economic dimensions. It is clear that a very large set of indicators must be looked at and evaluated. The problem with this is that it can show contrasting patterns and not be coherent enough to understand patterns of change. The main concern is that different connotations are made depending on time, space and assessment objectives when the concepts of multidimensional quality of life and wellbeing are applied (Boncinelli & Casini 2014).

CHAPTER 3: THE METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the various methods used in obtaining data and information in order to, firstly, give an overview of the various mining towns in the Northern Cape, secondly, rank these towns according to their quality of life indicators, and, finally, use two of these towns as case studies in order to make certain conclusions and recommendations and identify certain trends which policy makers can identify and use for future planning to ensure sustainable development in one-industry mining towns

3.2 METHODOLOGY

For this study, the researcher used a mixed methodological approach. This method was described by Eishenhardt (1989) as one which focuses on understanding certain dynamics within a singular setting. Case studies can be used to interpret and describe certain general themes and questions (Hays 2003). Creswell (2013) recommends the use of case studies when trying to understand certain events, activities and processes in respect of an individual or a community. This is done by singling out research regarding time, place or physical boundaries. In this study, the general level of well-being of 22 small mining towns was looked at as a whole, after which two case studies were conducted. In order to obtain an in-depth understanding of complex cause and effect relationships between the extractive industry and communities in small mining towns, a combination of quantitative and qualitative methods was applied. It is well-known in academia that quantitative research is used for testing hypothesis and theories, and on the other hand qualitative research is more exploratory and more often than not leads to the formulation of hypotheses and theories (Punch 2005).

For a definition of mixed methods research, Johnson, Onwuegbuzie, and Turner (2007) asked 21 researchers to define the mixed methods research method. They obtained 19 definitions, which they then used to eventually offer a composite definition:

“Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration” (Johnson et al 2007:123).

Creswell (2010) states that a mixed method is more than the banding together of two independent sets of quantitative and qualitative data. Creswell (2010) draws a proverbial line between the two

approaches. He then also suggests that a mixed methods approach includes the connection, integration or linking of these two sets of data collections. Another line can be drawn between the qualitative and quantitative data sets, and mixed methods are used where they intersect. This can be visually explained by looking at figure 3.1.

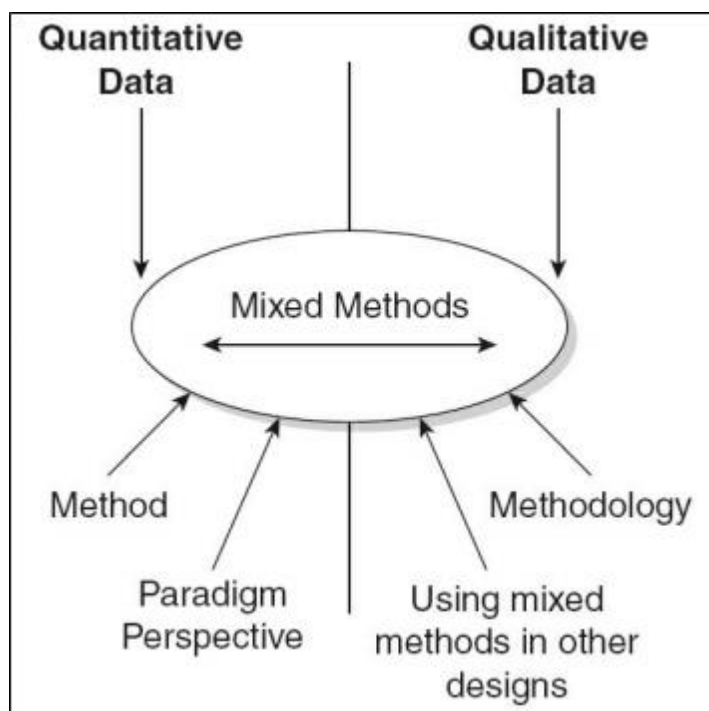


Figure 3.1 The essence of mixed methods research diagram

Source: Creswell (2010)

Greene (2007) also states a case for the mixed methods approach by saying that the method is used to better understand the complexities which arise in the social context of communities. The mixed methods research also produces meaningful results for the greater public such as the participants themselves and local stake holders (Greene 2007). Using mixed methods and integrating multiple research methods enhances and gives confidence in the findings (Eisenhardt 1989).

This research report used this mixed methods approach by combining quantitative and qualitative methods. These various methods have different purposes within the study and complement different stages of the research process. A sequential exploratory mixed methods design similar to that of Creswell (2013) was used in this study, one difference being that Creswell's original model gave priority to the initial qualitative data collection (see figure 3.2)

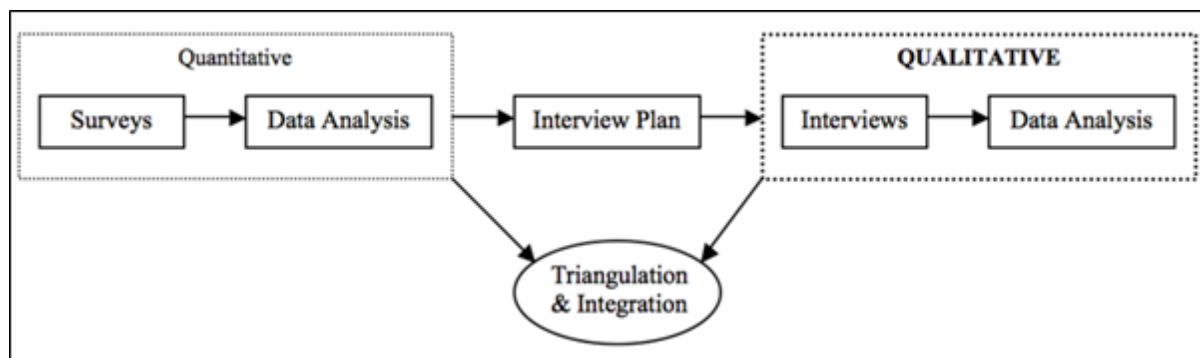


Figure 3.2 The components of exploratory sequential design

Source: Adapted from Creswell (2014)

Therefore, it can be said that the sequential explanatory design is characterized by, firstly, the collection and analysis of qualitative data followed by the collection and analysis of quantitative data. However, in this particular study the opposite was done: The collection and analysis of the quantitative data was done first before qualitative data was collected and analysed. The purpose of this was that the qualitative data was to assist in forming hypotheses and in triangulating the interview results.

This research gives priority to a quantitative approach with the qualitative approach playing a secondary, supportive role. The sequential exploratory mixed method design adopted in this study is illustrated in figure 3.3. In the first stage of the research, mining towns were identified through the Provincial Spatial Development Framework of the Northern Cape. In this government report, all the towns of the Northern Cape were classified by the economic base of the towns. Through this the 22 mining towns were identified. This Census data was then analysed and processed by using Statistica.

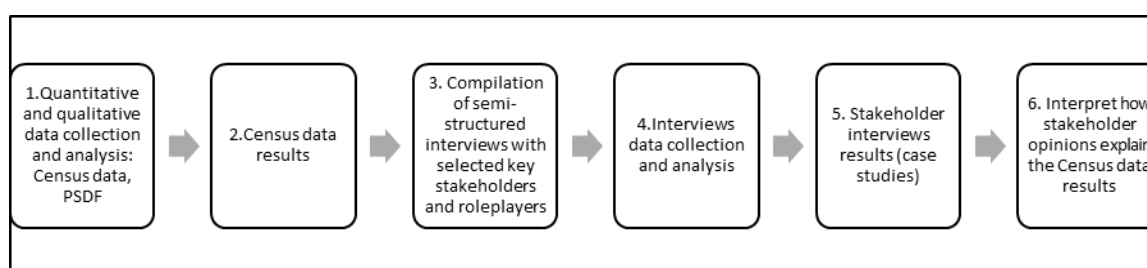


Figure 3.3 The components of exploratory mixed method sequential design Source:

Adapted from Creswell (2014)

In Stage 2 of the process the data from the Census of 2001 and 2011 was captured and analysed in Statistica and Excel. Quality of life (QoL) indicators were then identified and a composite indicator index compiled in order to rank the 22 towns from higher levels of QoL to lower levels of QoL.

Stage 3 entailed the development of semi-structured interviews in order to gauge the level of development through the analysis of the qualitative data. Stage 3 also requires the identification of

key stakeholders and role players with expert knowledge of the development issues in the two towns. This means that the quantitative data must be of such a nature as to underlie the qualitative data.

In stage 4 the researcher set up the interviews for fieldwork and these semi-structured interviews were conducted and recorded for analysis. In stage 5 these results of the interviews were then compiled in two separate case studies, which led to stage 6, which entails the interpretation of the Census data as well as the composite indicator rankings. The qualitative data in essence gives meaning to the quantitative data and puts it in context so that ambiguous and confusing findings could be understood. By using this explanatory sequential design, the researcher gained a better and in-depth understanding of the socio-economic issues that goes with resource extraction and the community.

3.3 DIMENSIONS AND INDICATORS OF WELLBEING AND QUALITY OF LIFE

It is important to understand how the dimensions and indicators were decided upon in order to portray Quality of Life (QoL) as well as social and economic wellbeing. This section explains the process the researcher used to identify and choose certain indicators in composing a composite indicator index.

Firstly, the definition of an indicator should be explained. An indicator is something that gives significance to a larger phenomenon that is not immediately detectable. The main defining characteristic of an indicator is that it simplifies complex information so that the public as well as decision-makers can understand the environmental as well as social problems in a quantifiable manner. The most important characteristic that an indicator must have is that it must be realistic as well as practical. There should be a balance between scientific accuracy and information available at a reasonable cost (Nardo et al 2005).

There are different approaches and various frameworks for measuring Quality of Life and well-being. For this study various frameworks and indexes were evaluated and compared to the available data in order to choose the appropriate indicators. In this section the various frameworks will be discussed as it is important to understand why certain indicators were selected

The first framework taken into consideration when trying to decide which indicators to use for the study was developed by the Organisation for Economic Co-operation and Development (OECD). Figure 3.4 shows the scope of this framework. The framework distinguishes between current material living conditions and quality of life, on the one hand, and the conditions required to ensure their sustainability over time, on the other.

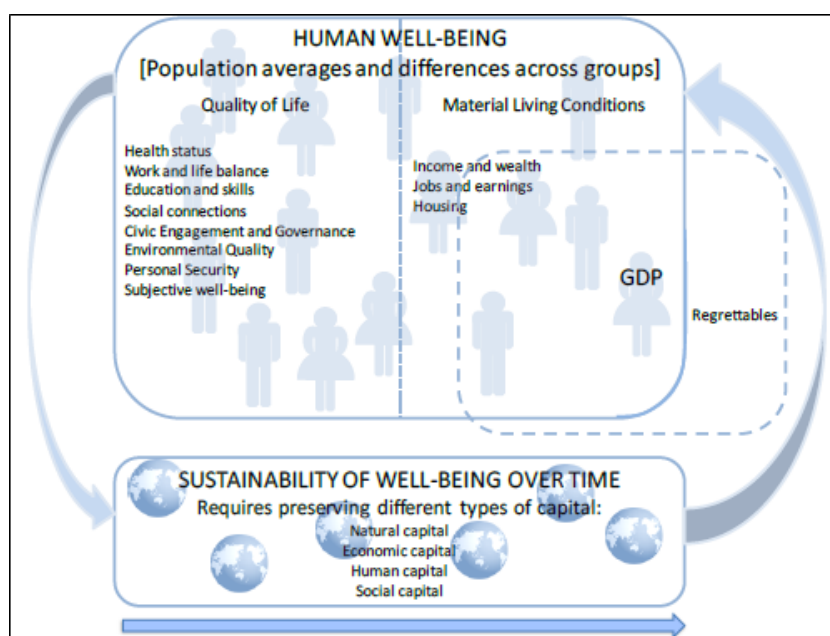


Figure 3.4 Framework for OECD wellbeing indicators

Source: OECD (2011)

Within this framework of human wellbeing there are various dimensions showing the level of Quality of Life, material living conditions, as well as the sustainability of wellbeing over time. Figure 3.5 shows the different dimensions that will be discussed briefly.



Figure 3.5 Different dimensions of human wellbeing and quality of life

Source: OECD (2011)

In the next part of this section will discuss these various dimensions, as well as some of the indicators which underlie them and which together contribute to human wellbeing, will be discussed briefly.

3.3.1 Material living conditions

This can be seen as the economic wellbeing that determines people's consumption capabilities. There are various indicators and sub-indicators which help in portraying this dimension.

3.3.1.1 Income and wealth

Income and wealth are essential components of the well-being of individuals and societies. Both income and wealth expand people's consumption possibilities and protect them from unexpected shocks that could lead to poverty. It also brings non-economic benefits like better health status as well as education. It can also lead to people living in better areas and conditions.

The indicators that the OECD uses to measure the income and wealth of communities are that of the household's net adjusted disposable income. This is derived from work, property, rents, social benefits in cash. It also includes education and the healthcare which households receive from governments, as well as various financial assets owned, such as cash, bonds and shares.

3.3.1.2 Jobs and earnings

The availability of jobs as well as the earnings derived from them are relevant for wellbeing. This enables people to increase their command over resources and provides them with an opportunity to fulfil their personal ambitions and to develop skills. Communities with high levels of employment are richer, politically more stable and healthier. Unemployment has a greater impact on people's subjective wellbeing than the actual loss of income experienced. Dolan (2008) provides evidence that this impact persists over time and that the psychological resilience to unemployment is low.

The first Indicator used in portraying jobs and earnings is the share of the working age population (15-64) who are currently employed in a paying job. The second indicator used in the OECD Compendium is that of the number of persons who have been unemployed for one year or more as a percentage of the labour force. Unemployed people are those who are currently out of a job but are willing to work and who are searching for job opportunities. According to the OECD there are some general trends as far as job opportunities are concerned. Employment rates are higher for prime aged men and much lower for youth, women and persons nearing retirement. Participation in the labour market also increases with a better level of education. Healthier people are also more often employed than those with chronic illnesses and handicaps. As far as long-term unemployment is concerned, the figures – according to the OECD – seem to indicate that the youth as well as people with lower educational status and immigrants have trouble finding work.

3.3.1.3 Housing

Housing is at the top, or near the top, of the hierarchy of human material needs. Housing is the largest component of spending in many households, and housing is central to meeting basic needs. Poor housing conditions can affect people's physical as well as mental health, the social relations within households, and basic social activities such as inviting people to your home.

The two indicators used by the OECD to portray this dimension is that of the average number of rooms per person, and the percentage of dwellings without access to basic facilities. The first indicator shows whether people live in crowded conditions. This indicator does not show the level of wellbeing of individuals who have traded-off between the size of the dwelling and its location, for example urban versus rural locations.

The second indicator shows the lack of facilities which might have a direct effect on hygiene. Two basic facilities are considered here. Firstly, the lack of flushing toilets – the percentage of households without an indoor toilet for the sole use of the household. Secondly, the percentage of households

without a bathroom (no bath or shower in the dwelling). These two indicators show the level of quality of housing.

3.3.2 Quality of life

This set of indicators are defined by non-monetary attributes of individuals. These are the dimensions which shape people's opportunities to improve their quality of life, and they have different core values in different cultures and contexts.

3.3.2.1 Health Status

Health is one of the most valued aspects of people's lives. Research has shown that people consider job opportunities and health to be the two most important factors affecting their lives and living conditions (OECD 2011). Life-expectancy at birth is the indicator in this framework.

3.3.2.2 Work and life balance

This indicator has to do with the balance between work commitments and a private life, and is also central to the well-being of people. The indicator used in this regard is the percentage of people who work more than 50 hours per week to earn a living.

3.3.2.3 Education and skills

Education is a basic need and enables people to aspire for greater achievements in life. The higher your education the greater your chances of earning a higher salary and securing a job. According to the OECD (2011), people with education live longer lives, have a better health status, and have fewer chronic diseases and disabilities. Better education also leads to higher GDP growth, higher tax incomes for the state and lower expenditure on social grants.

The OECD uses formal educational qualifications of the adult population to measure the level of education, and the percentage of the adult population holding at least an upper secondary degree as one indicator (OECD 2011).

3.3.2.4 Social connections

Social connections are crucial to well-being and quality of life. This can be measured in the frequency and the quality of people's personal relationships. These connections can provide material and emotional support in times of stress.

3.3.2.5 Civic engagements and governance

Being part of, and participating in society by having a political voice is also essential to individual wellbeing. It is one of the basic freedoms and enhances the accountability of public policy. Public policy with regard to service provision, the regulation of markets, and the justice system has a major

influence on people's lives. Two indicators are used in this regard. The first one is the electoral participation in major national elections, and the second is the extent to which formal consultation processes form part of the formulation of regulation proposals at key stages. It is a matter of people having the power to influence policies which regulate their living environments.

3.3.2.6 Environmental quality

The impact of pollutants on human health can be sizeable. The OECD (2016) states that a quarter of diseases worldwide are caused by poor environmental conditions. The beauty and cleanliness of the living environment also contributes to quality of life. The indicators used to measure this dimension are the concentration of fine particles in the air in residential areas, the measurement of different environmental media such as water, soil and air, and also people's access to environmental amenities and their subjective perceptions of these.

3.3.2.7 Personal security

The experience of crime is another core element of the well-being of individuals and communities. Crime may lead to loss of life or property and cause stress on the individual and affect the social functioning of communities. Crime causes individuals to feel vulnerable. Data based on police recorded homicides and the number of people (as a percentage of the population) who have been victims of an assault crime in the past year can be used to portray this dimension.

3.3.2.8 Subjective well-being

The last dimension of human well-being is the one related to the notion of happiness of the individual. This dimension has a long tradition in conceptualising perceptions of good life (OECD 2011). The dimension captures the notion that what matters is not the presence of a specific set of circumstances but how these circumstances impact on how individuals feel about their lives.

This dimension captures a reflective assessment of happenings in one's own life. It leads to assessing which circumstances and conditions are important for subjective well-being (Kahneman & Krueger 2006). Looking at this dimension supports an understanding of how people evaluate their own living conditions and measure them against the individual objective living conditions (Heliwell 2008). The indicator used to measure this dimension is that of the overall life satisfaction perceived by individuals. How people perceive overall life satisfaction rather than their current feelings is measured, and this is done by asking people to rate their own lives in terms of a scale from 10 (best possible life) to 0 (worst possible life). These individual scores get a mean value and this constitutes the level of life satisfaction for that community.

3.3.3 The sustainability of the socio-economic and natural systems

This dimension takes into account where people live and work since it is critical for well-being to be sustainable. Human activities impact on the stock of different types of capital (natural, economic, human and social). This is difficult to measure because of the lack of suitable indicators describing these stocks (OECD 2011), and the indicators of sustainability are therefore not included in the OECD framework of well-being indicators.

In the next sub-section the steps followed to compose the composite indicator index will be explained. This index, together with the various applicable indicators, will be used to compare the quality of life of two mining towns over two time frames (2001 and 2011).

3.4 COMPILING THE COMPOSITE INDICATOR INDEX

An aggregation of a set of indicators is called an index or a composite indicator. Composite indicators are based on sub-indicators that have no common meaningful unit of measurement and there is no obvious way of weighting these sub-indicators.

The pros and cons of composite indicators which were derived from (Saisana 2004) are summarised by the European Commission as follows:

The pros and cons of composite indicators were derived from the European Commission for Economic Development (Saisana 2004). The advantages of using a composite indicator index are that they are used to summarize complex issues, they provide the bigger picture and it makes it easier to find trends, they make it easier to rank complex phenomena, it also reduces the size of the list of indicators and includes more information in less size. The disadvantages on the other hand are that it may send out misleading information if the index is poorly constructed or indicators that were used were misinterpreted. A Composite indicator index may also oversimplify the issues at hand. This makes it easy for policy-makers to draw simplistic conclusions on a complicated matter, therefore indexes should be used in conjunction with sub-indicators. Lastly, when constructing a composite indicator, transparency should be implemented as well as sound statistical principles, because of judgements made in selection of sub-indicators, the choice of model and weighting of indicators.

The handbook compiled by the OECD to measure composite indicators provides a ten steps guide, and this was used to help the researcher to set up the framework for using these indicators in measuring wellbeing. In this section the process and the steps will be briefly discussed in order to show how the researcher went about deciding on the composite indicators as well as the sub-indicators.

3.5 THE THEORETICAL AND CONCEPTUAL FRAMEWORK

When using composite indicators, it is usually to summarise a number of underlying individual indicators or variables. An indicator, therefore, is a way to quantitatively or qualitatively measure observed facts in an area, or measure the direction of change when measured over time. For policy makers it is a useful tool to identify trends in performance and policies, indicating particular issues which need to be addressed.

There are three levels when trying to group indicators. Firstly, there are individual indicators. These are a selection of separate indicators or statistics. This is the first step in gathering existing quantitative data.

Secondly, there are thematic indicators. They are grouped together around a specific area or theme. This requires identifying a core set of indicators that have something in common or are linked to each other. These types of indicators are presented individually rather than in a composite index.

Then there are composite indicators. They are formed when thematic indicators are compiled into a synthetic index and presented as a single composite measure. A typical composite indicator of n indicators will be the weighted average of a sets of normalised indicators. This integration of individual indicators to accurately reflect the economic reality is extremely difficult to do in practice. To do this one needs a starting point which helps you understand and define what it is that is being measured or researched. It is therefore important for a theoretical framework to combine indicators into a meaningful composite and to provide a basis on which the selection of certain indicators and weights can be justified since it must reflect the dimensions and structure of the phenomena identified. Although the framework chosen must reflect the relative importance in the overall composite, as to date, the theoretical underpinning of most composite indicators is very underdeveloped.

It is also important to note that composite indicators by their nature may be incapable of reflecting the complexity performance and policies or of capturing the intricate relationships between indicators. Also, a simple composite indicator, formulated as an average of multiple indicators, implicitly assumes the substitutability of its components. For example, composite environmental indicators imply that clean air can compensate for water quality, therefore, the multi-dimensional nature of most performance areas argues for a set of individual indicators and against composites. The more comprehensive a composite, the weaker it may be in adequately reflecting actual performance.

3.5.1 Data selection

When looking at what hinders the evaluation of performance it is usually not a lack of measures, but actually the overwhelming abundance of potentially useful indicators. Therefore, indicators should be selected on their analytical soundness, relevance and measurability. The relationship to one other should be also be considered. The following criteria can be identified and summed up briefly as follows:

3.5.1.1 Policy relevance

The indicator should hold relevance with one or more issues around which key policies are formulated (Saisana 2004).

3.5.1.2 Simplicity

The information should be presented in an understandable and appealing manner to the audience. Even when the information is complex and calculations are complex, it should still be presented in a manner that the reader and the public understands (Saisana 2004).

3.5.1.3 Validity

It is important that the indicator portrays a true reflection of the facts. The data at hand should be collected by scientifically defensible measurement techniques. The data and indicators should be verified and reproducible. A good methodology approach should be implemented in order to make the data credible for both experts and the public (Saisana 2004).

3.5.1.4 Time series data

Time series data is important to show certain trends of the indicator over time. If the data is based on data point only, it is not possible to visualise the direction the institution might be going in the near future (Saisana 2004).

3.5.1.5 Availability of affordable data

The data must be of good quality, but must be weighed up against the reasonable monetary cost that will make it feasible in obtaining the necessary data sets. Information costs money as well as time and effort of many individuals (Saisana 2004).

3.5.1.6 Sensitivity

Can the indicators chosen detect small changes in the system? It has to be determined beforehand if small or large changes are relevant to monitoring (Saisana 2004).

3.5.1.7 Reliability

Will the same result be obtained by making two or more measurements of the same indicator? Would two different researchers arrive at the same conclusions (Saisana 2004)?

When using these criteria in choosing indicators, there is still several problems that arise when constructing a composite indicator. One of the most common problems encountered, is the major difficulty with the lack of relevant data. Statistics may be unavailable because certain behaviour cannot be measured or no one has measured it yet. Even when the data is available, it may not be comparable between institutions, or it may be that the data is not available for all the institutions you

would like to measure. Composites therefore may just measure the most obvious and easily accessible aspects of the performance of an institution.

There is no single definitive set of indicators for any given purpose, therefore the selection of data to use in the composite can be subjective. Another source of unreliability in a composite is that of using soft qualitative data to compose the index.

Changes in composite indicators over time are generally hard to interpret, which then leads to it being a limiting factor as a tool for identifying performance over time. In the end, though, quality and accuracy of composite indicators should develop in parallel with improvements in data collection and indicator development.

3.5.2 Multivariate analysis

This step is important for assessing the suitability of the dataset and providing an understanding of the implications of the methodological choices, with regards to weighting and aggregation, during the development of a composite indicator. This has an influence on how the grouping of information is done. This is done along the two dimensions of the data set for example along constituencies, countries, regions, sectors and not independently of each other.

According to the OECD (2011) there are a few common techniques for this type of analysis, including the Principal Components Analysis or Factor Analysis, the Cronbach coefficient alpha and the Cluster Analysis.

Factor Analysis and Reliability/Item Analysis (Coefficient Cronbach Alpha) is used to group the information on the indicators. The ultimate aim of using these techniques, is to explore whether the different dimension of the phenomenon is statistically well-balanced in the composite indicator. The higher the correlation between the indicators, the fewer the statistical dimensions will be present in the dataset. The opposite, however, is that if the statistical dimensions do not coincide with the theoretical dimension of the dataset, then a revision of the set of the sub-indicators must be done. If you use multi-criteria decision analysis, the researcher must consider the existence of correlations as a feature of the problem, and not correct it if it has a high correlation. Correlated indicators may reflect non-compensable different aspects of the problem.

Cluster analysis can be applied to group the information in terms of similarity with respect to different indicators. Cluster analysis can serve many purposes. It can be used as a statistical method of

aggregating indicators, or be used as a diagnostic tool for assessing the impact of the methodological choices made during the development of the composite indicator. It can also be used as a method of spreading the information on the composite indicator, without losing the information on the dimensions of the indicators.

3.5.2.1 Principal Components Analysis (PCA)

The reason for using this method of analysis is to show how different variables change in relation to one another or, on the other hand, how they are associated. To explain this, correlated variables are transformed into a new set of uncorrelated underlying variables (principal components), using the covariance matrix or, in standardized form, the correlation matrix. The lack of correlation in the principle components means that the principle components are measuring different statistical dimensions in the data (OECD 2008b). The expectation from doing a PCA is that correlations among the original variables are large enough so that the first few new variables or principal components account for most of the variance. If this holds, no essential insights are lost by further analysis or decision-making.

3.5.2.2 Factor Analysis

This method is similar in the end-result as PCA, in the sense that it is used to describe a certain set of variables, but in terms of a smaller amount of factors, therefore clarifying the relationship between these variables. The one big difference between FA and PCA is that PCA is not based on any particular statistical model. FA, on the other hand, has several approaches, for example communalities, maximum likelihood factors, and centroid method (OECD 2008b). The most common method is to use a PCA to extract the principal components and consider them as factors and neglect the rest. Opinions therefore differ on how to retain factors without losing too much information. Certain restrictive measures are built into the statistical model to ensure that the right amount of factors have been extracted (Nardo et al 2005).

3.5.2.3 Cluster Analysis

This is the name given to a collection of algorithms used to classify objects, such as countries, towns, communities etc. The classification has the aim of reducing the dimensionality of a dataset by exploiting the similarities and differences between cases. The result will be a set of clusters such that cases within a cluster are more similar to each other than they are to cases in other clusters. Cluster analysis is of great utility when trying to classify a large amount of information and to discover similarities between objects (Nardo et al 2005, OECD 2008b).

3.5.3 Imputation of missing data

Most composite indicators are hampered by the problem of missing values. For the purpose of this study only data sets with completed values were taken. This is due to money as well as time constraints (Nardo et al 2005).

3.5.4 Normalisation

This step has to do with the way indicators are expressed. Indicators are expressed in different statistical unit and scales. Firstly, they must be adjusted on dimensions such as size, population and income. Then it must be smoothed through time against cyclical variability. After which they have to be put on a common basis as to avoid comparing apples with pears. Normalisation serves this purpose. The method of normalisation should take into account the data properties as well as objectives of the composite indicator. Aspects to look at when deciding on a method includes whether hard or soft data is available, if exceptional behaviour has to be rewarded or penalised, if information on absolute levels matter, if benchmarking against a reference value is required or whether the variance in the indicators needs to be accounted for (Nardo et al 2005).

Common methods for normalising indicators include the following:

1. Ranking of indicators across countries, in this case towns
2. Standardisation (z-scores)
3. Re-scaling
4. Distance to reference country, in this case towns
5. Categorical scales
6. Indicators above or below the mean
7. Method for cyclical indicators
8. Percentage of differences over consecutive time points

In this study, the researcher has chosen the simplest normalisation approach, namely the ranking of indicators across the different towns. The main advantages of this approach is that it is very simple and the independence to outliers. Disadvantages of this method is that there may occur a loss of information on absolute levels and the impossibility to draw conclusions about difference in performance (OECD 2008b).

For studies dependent on time, the ranking is carried out at each point in time. Therefore, one can follow country performance in terms of relative positions.

3.5.5 Weighting

No uniform methodology that is agreed on exists to give individual indicators a specific weight before aggregating them into a composite indicator. Various weights may be assigned to a specific component series in order to reflect the economic significance, statistical adequacy, cyclical conformity as well as speed of the data available. These weights normally have an important impact on the composite indicator value and on the resulting ranking especially whenever higher weight is assigned to indicators in which some countries excel or fail. It should be made clear that no matter which weighting method is used, it is always a value judgement and have the property to make explicit the objectives underlying the construction of a composite

- Equal weights
- Weights based on statistical models
- Principal components analysis
- Data envelopment analysis
- Regression analysis
- Unobserved components analysis
- Weights based on public/expert opinion
- Budget allocation
- Public opinion
- Analytic hierarchy process
- Conjoint analysis

For the scope of this study it was decided that an equal weighting method will be used in weighting indicators within each dimension. As well as each dimension of QoL having the same weight in the theoretical framework (Nardo et al 2005). In many composite indicators, all variables are given the same weight when there are no statistical or empirical grounds for choosing a different scheme. The reason for giving all the indicators equal weighting is that the researcher recognises the equal importance of all the dimensions in the QoL model, rather than the insufficient knowledge of the relationships between indicators, or of which model to apply. The impact of this equal weighting on the composite indicator also depends on whether equal weight is applied to single indicators or to components. In this study all indicators have been given the same weighting of importance (OECD 2008b).

3.5.6 Aggregating indicators

When working with composite indicators, various methods and examples of aggregate techniques are available. The most common ones are additive techniques, and these range from summing up country ranking in each indicator to aggregating weighted normalized indicators. Additive aggregations imply that indicators and their weights have certain requirements and properties, which is often difficult to meet and troublesome to verify. To side-step these difficulties, the literature proposes other, and less

known aggregation methods such as multiplicative aggregations or non-compensatory aggregations, such as the multi-criteria analysis (Nardo et al 2005).

3.5.6.1 Additive methods

The simplest method of aggregation is that of additive methods. The simplest one of these aggregation methods is that of the sum of a country's rank in each of the indicators. This method is therefore based on ordinal information. For this study it will be used by ranking each country within each indicator. The advantages of this method are its simplicity and its independence to outliers. A disadvantage is that the method loses the absolute value of information.

A second method considered within this framework of additive methods is one which uses nominal scores for each indicator to calculate the difference between the number of indicators that are above or below a predetermined defined threshold around the mean. The advantages and disadvantages of this method is more or less the same as before mentioned method. When looking at the most used method in additive methods, the most widespread one is that of linear summation of weighted and normalized indicators. Although widely used, an aggregation method of this kind has a few restrictions on the nature of indicators and the interpretation of weights. Therefore, one condition of the nature of indicators is that there should be no phenomena that should conflict or synergise with each other. The indicators have to preferably also be independent. For example, any subset of the indicators is preferentially independent of its complimentary set of indicators. Preferential independence is a very strong condition since it implies that the trade-off ratio between two indicators is independent of the values of the remaining indicators (Nardo et al 2005).

3.5.6.2 Geometric aggregation

Another method that was considered is that of geometric aggregation. This method is different than additive methods, because like previously said, one undesirable is that additive aggregations is the full compensability they imply. This is where poor performance in some indicators can be compensated by sufficiently performing better in other indicators. This can be explained by the following example. If a hypothetical composite indicator was formed by the indicators of inequality, environmental degradation, GDP per capita and unemployment, two countries, one with the values (21,1,1,1) and the other with (6,6,6,6), would have the equal composite indicator value, namely 6, if calculated under the additive aggregation method. Obviously this must be seen in the context that both countries will represent totally different social conditions, and this would not be represented in the composite. Therefore, geometric aggregation (the product of the weighted indicators) is a less

compensatory approach. In the example, the first country would have a much lower composite value (2.14) than the second country (6.00) by using geometric aggregation (Nardo et al 2005).

3.5.6.3 Non-compensatory multi-criteria analysis

Compensability means the existence of trade-offs which show the possibility of off-setting a disadvantage of some indicators by a sufficiently larger advantage in other indicators. The implication is the existence of a theoretical inconsistency in the way weights are actually used and their real theoretical meaning (Munda & Nardo 2003). The weights must be interpreted as “importance coefficients” and non-compensatory aggregation procedures must be used to construct the composite indicators. This can be done by using the non-compensatory multi-criteria approach. This procedure tries resolve the conflict arising in communities’ comparisons as some indicators favour one community and another indicator favouring another

3.5.7 Sensitivity analysis

It has been argued that composite indicators are too subjective due to all the assumptions made to build them (Freudenburg 2003). Some of these assumptions are: the model chosen for estimating the measurement error in the data; the mechanism for including or excluding indicators in the index; transformation and trimming of indicators; the type of re-scaling or standardisation of indicators; the choice of weights (equal weights, weights derived from factor analysis or expert opinion models); and lastly the choice of aggregation method as previously discussed. All these assumptions can heavily influence the broad message conveyed by the composite indicator in a way that deserves analysis and validation. Using a combination of uncertainty and sensitivity analysis can help to gauge the robustness of the composite indicator, to increase its transparency and to frame policy discussions. Some of the questions which sensitivity analysis tries to answer is how community ranks (composite indicator scores) compare to most likely ranks under all scenarios in building the index, which countries are the most volatile and why, and what are the largest influence in a composite indicator.

3.5.8 Link to other measures

Composite indicators measure concepts that are well-known and measurable. These links can be used to test the explanatory strength of a composite indicator. Cross plots are the best way to illustrate such similarities.

3.5.9 Visualisation

Presenting a composite indicator is not difficult. It must be able to communicate a picture to decision-makers quickly and accurately. Graphic representation should provide clear messages, without hiding individual data points. Tables and bar charts are the simplest way to illustrate this.

3.6 DATA COLLECTION

In the following section the quantitative and qualitative methods used are discussed. As explained above different data collection methods were used - Census data collection, semi-structured interviews with stakeholders and, to some extent, observations.

3.6.1 The semi-structured interviews (Qualitative research)

Yilmaz (2013:312) defines qualitative research as:

“an emergent, inductive, interpretive and naturalistic approach to the study of people, cases, phenomena, social situations and processes in their natural settings in order to reveal in descriptive terms the meaning that people attach to their experiences in the world”.

The research approach in obtaining the views of key stakeholders used in this study was to collect the data by means of recording and taking notes while interviewing individuals in their natural settings (Creswell 2009), which were the offices of the mining companies as well as the officials in their offices in the municipalities. People in Non-Governmental Organisations were also interviewed within their places of work as well as businesses. Councillors were also interviewed at the municipal offices. This implied that the researcher was important in this process and had to understand the significance that the participants attached to the issues (Creswell 2009).

The researcher decided to use semi-structured interviews for the qualitative method of the study. Charlesworth (2003) described the semi-structured interview as providing consistency and standardisation between the various interviews. It also allows for flexibility when probing the interviewee's responses and gives the opportunity to explain questions to the interviewee. Having standardised questions promotes quicker interview times as well as making comparisons between interviewee's opinions easier (Laxton 2004).

The aim of these interviews was to determine the views and opinions of the various stakeholders and community leader. The researcher wanted to investigate the opinions on the current state of quality of life of the communities in these towns, and also to determine what is being done by the mining companies and the government to improve the levels of quality of life and socio and economic well-being. It was also of importance to find out how these various institutions react to, and perceive the various challenges which go hand in hand with resource extraction and the development of the communities forming part of the process.

This was done through various methods. The method most frequently used was the face-to-face method, where the researcher travelled up to the Northern Cape to go and interview the various stakeholders and experts. Kvale (1983:174) defines the qualitative research interview as:

“an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena”

The researcher used several methods in collecting these descriptions, with face-to-face being the most common. The other two methods used, were the interviewing by telephone (not texting, but by calling and speaking to the person), and also interviewing by using the internet, in the form of emails. The last method that can be used is through the internet using various forms of chat boxes (e.g. MSN Messenger). The researcher did not have to use this form of interviewing since all the people interviewed were either interviewed face-to-face, telephonically or by emails.

The researcher tried to interview everyone face-to-face, but financial and time constraints were the main restrictions of not interviewing everyone with the face-to-face method. The natural second-best option was to use telephone interviews. However, not all the respondents were open to this and preferred to reply on my questions through the use of email. Through doing the interviews, certain advantages and disadvantages came to the fore, which will be discussed briefly. Table 3.1 show the techniques used by the relationships to the synchronous or asynchronous dimensions. Face-to-face interviews are characterised by synchronous communication in time and place.

Table 3.1 Interview techniques used

	Time	Place
Synchronous communication	Face-to-face, Telephone	Face-to-face
Asynchronos communication	Email	Email, Telephone

Telephone interviews are synchronous in time but asynchronous in place. Email interviews are both asynchronous in time and in place. Communication in cyber space has different advantages and disadvantages to that of face-to-face communication.

3.6.1.1 Face-to-face interviews

Face-to-face interviews are synchronous on place and time and therefore can take advantage of social cues such as voice and the body language of the interviewee. This can give the interviewer extra information that can be added to the verbal answer of the interviewee. These social cues were important for the researcher, because of the interviewees being subjects and their attitude towards the

government or the private sector could be analysed through the tone of their voice or their body language. The other side of this is that the interviewer can disturb the interview direction by leading the interviewee into a certain direction through the interviewers' body language. This can be diminished by the interviewer being aware of this possible disadvantage.

Another advantage of this method of synchronous interviews is that the answer is spontaneous, and could possibly avoid the extended time the interviewee has to reflect on the question. On the other hand, the interviewer, when using unstructured or semi-structured interviews, must concentrate much more on the questions to be asked because of the interactive nature of communication. In this regard Wengraf (2001:194) refers to the problem of "double attention":

"You must be both listening to the informant's responses to understand what he or she is trying to get at and, at the same time, you must be bearing in mind your needs to ensure that all your questions are liable to get answered within the fixed time at the level of depth and detail that you need"

Face-to-face interviews can be tape-recorded, but this is only permissible through the consent of the interviewee. This method of recording is much more accurate than taking notes but it also has disadvantages. By using the recording method one may forget to make notes. Taking notes is important to check if all the question were answered and also to ensure that you have a backup if the recording failed, got corrupted, or the interviewer forgot to press the record button. Another disadvantage of the face-to-face method is the definite financial cost as well as the time factor. With the study area being in the Northern Cape, travel time as well as the costs involved have to be considered. Another disadvantage is that interviewee becomes ill or unforeseen circumstances lead to the interviewee missing the scheduled date and time of the interviewer being in the study area.

An advantage of the face-to-face method is the remarks interviewee's may make after the formal questions are done, and this may lead to crucial important information and leads in the research

3.6.1.2 Telephone interviews

The use of telephone interviews has one distinct advantage, that of it being synchronous in time but asynchronous of place. It therefore extends the access to participants when compared to face-to-face interviews. Mann & Stewart (2000) point out other advantages. They suggest that telephone interviews have a wider scope of geographical access, as well as broadening the populations that may be difficult to reach. Also, it may give access to people on closed sites such as prisons. Another advantage is that telephone interviews may give access to sensitive information if a participant is

reluctant to meet face-to-face. Telephone interviews also give the researcher access to dangerous or politically dangerous sites. This was the case in Kathu, where there were protests outside the municipal offices and the researcher could not meet with certain individuals. Interviews had to rescheduled telephonically in this case.

Telephonic interviews, though, lead to the reduction of social cues. The interviewer is unable to read the body language of the interviewee, therefore losing possible extra information that can only be surmised though face-to-face interviews, where hidden information can be collected through intonation and the tone of voice. Another disadvantage is that the interviewer will find it difficult to create a good interview ambience. When it comes to telephonic interview, recording of the interview is more difficult because of equipment, but a way of easing that is having the telephone on speaker phone and then recording the conversation.

3.6.1.3 Email interviews

The method of using Email as a platform for interviews has the advantage, as in the case of telephonic interviews (asynchronous), of giving increased access to participants compared to that of face-to-face interviews. One distinct disadvantage is that of being unable to read social cues. On the other hand, an interview through an email gives the interviewee the chance to answer the formulated questions at their own convenience and this can be done without pressure due to this method being asynchronous to time and place. It results in the email method being much less financially restrictive due to the travel costs associated with face-to-face interviews. However, being asynchronous in nature, waiting for the reply of the interviewee may be weeks even months, and this may lead to the interviewee losing interest in the research and even forgetting to answer the questions totally (Kivits 2005). Kivits (2005) also states that email interviews can lose all the spontaneity of the answer because the interviewee has time to reflect on the answer, and some of the richness of the data collected from the interview then becomes lost. On the other hand, the interviewee has time to respond to the developing dialogue (Bampton & Cowton 2002). Emails are also very suitable in the case of interview stakeholders who are very busy and would not otherwise have time to give the researcher answers on certain topics. Email interviews also eliminate the transcription time which would otherwise be relevant if face-to-face or telephone interview methods were used.

To conclude: The face-to-face method was preferred when the social cues were very important to analyse, if the researcher's budget allowed it, and if the standardisation of the interview was important. When telephonic interviews were preferred, the social cues were less important. It was also preferred in instances where the budget did not allow for travelling. Telephonic interviews were

also used when the interviewee was not available on the dates scheduled for the fieldwork, or the researcher had limited access to individuals, as in the case of municipal managers who were very busy or not in town. Some respondents preferred telephonic interviews due to them wanting to stay anonymous.

Email interviews were used as a last resort when face-to-face and telephonic interviews could not be scheduled. Through emails the interviewees could comfortably complete the interview questions in their own time.

3.6.2 DATA CAPTURING AND ANALYSIS

Information and data from the census were captured in Excel and imported into STATISTICA. All statistical analyses were executed in STATISTICA and Excel. For the analysis of the data, standard reliability and item analyses were done by using t-tests. The dependent t-test (also called the paired t-test or paired-samples t-test) compares the means of two related groups to determine whether there is a statistically significant difference between these means (Zimmerman 1997). A box and whisker plot was used as a way of summarizing a set of data measured on an interval scale. It is often used in explanatory data analysis. This type of graph is used to show the shape of the distribution, its central value, and its variability (STATISTICAHelp 2015). The graphs in the thesis were designed in Excel and the maps in ArcMap 10.0.

3.7 CONCLUSION

This chapter explained the mixed-methods approach used. Census data was used to ensure a representative sample and interviews with stakeholders were conducted to add clarity to the trends of the statistical data. A participatory drawing exercise was done to provide insights into the children's way of living, their thinking and their expectations. The methods were used in conjunction to strengthen the findings. In Chapter 4 the results and findings of the census data are presented, and in Chapter 5 the interviews with, and perceptions of stakeholders in two towns are discussed in order to show certain trends as far as performance is concerned.

It is interesting to note that these towns cluster together in three regions of the Northern Cape: towns on the West Coast (Alexander Bay, Port Nolloth, Kleinsee, Koingnaas and to an extent Sanddrift and Komaggas), are known for their offshore diamond mining operations. The towns just east of the West Coast (Carolusberg, Concordia and Okiep) form a second cluster, and are historically known for copper mining. These towns were especially affluent when the copper price was very high but went into a rapid decline with the dramatic decline in the copper price worldwide. The towns near the North-eastern border (Barkly West, Kathu, Sishen, Blackrock, Hotazel, Postmasburg, Danielskuil, Delportshoop, Ulco, Lime Acres) of the Northern Cape, close to Kimberley form the third cluster, and they are known for open-mine diamond mining and more recently iron ore, manganese and limestone mining.

Table 4.1 shows the 22 mining towns and classifies the resources being mined as well as which big mining company (where the information was available) owns the rights to mine in a particular area. It also shows the size of the population in 2001 and 2011, derived from the census data. The size of each town was determined by using the classification according to the NCSPDF (2012), as was the potential to develop these towns and the need to do so.

Table 4.1 Summary of mining towns in the Northern Cape

Town Name	Population 2001	Population 2011	Type of Mining	Size	Ownership (Current or previous)	Potential/Need
Aggeney's	2057	2282	Zinc/Lead/Copper/Silver	Medium	Vendanta	low/low
Alexander Bay	1452	1736	Diamonds	small	Alexkor/ Trans Hex	high/low
Barkly West	7101	8243	Diamonds	Large	Roclovel	high/high
Blackrock	1002	408	Manganese	Small	Asmang	low/low
Campbell	1768	2175	Copper	Medium	Galileo Resources	low/high
Carolusberg	968	1336	Copper	Small		high/low
Concordia	4086	4888	Copper/Granite	Medium		low/low
Danielskuil	6730	13597	Asbestos/Diamonds/Marble	Large	Indwala	low/low
Delportshoop	2831	4787	Diamonds	Large		high/high
Dingleton/Sishen	2866	11084	Iron Ore	Medium	Kumba	transition
Groenwater	517	739		Very Small		low/high
Hotazel	1232	1736	Manganese	Small	Samancor	low/low
Kathu	8247	11510	Iron Ore	Large	Asmang	high/low
Kleinsee	2712	728	Diamonds	Medium	De Beers	high/low
Koingnaas	724	105	Diamonds	Small	De Beers	low/low
Komaggas	3315	3116	Diamonds	Medium	Transhex	low/low
Lime Acres	3723	4406	Lime Stone/ Diamonds	Medium	Petra Diamonds/ PPC Lime	high/low
Okiep	5241	6299	Copper	Medium	OCC	high/low
Port Nolloth	4655	6085	Diamonds/ Shipping	Medium	Alexkor/ Trans Hex	high/low
Postmasburg	13962	30085	Manganese	Large	Kumba	high/low
Sanddrift	1146	1854	Diamonds	Small	Alexkor/ Trans Hex	low/low
Ulco	1068	860	Lime Stone/ Cement	Small	Afrisam	low/low

4.3 DEMOGRAPHIC PROFILE OF SMALL MINING TOWNS IN THE NORTHERN CAPE

The Northern Cape is the least populated province in South Africa. In the 2011 Census, the total population of the Northern Cape was 1.1 million out of a total of about 55 million people living in South Africa. The current population growth rate in the province, according to the most recent source, is about 2.8% per annum (StatsSA 2014). When looking at small mining town demographics, the first statistic which shows the level of migration is the one indicating a growth or decline in population numbers. The total population of these towns has stayed more or less the same over the ten-year period: from 102 000 in 2001, it has increased by just over 11 500 people to 113 500 in 2011. This is in line with the population growth rate of the whole Northern Cape, but by looking at individual towns, one can see the number in some towns staying the same, some showing a sharp increase in population, and others a sharp decrease in ten years. This is solely due to the towns being dependent on one industry, and when a nearby mine closes or downscales, the livelihood of the community is endangered and people have to move to where a new mine is being established. Prime examples of this can be seen by looking at the towns of Kleinzee and Koingnaas (Figure 4.2).

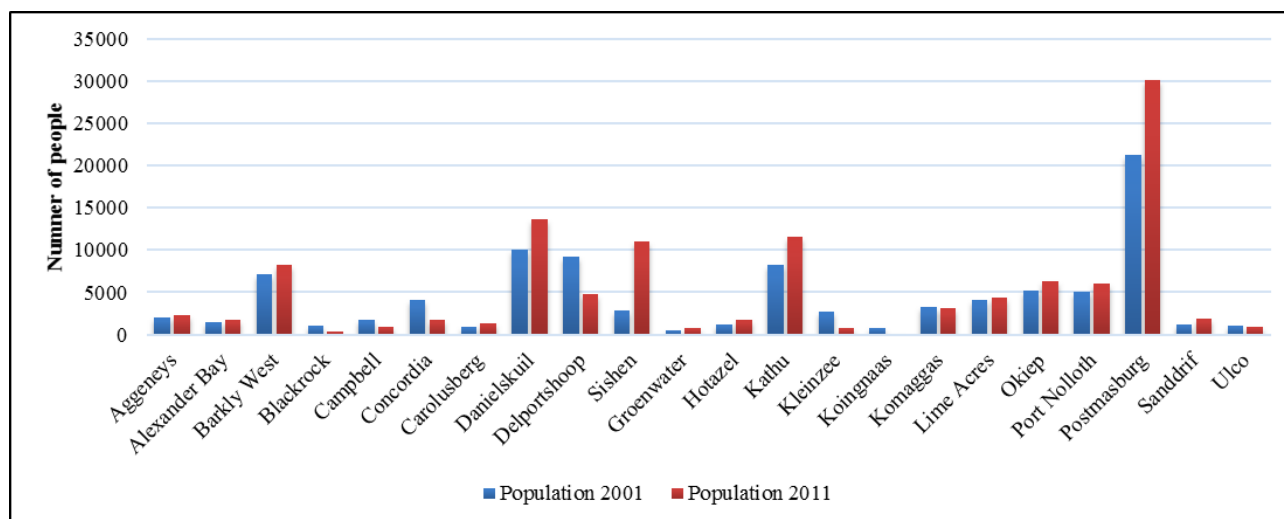


Figure 4.2 Population change per town 2001 vs 2011

Source: Author (2016)

Stilwell (2011) states that these two towns were once flourishing mining towns, but with De Beers pulling out of the area, there has been rapid decline. During the mining peak in the 1980s, Kleinzee had more than 3000 people employed there and the population was above 6000, whereas Koingnaas had a population above 1000 residents. Now the latest population statistics now show that the Kleinzee population has declined from 2712 in 2001 to 728 in 2011, and Koingnaas population from 724 to 105 in the same time-frame. On the other side of the spectrum, some towns showed a relative massive growth in population in the ten-year period between 2001 and 2011. These towns are Kathu,

Sishen, Postmasburg, Danielskuil and Delportshoop. Kathu and Sishen are in close proximity of each other, as are Postmasburg and Danielskuil. This influx of people was due to a boom in iron ore and manganese mining in the area. Big companies such as Kumba, Assmang and Indwala have moved into the area and changed the economic landscape of the region through its big operations. People have flocked to these towns, hoping for a better life with billions of Rands generated from the export of these natural resources. The populations of the other mining towns have remained more or less stable.

This can be ascribed to mine closures and downscaling before 2001 and the fact that the towns have moved towards other industries like agriculture, as is the case in Barkly West. Another reason for the populations being stable is that there are still mining operations in the area albeit on a smaller scale. People are still employed for a longer period of time, as is the case in Alexander Bay and Port Nolloth where offshore diamond mining continues. The populations of Ulco and Lime Acres have also remained stable with the limestone and cement markets being consistent and these mines still being in operation. The populations of Concordia and Aggeneys, where there is still copper mining on a smaller scale is continuing, are also stable.

Table 4.1 shows the potential and need of the towns to develop. It is interesting to note that in the towns with population numbers which seemed to have stayed more or less the same in the ten-year census period, the potential and need to develop were both classified as low. This is due to these towns being dependent on the mining industry to provide employment to its labour force, and the fact that the mine can only accommodate a limited number of workers. The populations of these towns have thus stayed the same because the employment opportunities have remained the same and there has been no drastic influx or outflow of people.

Looking at the gender and race profiles of small mining towns in the Northern Cape, there has been an increase of men into these towns between 2001 and 2011 and a decrease in women in the towns combined. Once again, Kleinzee and Koingnaas (Figure 4.3) show that in the ten-year census period and with the closing of the major mining operations, the number of males has drastically declined.

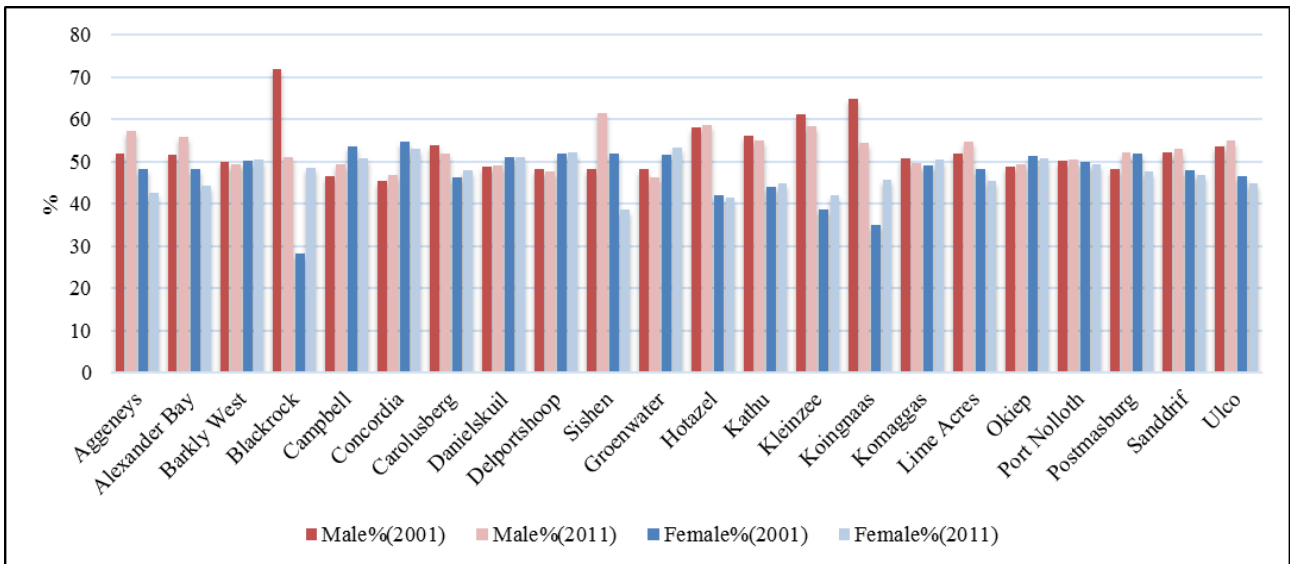


Figure 4.3 Change in gender % per town 2001 vs 2011

Source: Author (2016)

The town of Blackrock also shows a sharp decline in its male population. This can be attributed to more women moving into the town because of long term job opportunities and the wives of male workers' moving into the town after the new mine became operational. The male population in Blackrock declined from just above 70% to a median of about 50%, whereas the female population grew from being just below 30% in 2001 to almost 50% in 2011. The overall increase of males in the small mining towns in the Northern Cape (Figure 4.4) has a significant meaning even if it seems small, since mining is still a very male dominated industry.

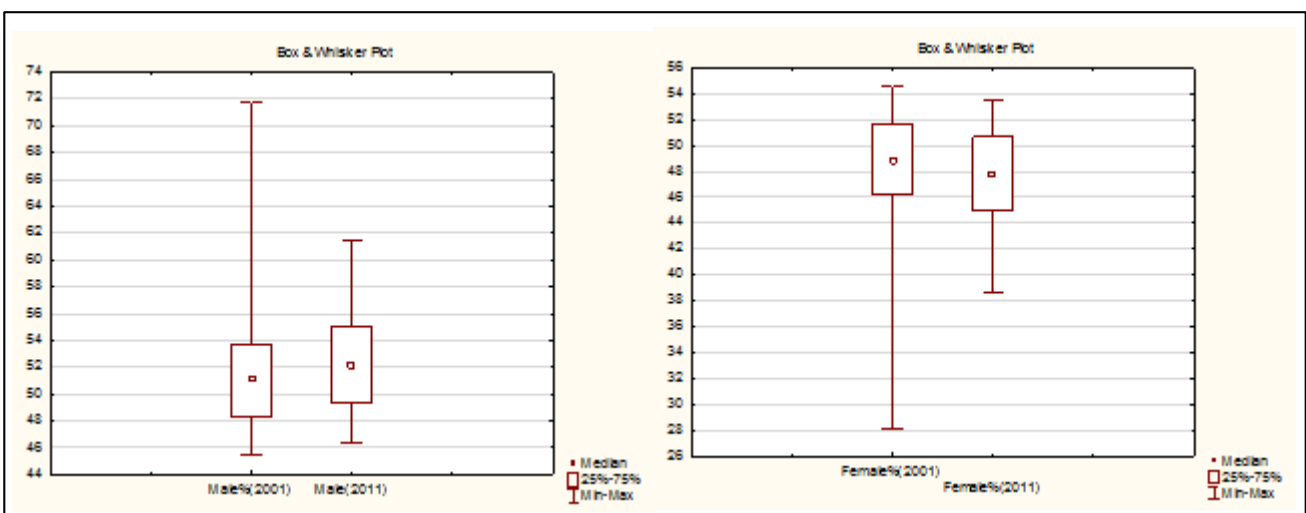


Figure 4.4 Overall change in gender 2001 vs 2011

Source: Author (2016)

Figures 4.5 and 4.6 illustrates that most of the towns are largely populated firstly by coloured people, and secondly by black people. Coloured people comprise an average of just above 60% of the total population in these towns, with black people making up about 20% of the population.

White and Asian people are the minority, and the Asian population in the towns does not even average 1% of the total population. The overall white population of these towns as a whole has declined substantially in the ten-year census period. Figure 4.6 shows this decline of about 5%, from 15% of the population to just under 10% in 2011. Further research is needed to determine the reason for this decline.

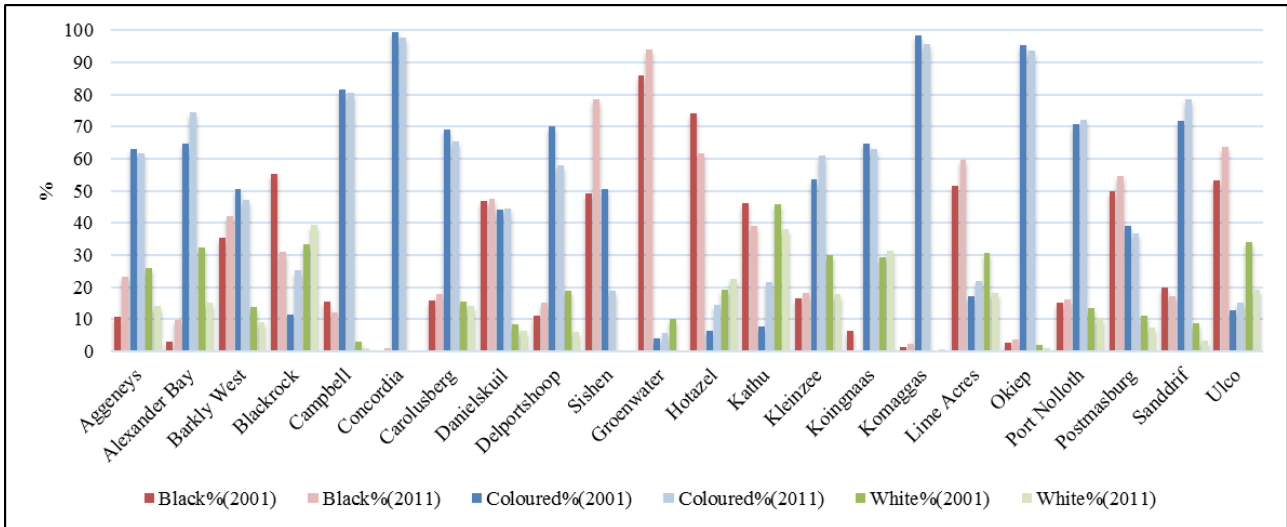


Figure 4.5 Racial make-up per town 2001 vs 2011

Source: Author (2016)

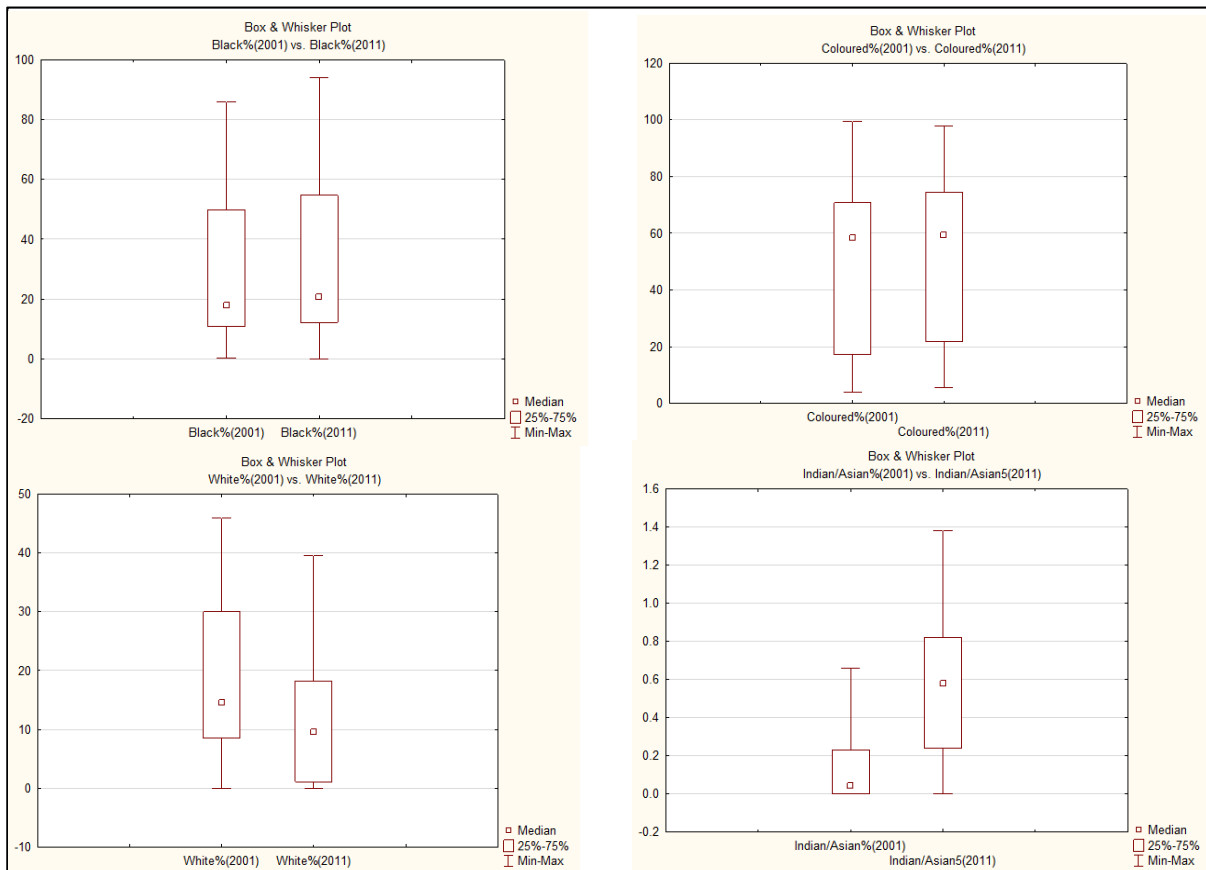


Figure 4.6 Overall racial make-up of towns 2001 vs 2011

Source: Author (2016)

The age compilation in these small mining towns is mostly between 15-64 years. This means that the majority of the population are of working age, which constitutes the workforce. The number of people that fall in the age group of between 15-64 has increased overall from 2001 to 2011 (Figure 4.7). This age group grew about 5% in ten years, which can be attributed to new mining operations in the Northern Cape. Figure 4.8 shows that in most of the towns there was an increase in the 15-64 year age group except for Blackrock and Kathu.

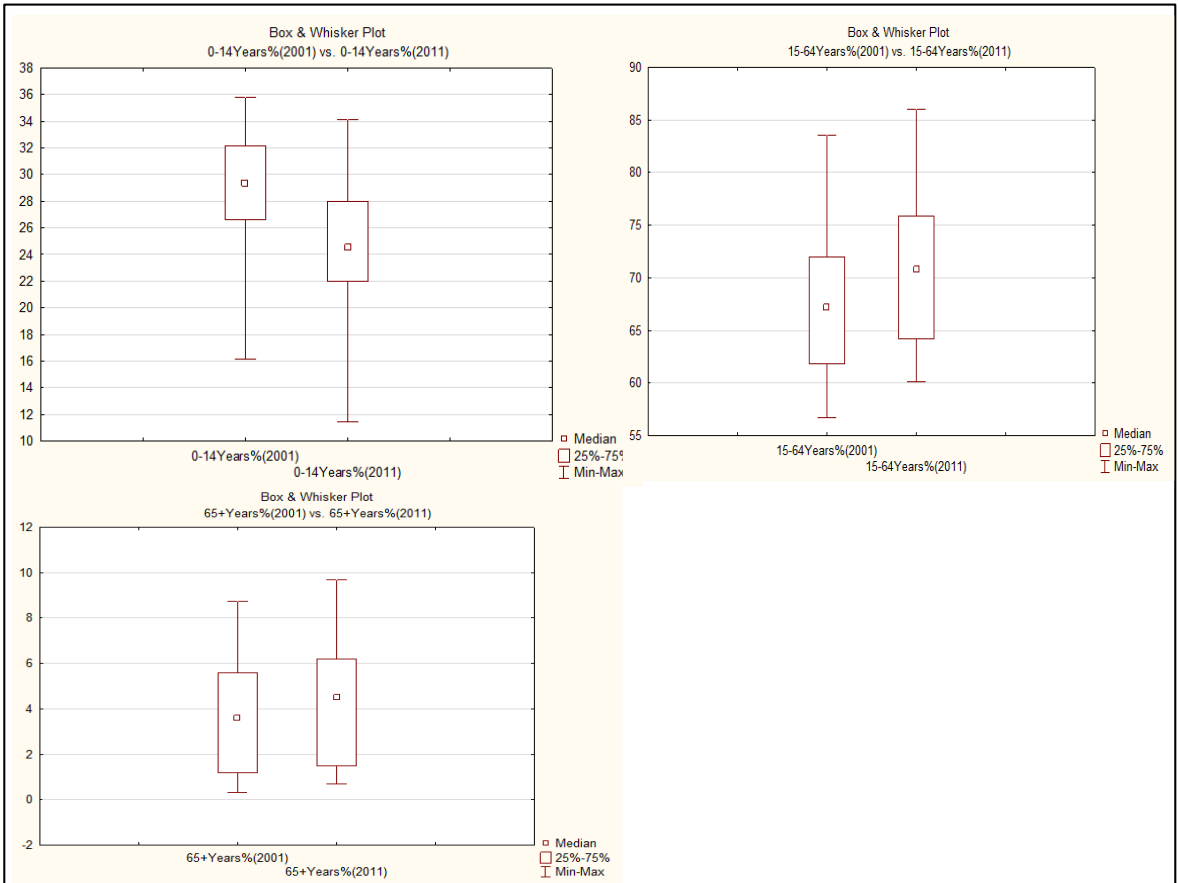


Figure 4.7 Overall compilation of race 2001 vs 2011

Source: Author (2016)

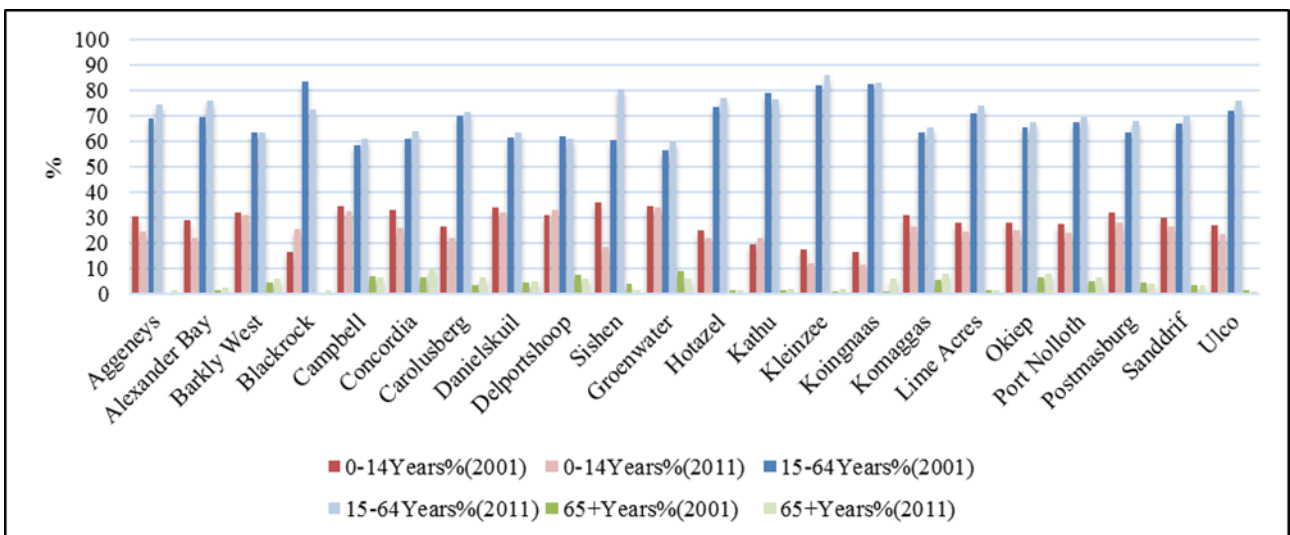


Figure 4.8 Change in age groups per town 2001 vs 2011

4.4 ECONOMIC LIVING CONDITIONS OF SMALL MINING TOWNS IN THE NORTHERN CAPE

This section portrays the level of economic wellbeing according to the dimensions chosen and using the indicators available in the census of 2001 and 2011. It shows changes as well as levels of economic wellbeing in the small mining towns as a collective.

The researcher's most reliable and accurate data was gleaned from census 2001 and 2011 census data. This was the most cost-effective and accurate way to determine levels of economic wellbeing in an objective manner. By using the OECD (2011) better life index as a guideline, four indicators were grouped together to portray economic wellbeing in the communities. These four indicators are: the % of the households earning less than R76 400 per annum, % of individuals with monthly income lower than R1600 per month, the % of the population that is employed, and lastly the % of the labour force that work in the formal sector.

4.4.1 Income and wealth (economic wellbeing)

This dimension tries to show the level of economic stability in communities in vicinity of mining operations where vast amounts of capital is generated. As previously mentioned in section 4.4, this dimension is a crucial component of wellbeing for individuals since it has the ability to expand people's consumption abilities and provides them with the resources to satisfy their needs. In this dimension various indicators are available through the census data of 2001 and 2011. The first indicator used in the index was that of annual household income per year. Figure 4.9 shows how annual household income was grouped together as no income, low income (R76 400 per year and lower), middle income (between R76 401 and 307 600 per year), high income (between R307 601 and R1 228 800 per year), and super-rich (R1 228 801 per year and above).

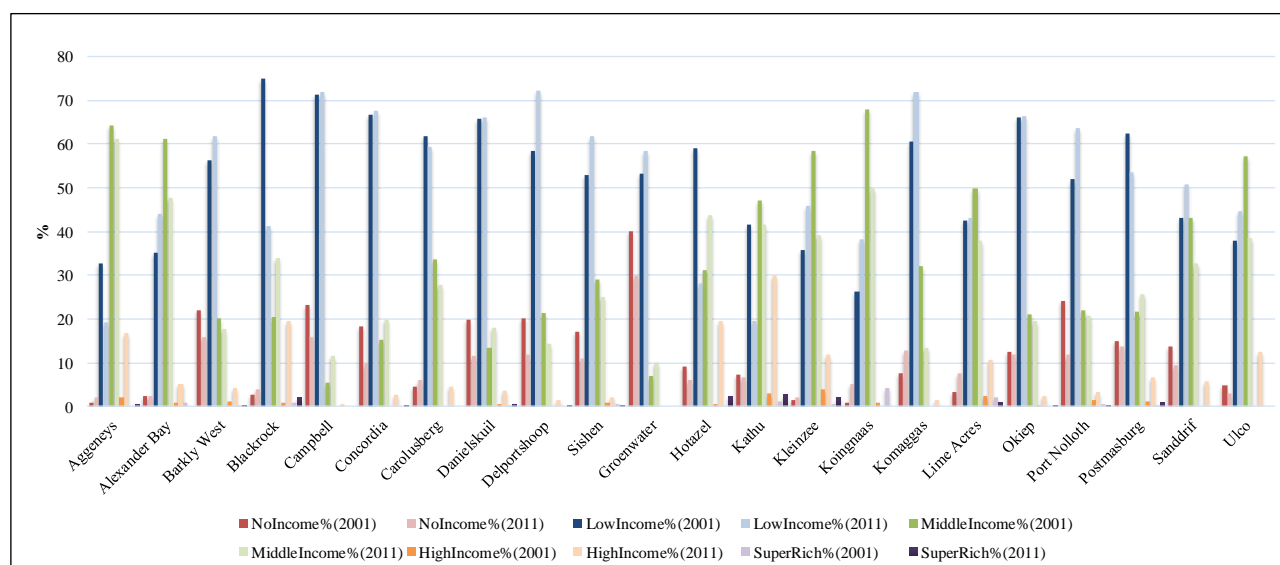


Figure 4.9 Annual household income per town

Source: Author (2016)

Figure 4.10 depicts most of these towns as low income classifications. This means that almost 60 % of all the households in these towns were earning less than R76 400 per year and 10% of the households not earning any income. The middle class makes up almost 30% of the households, while the high income and super rich households make up below 5% of the households.

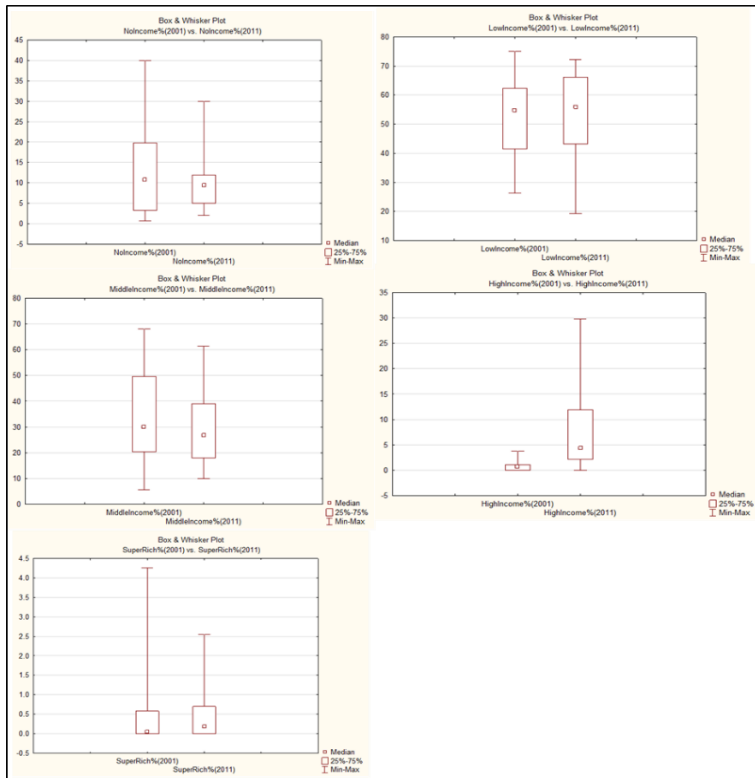


Figure 4.10 Overall annual household income per town 2001 vs 2011

Source: Author (2016)

Table 4.2 shows the ranking according to % of households earning less than R19 600 per annum. The towns highlighted in red are the worst-performing, the towns highlighted in green performed the best, and the towns highlighted in yellow are the towns which were chosen for the case studies. Earning less than R19600 can be classified as extremely poor, with the household living on just over R1000 per month. The fewer low income households, the higher the town's ranking.

Table 4.2 Ranking of household income below R19 600 per annum

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	15.8	3	5.76	1
Alexander Bay	16.4	4	11.11	2
Barkly West	64.9	19	43.74	19
Blackrock	50.4	12	28	10
Campbell	84.9	21	51.65	21
Concordia	62.7	17	36.34	15
Carolusberg	39.1	9	21.8	9
Danielskuil	68	20	39.6	17
Delportshoop	63.8	18	46.35	20
Sishen	56.2	14	28.49	12
Groenwater	90.9	22	58.57	22
Hotazel	42.5	10	14.07	5
Kathu	31.6	6	13.79	3
Kleinzee	14	2	14	4
Koingnaas	5.17	1	15	6
Komaggas	43.4	11	43.46	18
Lime Acres	28.3	5	20.34	8
Okiep	55.6	13	37.3	16
Port Nolloth	57.7	15	36.29	14
Postmansburg	57.9	16	32.1	13
Sanddrif	36.3	8	28.24	11
Ulco	31.8	7	17.71	7

The next indicator which forms part of depicting the dimension of economic wellbeing is individual monthly income. Figure 4.11 shows that the data was grouped together for the indicator of individual monthly income as follows: no income, low income (R6400 per month and lower), middle income (between R6401 and R25 600 per month), high income (between R25 601 and R102 400 per month), and super rich (R102 401 per month and above).

It is apparent that from 2001 to 2011 more people have moved out of the no income bracket (Figure 4.12). This figure was at almost 60% in 2001 and has improved considerably to only 35% of the population in these towns not earning any income per month. The low income bracket earning R6400 or less has increased by 5% to 40% of the population. More people have moved into the middle income and high income brackets respectively, with the middle income bracket growing by almost 6%. This suggests that the new mining operations which were established after 2001 have improved the spending power of the communities in these towns.

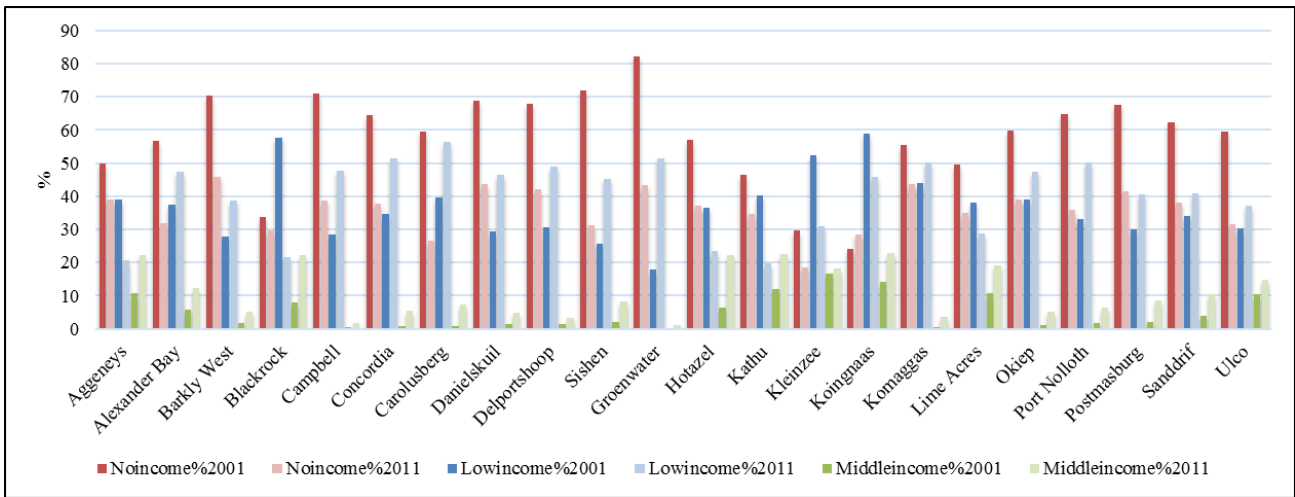


Figure 4.11 Individual monthly income changes per town 2001 vs 2011

Source: Author (2016)

Table 4.3 shows the rankings according to the population’s individual incomes per month. For this indicator the towns were ranked in terms of the % of the population that earn less than R1600 per month as well as those stating that they do not earn any income. Although the groupings in Figure 4.11 were constructed with low income earning R6400 or less per month, the bracket of R1600 shows a greater level of economic deprivation.

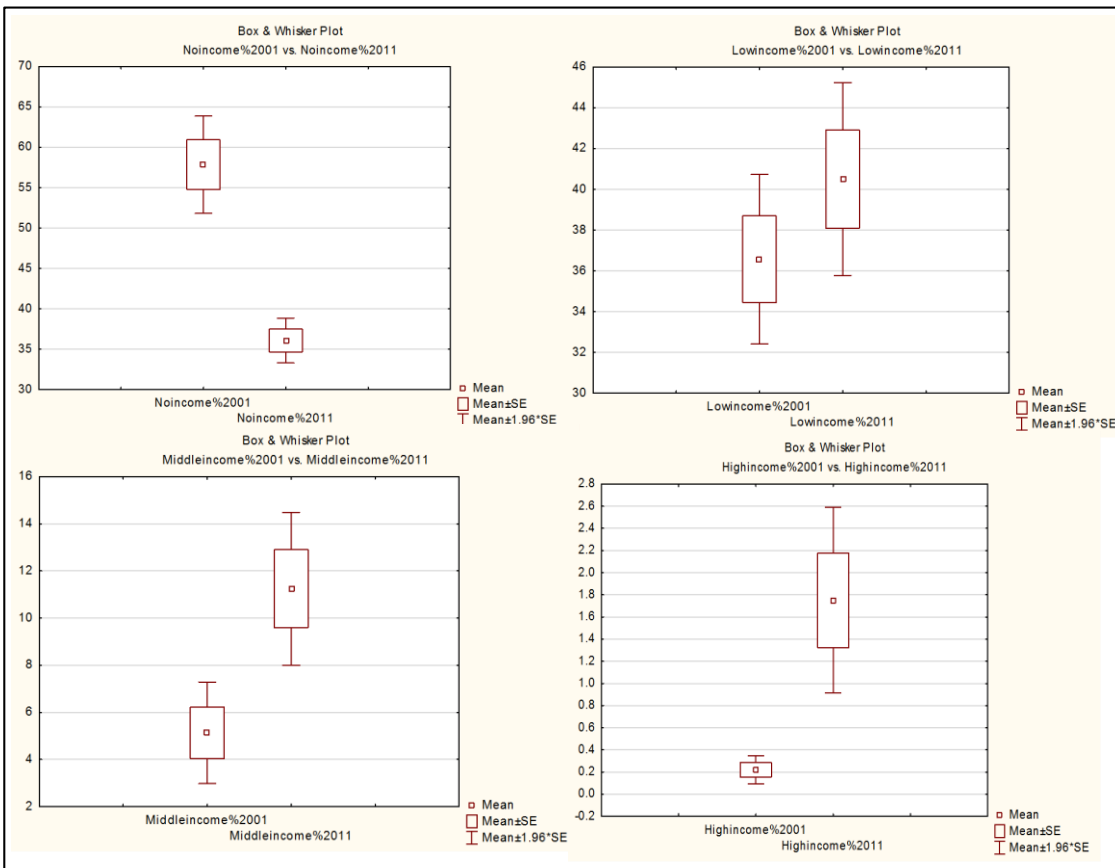


Figure 4.12 Overall individual monthly income 2001 vs 2011

Source: Author (2016)

This indicator of individual monthly income shows that although some people had moved out of the no income bracket, the number of people who earn less than R1600 was very high across all the

towns. Table 4.3 shows that in almost all cases almost 50% of the people earn either no income or less than R1600 per month.

Table 4.3 Ranking of individual monthly income below R1600 per month

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	54.22	3	45.49	5
Alexander Bay	56.51	5	54.84	10
Barkly West	85.81	17	76.16	16
Blackrock	59.32	7	40.74	3
Campbell	95.41	22	80.14	18
Concordia	87.63	19	77.39	17
Carolusberg	76.72	11	54.93	11
Danielskuil	88.34	20	81.66	20
Delportshoop	87.51	18	83.08	21
Sishen	82.95	14	52.84	9
Groenwater	95.02	21	80.89	19
Hotazel	67.83	8	48.29	7
Kathu	55.27	4	41.2	4
Kleinzee	29.04	2	28.51	1
Koingnaas	21.7	1	40	2
Komaggas	77.07	12	86.9	22
Lime Acres	57.38	6	46.97	6
Okiep	84.83	16	73.94	15
Port Nolloth	83.18	15	70.61	14
Postmansburg	82.89	13	67.68	13
Sanddrif	70.19	10	62.62	12
Ulco	68.47	9	50.7	8

4.4.2 Jobs and earnings

The second dimension to show levels of material wellbeing is that of jobs and earnings. To gauge this dimension, the following indicators were used: employment status of the communities within the towns, and the type of sector individuals work in. For the indicator of employment status, unemployment could not be used as the data sets of 2011 did not show real unemployment figures.

Figure 4.13 clearly shows that the level of unemployment in most towns according to the data has decreased. This is due to most responses being “not applicable” or people not being economically active. In most cases the figures of these two options combined account for more than 50% of the population. For this reason, the indicator of being employed has been used to gauge the official employment situation in each and the towns as a whole.

The researcher also wanted to incorporate the type of sectors the population work in. This data, however, is only available in the case 2001 census data. Census data 2011 only reports on whether the respondent is employed in the formal or informal sector. This is unfortunate because it would be of great importance to show in which sectors, for instance mining and agriculture, individuals are employed in. This could have shown whether mining has had a direct effect on the employment status in these towns.

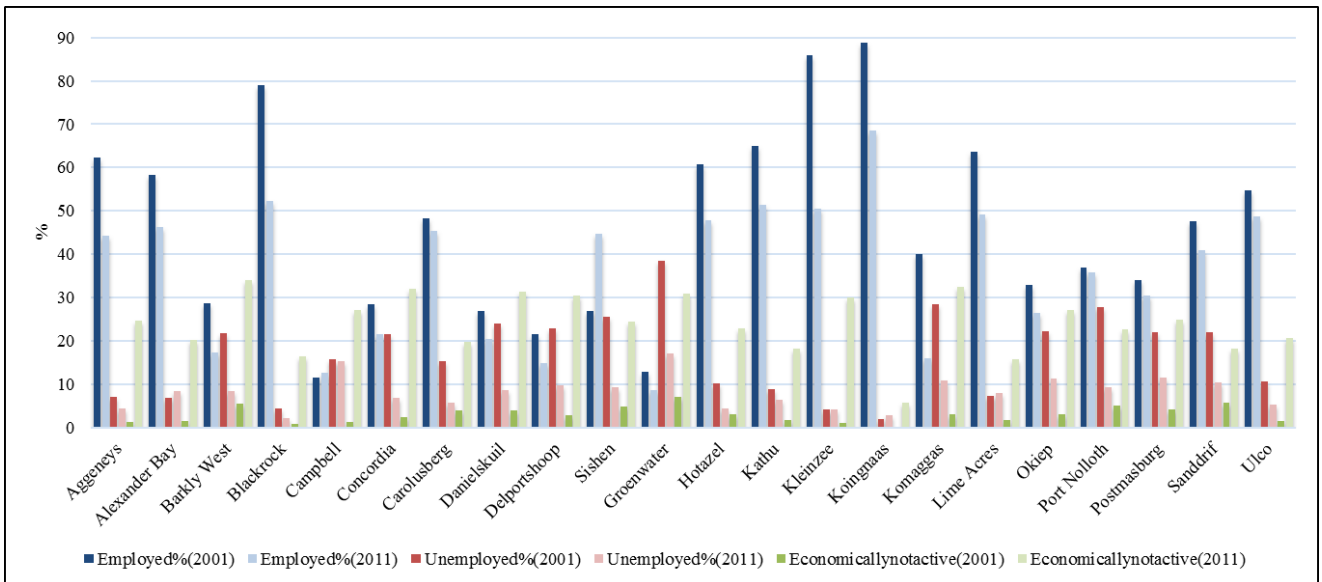


Figure 4.13 Employment status per town 2001 vs 2011

Source: Author (2016)

Figure 4.14 shows the overall employment status of the small mining towns. Comparing this with Figure 4.13, it can be seen clearly that the overall average of employed people has declined. This means that fewer people were employed in 2011 than in 2001.

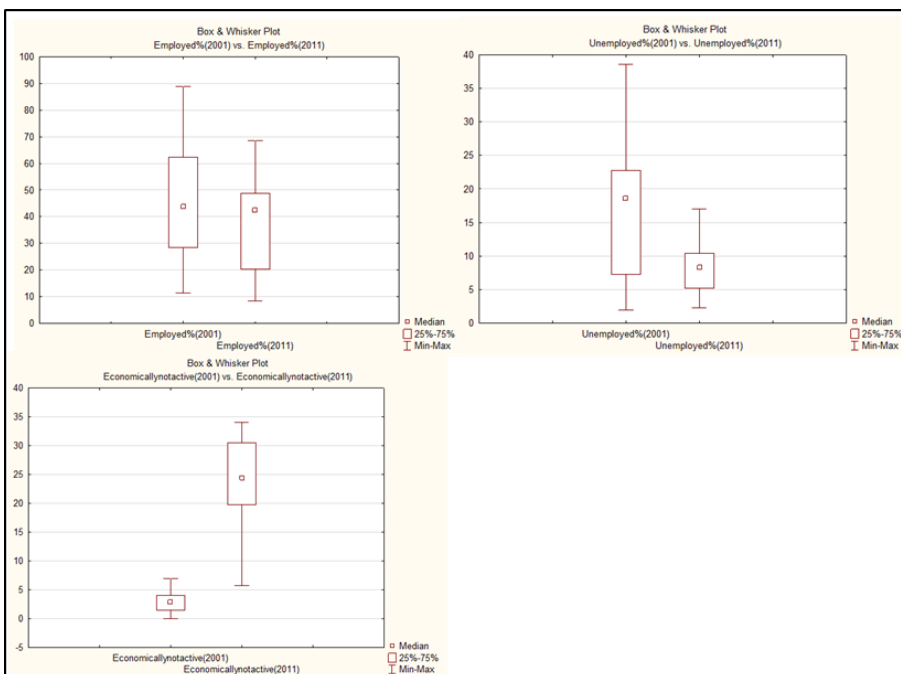


Figure 4.14 Overall employment status per town 2001 vs 2011

Source: Author (2016)

This is a clear indication that an overall downscaling of mines has gradually been happening in the Northern Cape. Figure 4.14 shows the major difference in the populations of these towns being economically inactive. The data shows that the average of people who are not economically active in some manner in 2001 was less than 5%, but that this figure has spiked alarmingly to about 25% of the population not being active in the economy in 2011. This can explain the drop in unemployment

figures; there were fewer people actively looking for a job, or even having the opportunity of finding one. This comparison accentuates the level of hopelessness in most of these towns.

The data on the different age groups is difficult to decipher. The data in the 2011 census does not have options when looking at the indicator other/economically not active. In the 2001 census various options were given (scholar or student, homemaker/housewife, retired/too old to work, disability, seasonal worker not working presently/ does not choose to work), but in contrast all these options were grouped together in 2011. No distinction could be made as to why people were not economically active.

Figure 4.15 illustrates the situation of the youth with regard to employment status. Youth is classified as between the ages of 15-35, and adults as between the ages of 36-65. Although there has been an overall increase in employment of the youth, the indicator that stands out is that of the high percentage change in the workforce of the youth who were not economically active.

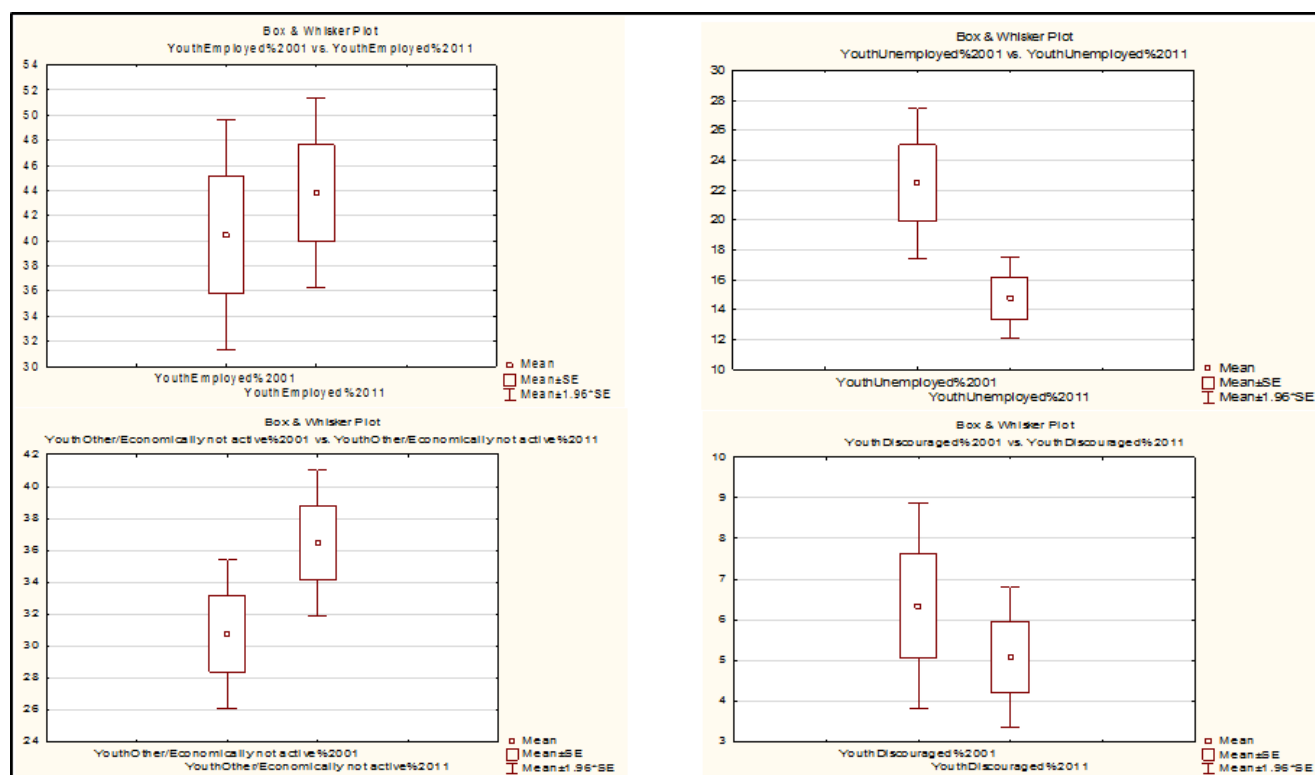


Figure 4.15 Overall youth employment 2001 vs 2011

Source: Author (2016)

This shows that job opportunities for the youth are hard to come by, and because unemployment has dropped within the youth (the active work-seeking population), the people who do not have a chance of obtaining a job (being economically not active) has risen by almost the same average amount.

Figure 4.16 shows the overall adult employment. When comparing this to Figure 4.15, it can be seen that the adult population has a more stable working environment, with no major increases or decreases in overall employment status over the ten-year period.

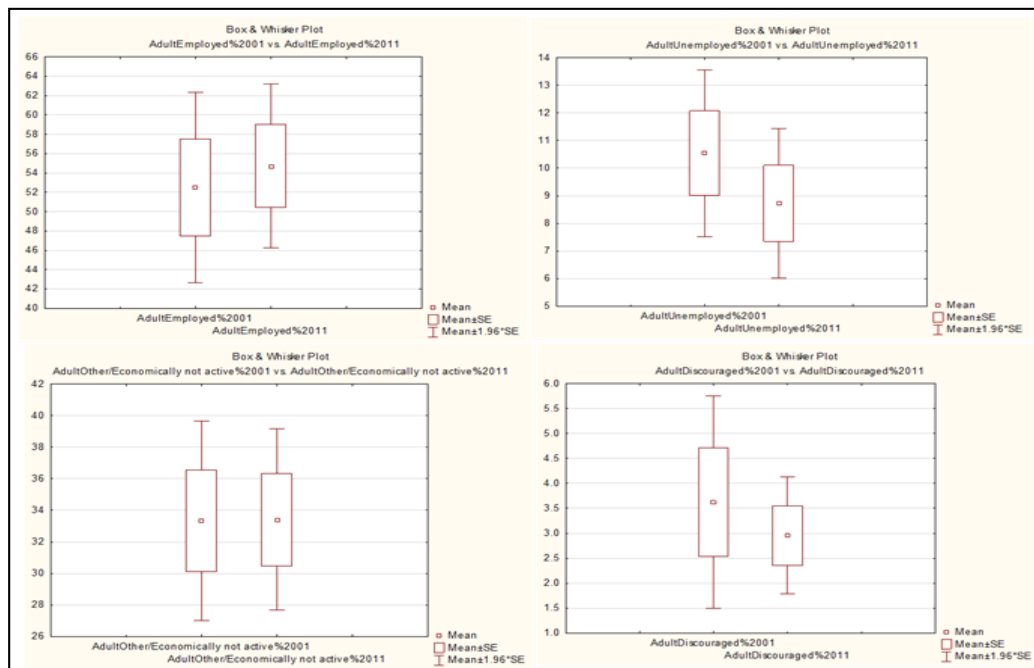


Figure 4.16 Overall adult employment 2001 vs 2011

Source: Author (2016)

This trend ties in with the rest of the employment statistics of the country. StatsSA (2015) showed an unemployment rate for the youth in South Africa of 37%, and an even higher rate of 45% for the Northern Cape. When combining the averages of unemployed and economically not active, the average was about 50% of the youth in these mining towns. The number of unemployed adults were much lower than that of the youth, which mirrors the situation in the province and nationally (StatsSA 2015).

For this indicator of jobs and earnings, the level of employment was used in the composite indicator index. The higher the % of people employed in the town, the better the ranking. Table 4.4 shows these rankings. Although Koingnaas and Kleinzee are ranked at the top, it must be noted that the population of these towns are very small and mining in the vicinity is almost non-existent at the moment. Therefore, the people who still live in these towns are employed in other sectors. Groenwater is ranked the lowest, with only 9% of the population employed.

Table 4.4 Ranking according to population employed

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	62.31	6	44.16	11
Alexander Bay	58.33	8	46.29	8
Barkly West	28.69	16	17.22	18
Blackrock	79.02	3	52.24	2
Campbell	11.46	22	12.69	21
Concordia	28.42	17	21.47	16
Carolusberg	48.32	10	45.39	9
Danielskuil	26.81	19	20.34	17
Delpportshoop	21.6	20	14.85	20
Sishen	26.93	18	44.64	10
Groenwater	12.94	21	8.54	22
Hotazel	60.71	7	47.86	7
Kathu	65.06	4	51.41	3
Kleinzee	86.03	2	50.41	4
Koingnaas	88.83	1	68.57	1
Komaggas	40.03	12	15.98	19
Lime Acres	63.55	5	49.18	5
Okiep	32.98	15	26.35	15
Port Nolloth	37	13	35.7	13
Postmansburg	34.04	14	30.41	14
Sanddrif	47.66	11	40.94	12
Ulco	54.74	9	48.78	6

Lastly the type of sector in which people work in was investigated. The problem here was that the 2001 census data distinguishes between the different type of sectors in which individuals worked (such as mining and quarrying, agriculture and manufacturing), whereas the 2011 data sets however only show whether individuals worked in the formal or informal sector.

For the purposes of ranking the researcher decided to use as indicator the % of the workforce that work in the formal sector. The higher the % of workers in the formal sector, the higher the ranking of that town will be. Table 4.5 ranks the towns according to their proportion of the population working in the formal sector. What is interesting to note is that all of the towns have seen a decline in the number of people working in the formal sector. This indicates that major downscaling and mine closures have changed the job environment and more people have to enter the informal economic sector to earn a living.

Table 4.5 Ranking according to formal working sector

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	53.17	6	40.05	6
Alexander Bay	51.17	7	44.39	3
Barkly West	24.88	16	13.94	18
Blackrock	69.7	3	36.57	11
Campbell	10.32	22	9.66	21
Concordia	24.03	17	19.3	15
Carolusberg	45.69	10	38.2	8
Danielskuil	22.47	19	16.11	17
Delportshoop	19.24	20	10.4	19
Sishen	23.73	18	34	12
Groenwater	11.95	21	6.91	22
Hotazel	50.85	8	38.29	7
Kathu	55.21	4	45.15	2
Kleinzee	79.07	2	42.56	4
Koingnaas	81.81	1	60	1
Komaggas	32.5	12	10.11	20
Lime Acres	54.49	5	37.67	9
Okiep	29.36	14	18.01	16
Port Nolloth	32.02	13	28.65	13
Postmansburg	27.22	15	19.78	14
Sanddrif	43	11	37.38	10
Ulco	47.15	9	40.42	5

4.4.3 Overall ranking of towns according to dimension of economic wellbeing

Finally, an aggregate ranking for each of the towns for economic wellbeing was calculated (Table 4.6). This was done by adding up all four rankings of the four indicators depicting economic wellbeing in the towns and then dividing them by four.

Table 4.6 Overall ranking of economic dimension

Town	2001		2011	
	Average	Rank	Average	Rank
Aggeneys	4.5	3	5.75	4
Alexander Bay	6	6	5.75	4
Barkly West	17	17	17.75	17
Blackrock	6.25	7	6.5	6
Campbell	21.75	22	20.25	21
Concordia	17.5	18	15.75	16
Carolusberg	10	10	9.25	10
Danielskuil	19.5	20	17.75	17
Delportshoop	19	19	20	20
Sishen	16	16	10.75	11
Groenwater	21.25	21	21.25	22
Hotazel	8.25	8	6.5	6
Kathu	4.5	3	3	2
Kleinzee	2	2	3.25	3
Koingnaas	1	1	2.5	1
Komaggas	11.75	12	19.75	19
Lime Acres	5.25	5	7	9
Okiep	14.5	14	15.5	15
Port Nolloth	14	13	13.5	13
Postmansburg	14.5	14	13.5	13
Sanddrif	10	10	11.25	12
Ulco	8.5	9	6.5	6

4.5 HOUSING AND INFRASTRUCTURE CONDITIONS IN SMALL MINING TOWNS IN THE NORTHERN CAPE

This dimension also helps to measure the material living conditions of the community. As previously mentioned in Section 3.3.1.3, having adequate housing is at the top of human material needs. It also constitutes the largest portion of a households' expenditure. Non-adequate housing conditions may lead to poor health conditions in a community. In this section the level of household infrastructure in the mining towns in the Northern Cape are measured and as in the previous section, also ranked according to the indicators which form part of the composite indicator showing overall levels of quality of life.

For this dimension five indicators are used to show the levels of household infrastructures. The indicators are: the % of households living in informal housing, % of the households that owning the dwelling (which is fully paid off), % of households with no access to water, % of households with access to flushing toilets, and lastly % of households with more than five people living in the dwelling.

4.5.1 Type of housing

To assess the quality of housing in these towns the type of housing can be investigated to gauge policy implications for decision makers. One of the easiest indicators is the type of dwelling the respondent lives in. For obvious reasons a brick house is better than living in a make-shift informal dwelling.

Figure 4.17 shows that the majority of the population and households live in detached free-standing dwellings. These buildings are built of brick and are capable of accommodating basic household infrastructures such as electricity, toilets and piped water. For policy implications one can argue that since 2001 major developments have been implemented to improve the housing situation.

In 2001 only 65% of the households in mining towns lived in detached housing; this figure has however risen to almost 80% of the population when one adds the number of people who live in semi-detached brick houses. This can be corroborated by the fact that the number of households who live in informal housing has declined to under 10%.

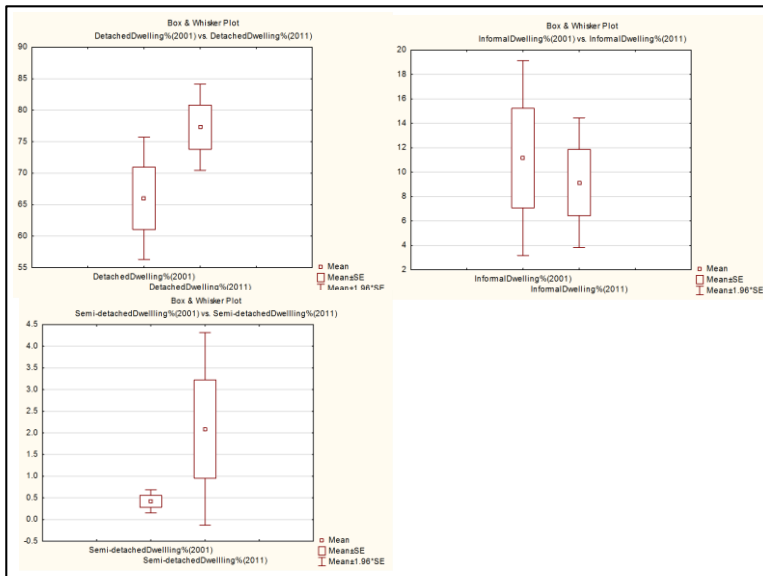


Figure 4.17 Overall type of dwelling 2001 vs 2011 Source: Author (2016)

Figure 4.18 shows the type of dwelling per town. The towns of Barkly West, Campbell, Danielskuil, Groenwater, Postmasburg and Sanddrif show high levels of people who stay in informal housing, with the trend in other towns being almost no informal housing. The towns with higher levels of informal housing are towns which have either experienced mine closures in the vicinity, or on the other hand new mining operations have started and people have moved into the towns and needed housing in order to find work on the new mines. This can be seen in Postmasburg, whereas the other towns, with the exception of Danielskuil, the mining operations which promised development have all but closed down. Development has therefore not been as effective as envisaged and the will to build new infrastructures is low.

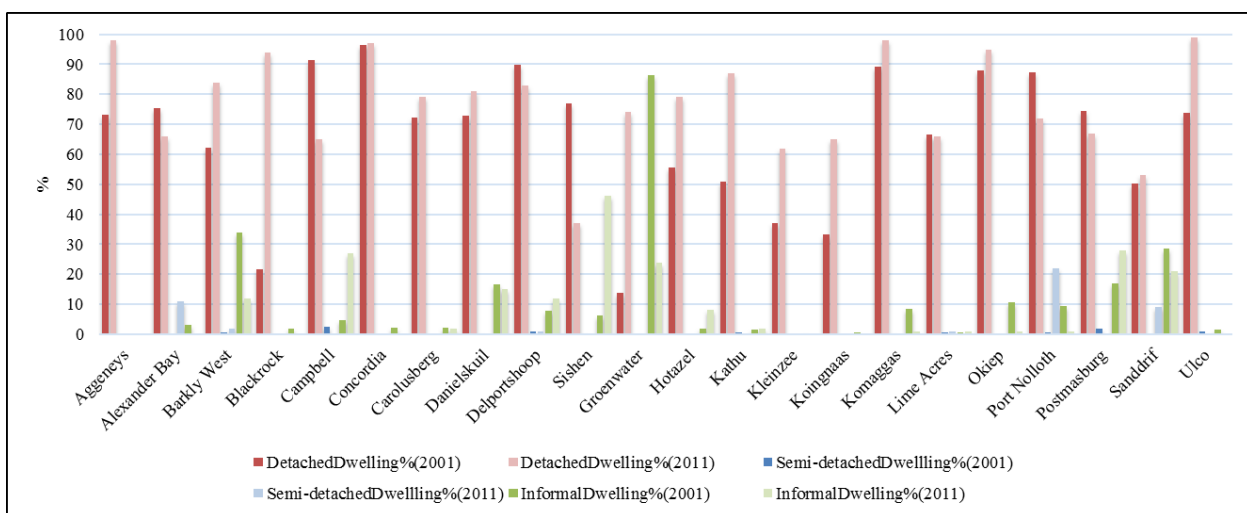


Figure 4.18 Type of dwelling per town 2001 vs 2011 Source Author (2016)

Table 4.7 shows the ranking of towns according to how many people live in informal housing. The lower the % of households living in informal housing the higher the ranking of the towns.

Table 4.7 Ranking according to informal housing

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	0	1	1.57	11
Alexander Bay	3.05	11	0	1
Barkly West	33.92	21	12.02	16
Blackrock	1.87	8	0	1
Campbell	4.76	12	26.92	20
Concordia	2.31	10	0.21	5
Carolusberg	2.25	9	1.5	10
Danielskuil	16.72	18	15.05	17
Delportshoop	7.93	14	11.98	15
Sishen	6.15	13	46.26	22
Groenwater	86.23	22	24.29	19
Hotazel	1.78	7	9.5	14
Kathu	1.42	5	1.89	12
Kleinzee	0.19	2	0	1
Koingnaas	0.7	4	5	13
Komaggas	8.59	15	0.71	6
Lime Acres	0.45	3	0.85	7
Okiep	10.59	17	0.88	8
Port Nolloth	9.44	16	1.15	9
Postmansburg	16.84	19	29.11	21
Sanddrif	28.48	20	21.64	18
Ulco	1.6	6	0	1

This ranking has a big variance which means that the ranking may not be a strong indicator for depicting housing, but together with the other indicators it evens out. Between these towns there is either a very low number of people living in informal housing, or the number is substantially higher, or there is no middle ground with some towns having less than 1% living in informal housing but ranking near the middle and not the top (as in Okiep). However, for this composite index all the indicators carry the same weight.

4.5.2 Tenure status

This indicator can also tie in with economic stability. The more people who own the houses they live in, the more financially secure and stable they feel, even more so if the house is fully paid off.

Secondly, people who live in a house rent-free may also feel stable because of the money saved that would have gone to paying the rent. It is also noteworthy to mention the large number of households that live in rented or rent free houses in these mining towns (Figure 4.20).

Figure 4.19 and Figure 2.20 show these trends which may result from the finite nature of mining and the relatively short life-span of mining operations which causes potential home owners not to invest

money in buying houses but rather renting since they are not sure for how long the operations will last and they will have to move again.

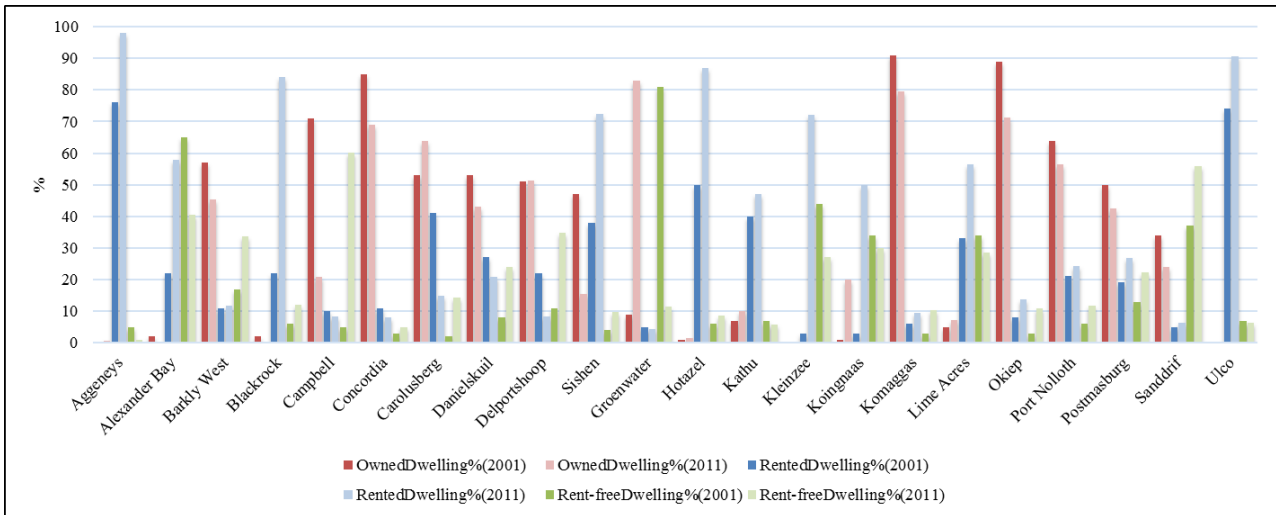


Figure 4.19 Tenure status of dwelling 2001 vs 2011

Source: Author (2016)

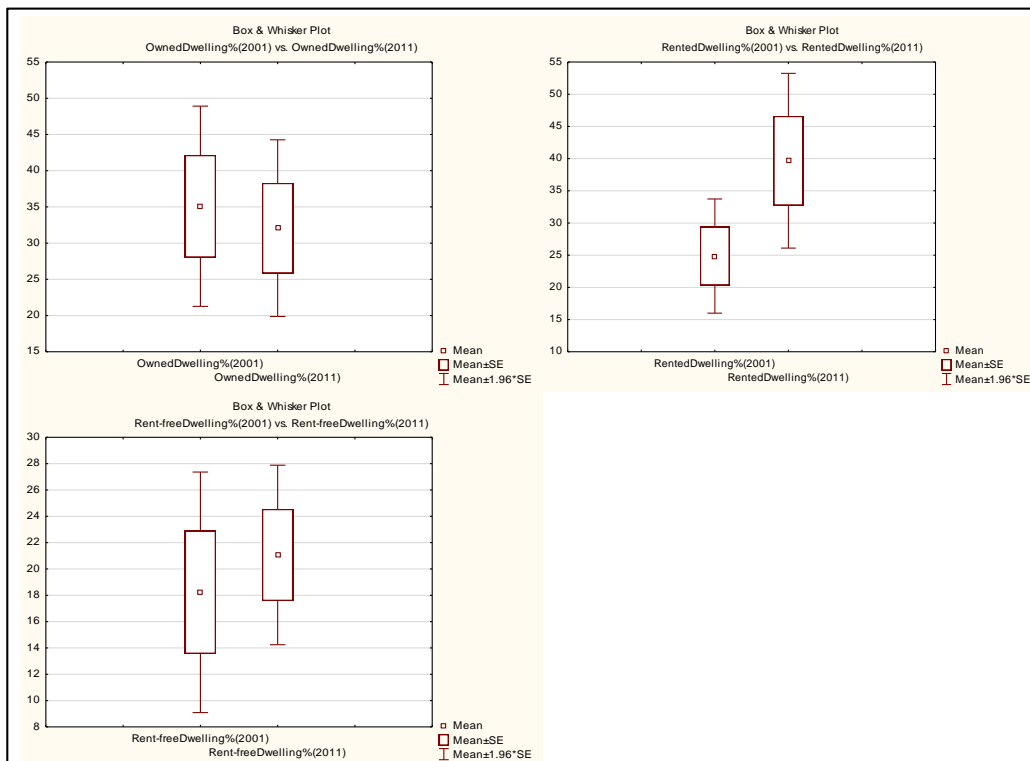


Figure 4.20 Change in tenure status of dwellings 2001 vs 2011

Source: Author (2016)

The ranking of the tenure status of the dwellings is shown in Table 4.8. Groenwater is ranked at the top with 86% of households owning their dwellings. This is the only indicator in which Groenwater ranks at the top. This may be due to government housing projects; the houses are given to the permanent population of this very small town.

Table 4.8 Owned fully paid of dwelling ranking

Town	2001		2011	
	%	Rank	%	Rank
Aggeneys	0.45	20	0.52	18
Alexander Bay	2.34	16	0	19
Barkly West	57.25	6	45.48	8
Blackrock	1.87	17	0	19
Campbell	71.45	4	20.88	12
Concordia	84.96	3	69.12	4
Carolusberg	52.96	8	63.91	5
Danielskuil	53.23	7	43.12	9
Delporthoop	51.22	9	51.43	7
Sishen	47.38	11	15.55	14
Groenwater	9.13	13	82.86	1
Hotazel	0.6	19	1.51	17
Kathu	7.31	14	10.1	15
Kleinzee	0.39	21	0	19
Koingnaas	0.7	18	20	13
Komaggas	90.7	1	79.51	2
Lime Acres	5.15	15	7.18	16
Okiep	89.02	2	71.28	3
Port Nolloth	63.61	5	56.49	6
Postmansburg	49.55	10	42.46	10
Sanddrif	34.14	12	24.12	11
Ulco	0	22	0	19

4.5.3 Household infrastructure

Household infrastructure is used in this composite index to show the level of amenities in the house itself. Three data sets were used for this indicator, namely flushing toilets, electricity for lighting in the home, and access to water connected to the house. This data shows that there are adequate facilities which improve the health of people. Flushing toilets used in the data sets are toilets which are connected to the sewerage system or connected to a septic tank. Having a flushing toilet and clean running water reduces health risks of households compared to those who do not have this basic household infrastructure.

Figure 4.21 shows that the overall basic household infrastructures have improved across these towns as a result of more people living in detached housing and more people having access to basic facilities in their homes. The number of households that have access to running water in their homes has increased by 10%. Table 4.9 ranks the towns according to these household infrastructure indicators.

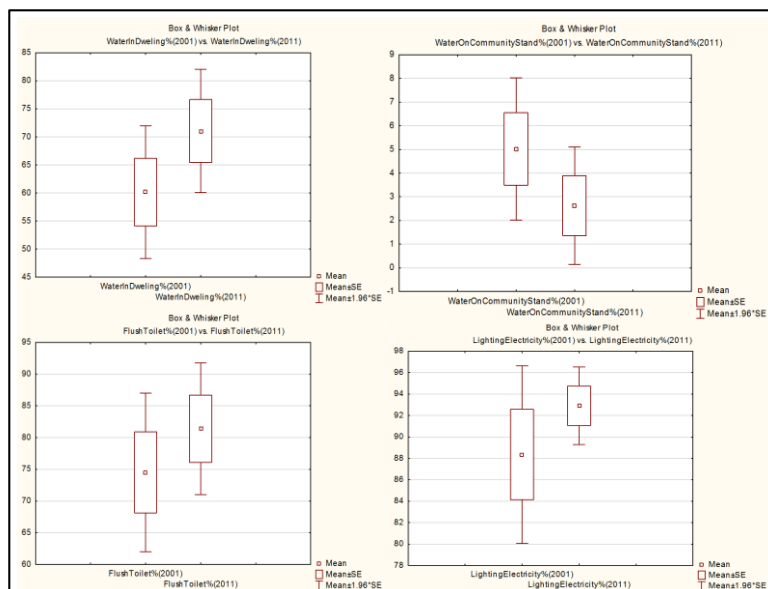


Figure 4.21 Overall household infrastructure within dwellings 2001 vs 2011

Source: Author (2016)

Table 4.9 Rankings of household infrastructure (water, toilets, household size, electricity)

Town	H2O connected to house				Flushing toilets in home				HH size5+		Electricity in home			
	2001		2011		2001		2011		2011		2001		2011	
	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Aggeney's	95.07	4	98.43	2	97.76	5	99.48	4	23.04	14	100	1	100	1
Alexander Bay	81.31	7	97.08	4	97.71	6	98.25	5	20	11	100	1	100	1
Barkly West	54.24	14	60.54	15	54.18	17	86.79	13	31.1	20	65.94	21	82.97	20
Blackrock	38.28	17	98	3	98.13	4	98	6	14	5	99.06	7	100	1
Campbell	6.35	22	6.59	22	9.52	22	4.95	22	32.04	22	83.71	17	68.51	22
Concordia	57.06	12	80.46	10	43.82	19	69.54	18	21.85	13	95.64	11	98.95	7
Carolusberg	76.75	9	79.1	11	87.54	11	78.36	15	18.05	9	98.87	8	92.48	14
Danielskuil	47.07	15	68.89	14	84.36	12	94.71	12	31.81	21	79.61	19	91.24	16
Delpportshoop	54.86	13	43.9	18	70.68	15	84.42	14	29.87	19	89.63	15	85.94	19
Sishen	34.63	18	41.9	20	83.84	13	97.98	8	13.95	4	83.46	18	74.29	21
Groenwater	9.37	21	28.57	21	11.57	21	50	20	24.29	15	9.37	22	88.57	17
Hotazel	81.73	6	89.45	9	95.46	10	97.99	7	15	6	96.05	10	96	12
Kathu	91.06	5	92.92	6	98.4	3	97.92	9	16.71	8	99.34	6	97.64	10
Kleinzee	98.66	1	100	1	99.81	1	100	1	3	1	100	1	100	1
Koingnaas	95.11	3	95.24	5	99.3	2	100	1	4.76	2	100	1	100	1
Komaggas	25.51	20	58.66	16	21.42	20	53.36	19	25.8	18	94.02	12	98.59	8
Lime Acres	77.13	8	90.61	7	96.82	9	96.42	11	12.14	3	97.96	9	96.93	11
Okiep	65.22	10	75.48	13	60.4	16	71.28	17	25.61	17	78.91	20	94.92	13
Port Nolloth	64.04	11	78.16	12	97.4	8	97.37	10	18.23	10	94	13	98.03	9
Postmansburg	39.16	16	45.49	17	80.1	14	72.34	16	25.04	16	88.05	16	87.65	18
Sanddrif	34.35	19	43.86	19	53.84	18	41.52	21	21.05	12	90.18	14	92.4	15
Ulco	96.69	2	89.58	8	97.6	7	100	1	16.67	7	100	1	98.96	6

4.5.4 Overall ranking according to dimension of housing and infrastructure

To conclude, Table 4.10 shows the overall ranking per town in the dimension of housing. There were no major improvements in rank by any of the towns, except for Blackrock which moved from tenth to second in the ranking (this can possibly be ascribed to the decline in population by 60%, from 1000 to 400 people, with a higher percentage of a smaller population having access to these infrastructure developments). Kathu in fact ranked quite low in tenth place. In the other indicators Kathu ranks in

the top five. This may be due to Kathu ranking very low in the ownership of houses, but having a high number of people who rent.

Table 4.10 Overall housing rankings

Town	2001		2011	
	Average	Rank	Average	Rank
Aggeneys	6.2	3	8.333333	6
Alexander R	8.2	6	6.833333	4
Barkly Wes	15.8	20	15.333333	17
Blackrock	10.6	10	5.833333	2
Campbell	15.4	19	20	22
Concordia	11	12	9.5	9
Carolusberg	9	8	10.66667	11
Danielskuil	14.2	16	14.83333	15
Delportsho	13.2	14	15.33333	17
Sishen	14.6	17	14.83333	15
Groenwater	19.8	22	15.5	19
Hotazel	10.4	9	10.83333	12
Kathu	6.6	4	10	10
Kleinzee	5.2	1	4	1
Koingnaas	5.6	2	5.833333	2
Komaggas	13.6	15	11.5	13
Lime Acres	8.8	7	9.166667	7
Okiep	13	13	11.83333	14
Port Nolloth	10.6	10	9.333333	8
Postmansb	15	18	16.33333	21
Sanddrif	16.6	21	16	20
Ulco	7.6	5	7	5

4.6 THE LEVEL OF QUALITY OF LIFE IN EDUCATION

Education has a big influence on human wellbeing. Education is a basic need and an important part of life which people aspire to. Individuals with better education earn higher wages and have higher probabilities of securing jobs (OECD 2013). According to the better life index, people with better education live longer lives, have better health status, and a lower level of chronic diseases and disabilities (OECD 2016). The OECD (2016) also found that people with higher education levels participate actively in politics as well as in their communities as opposed to people with lower education. People with lower education commit more crimes and need more social assistance which raises the cost of government spending in communities. As a rule, the higher the level of education within a society, the higher the GDP growth and tax revenues, and the lower social expenditure (OECD 2013).

In the composite indicator index, the indicators chosen for portraying the dimension of education and skills, were the % of the population over the age of 20 years with an educational qualification lower than matric, and the % of the population with some form of tertiary education.

4.6.1 Basic education and skills

This indicator was chosen to show the basic level of education in the communities. In South Africa a minimum level of matric as highest level of education is required for post-school qualification.

Figure (4.22) illustrates the highest level of education completed in each town. For this Figure no schooling, Gr7 (indicates finished primary school), Gr12 (indicates finished high school) and tertiary education (indicates completed tertiary degree/diploma/certificate) were used.

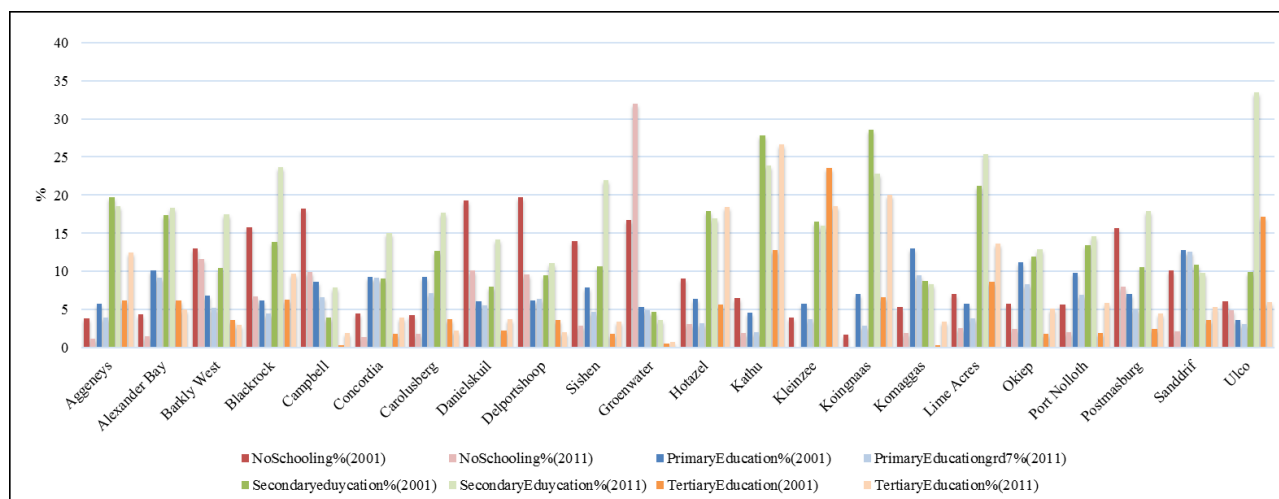


Figure 4.22 Highest education completed per town 2001 vs 2011

Source: Author (2016)

Figure 4.22 highlights the fact that some towns have fared markedly better than others in providing basic education training for its communities. Groenwater is the only town in which people have not been able to receive any form of basic education. Barkly West is the other town which failed to reduce the number of people who have received no schooling. However, looking at the overall status of the population with no schooling, the statistic looks good (Figure 4.23). The number of people with no schooling has decreased by 5%, from 10% to 5% of the population in these towns.

The number of people who have some primary school education as well as Grade 7 as the highest level of schooling has also been reduced. This can be attributed to more people having a higher level education, with increases in people with some level of high school education, and people actually completing matric. The % increase in people who finish their high school education has improved from 13% to 17% of the population. The number of people with a completed tertiary qualification has improved by more than 3% to almost a tenth of the population having completed after high school studies.

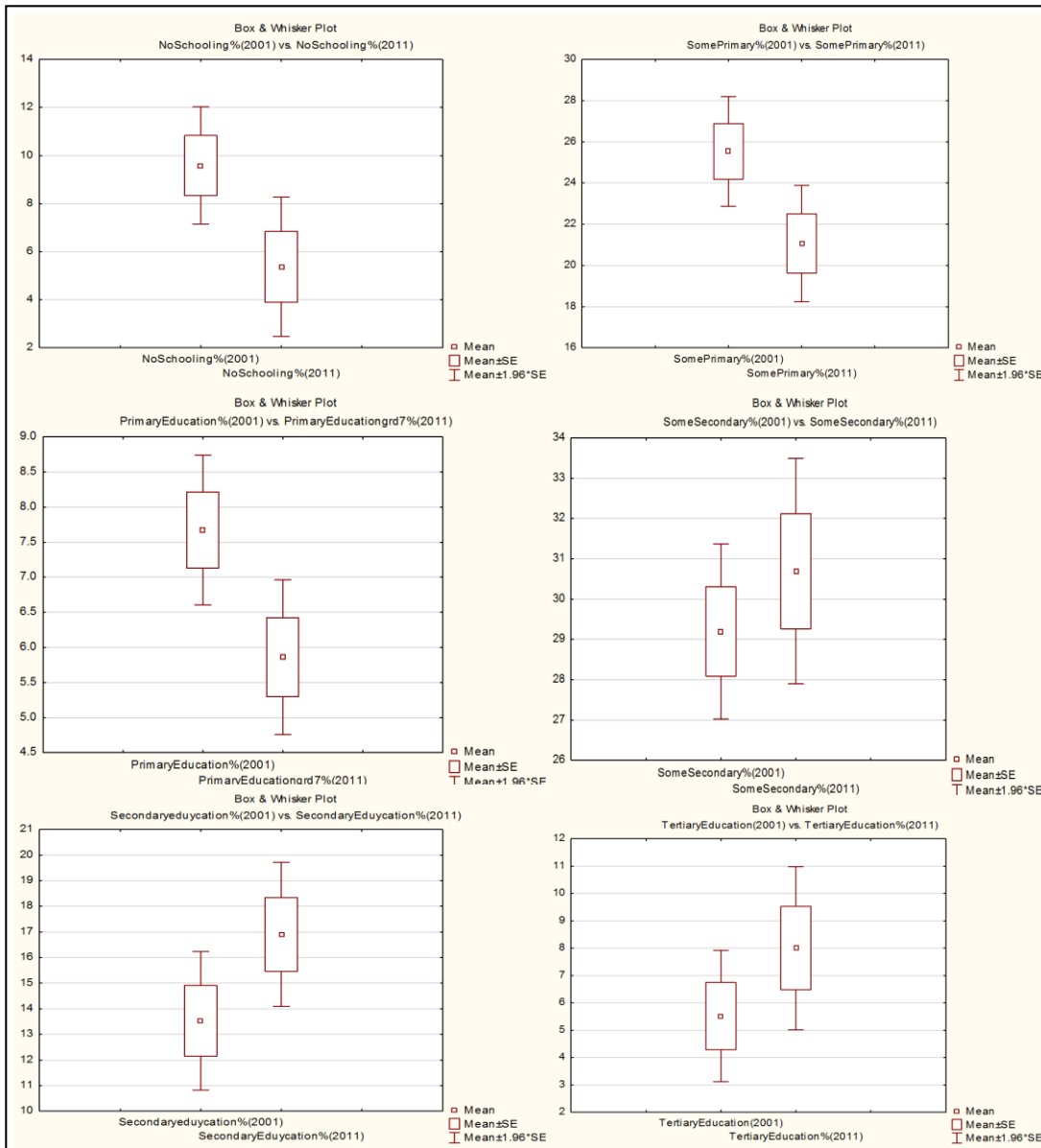


Figure 4.23 Overall level of education 2001 vs 2011

Table 4.11 ranks the towns by showing the number of people over the age of 20 who have not finished high school. This indicator depicts the skill levels of the population who are able to be part of the workforce. It shows clearly that the workforce in all the towns is unskilled, except for Kathu with only 36% of the population over the age of 20 not finishing matric. Kathu also ranks at the top as far as people with some sort of tertiary education is concerned, with 15% of the population. The next nearest is Hotazel with 11%. This indicator also shows that the levels of specialisation are very low in most cases.

Table 4.11 Education and skills rankings

Town	Age over 20 with less than matric				Population with tertiary qualification				Overall ranking of education and skills			
	2001		2011		2001		2011		2001		2011	
	%	Rank	%	Rank	%	Rank	%	Rank	Average	Rank	Average	Rank
Aggeneyns	60.91	6	59.54	4	5.48	6	5.93	5	6	6	4.5	4
Alexander Bay	64.64	7	80	9	4.95	9	1.61	16	8	8	12.5	11
Barkly West	77.63	12	87.9	14	3.4	11	2.42	13	11.5	11	13.5	13
Blackrock	76.97	10	79.31	8	5.37	8	8.47	4	9	9	6	6
Campbell	92.4	22	95.89	21	0.34	21	1.1	19	21.5	22	20	20
Concordia	82.86	19	92.03	17	1.51	19	1.9	14	19	19	15.5	17
Carolusberg	75.26	9	95.38	20	3.43	10	0.84	20	9.5	10	20	20
Danielskuil	82.12	18	90.26	16	2.23	15	2.91	12	16.5	17	14	14
Delportshoop	78.8	15	95.23	19	3.39	12	1.46	17	13.5	13	18	18
Sishen	78.75	14	77.55	7	1.59	17	0.69	22	15.5	16	14.5	16
Groenwater	91.54	21	98.46	22	0.59	20	0.77	21	20.5	20	21.5	22
Hotazel	66.25	8	56.47	3	5.47	7	11.39	2	7.5	7	2.5	2
Kathu	47.15	1	36.62	1	12.13	3	15.02	1	2	2	1	1
Kleinzee	56.99	2	43.53	2	18.82	1	5.29	8	1.5	1	5	5
Koingnaas	57.65	4	72.73	6	6.6	5	4.35	9	4.5	5	7.5	7
Komaggas	86.19	20	93.2	18	0.18	22	1.19	18	21	21	18	18
Lime Acres	57.06	3	67.53	5	7.96	4	9.94	3	3.5	3	4	3
Okiep	80.89	17	87.4	13	1.55	18	1.67	15	17.5	18	14	14
Port Nolloth	77.62	11	81.99	10	1.85	16	5.3	7	13.5	13	8.5	8
Postmansburg	79.12	16	88.46	15	2.24	14	3.76	10	15	15	12.5	11
Sanddrif	78.64	13	84.29	11	3.15	13	3.14	11	13	12	11	10
Ulco	60.45	5	84.55	12	17.2	2	5.41	6	3.5	3	9	9

4.7 OVERALL RANKING OF QUALITY OF LIFE ACCORDING TO THE COMPOSITE INDICATOR INDEX

The overall ranking of the composite indicator for human wellbeing and quality of life is shown in Table 4.12. The dimensions of education, housing and economic wellbeing (jobs/earnings) are combined to form a composite indicators ranking index, which ranks the 22 identified small mining towns from the best performing (rank 1) to the worst performing (rank 21). Campbell and Groenwater incidentally achieved the same average score and ranking.

Table 4.12 Overall ranking of towns according to human wellbeing and quality of life composite indicator index

Town	Education		HH Infrastructure		Jobs/Earnings		Average		Overall Rank	
	2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
Aggeneys	6	4	3	6	3	4	4	4.67	4	4
Alexander Bay	8	11	6	4	6	4	6.67	6.33	7	6
Barkly West	11	13	20	17	17	17	16	16	16	18
Blackrock	9	6	10	2	7	6	8.67	4.67	9	4
Campbell	22	20	19	22	22	21	21	21	21	21
Concordia	19	17	12	9	18	16	16.3	14	18	12
Carolusberg	10	20	8	11	10	10	9.33	13.7	10	11
Danielskuil	17	14	16	15	20	17	17.7	15.3	20	17
Delpportshoop	13	18	14	17	19	20	15.3	18.3	14	20
Sishen	16	16	17	15	16	11	16.3	14	18	12
Groenwater	20	22	22	19	21	22	21	21	21	21
Hotazel	7	2	9	12	8	6	8	6.67	8	8
Kathu	2	1	4	10	3	2	3	4.3	3	3
Kleinzee	1	5	1	1	2	3	1.33	3	1	1
Koingnaas	5	7	2	2	1	1	2.67	3.33	2	2
Komaggas	21	18	15	13	12	19	16	16.7	16	19
Lime Acres	3	3	7	7	5	9	5	6.33	5	6
Okiep	18	14	13	14	14	15	15	14.3	13	15
Port Nolloth	13	8	10	8	13	13	12	9.67	11	10
Postmansburg	15	11	18	21	14	13	15.7	15	15	16
Sanddrif	12	10	21	20	10	12	14.3	14	12	12
Ulco	3	9	5	5	9	6	5.67	6.67	6	8

It must be noted again that Kleinzee and Koingnaas which rank 1 and 2 respectively, have all but become ghost towns after the populations of both towns fell sharply to just over 700 in Kleinzee and 105 people in Koingnaas. This shows that the people who can afford to live there have enough resources to live there and their wellbeing and quality of life are of a high standard. This also shows that with mines operations leaving the area, people have moved away and now the need for further development is low because of the relatively high levels of wellbeing and quality of life for the few who remain.

The next section discusses the impact the mining industry has had on current levels of human wellbeing and quality of life.

CHAPTER 5: PERCEPTIONS OF SOCIO-ECONOMIC WELLBEING IN TWO MINING TOWNS IN THE NORTHERN CAPE

5.1 INTRODUCTION

In this chapter a basic profile of the current demographic, housing, employment and education levels of the two towns is analysed after which various stakeholders' perceptions of the level of socio-economic wellbeing is discussed. This entails an analysis of the various interviews held with key stakeholders and role players within the public and private spheres that regulate and control the mining industry and have the power to impact on the livelihoods of the people who work and live in these mining towns. The responses captured in the interviews give insight into the current climate of social and public development in these small mining towns and help us understand what is being done to help the communities out of the situations they find themselves in.

The decline of mining and the responses to this situation vary, and this is due to the varying circumstances in these areas of mining. A response to mine closure in an area near an economic node of a country may be different from the response to a mine closure in a frontier region. Also, perceptions on wellbeing may differ according to the stage in the mining life cycle the town finds itself in.

To help with comparisons when analysing mine closures, an overview of the broad responses by the various role players must be given. These role players include the company, the government and the communities affected. By doing this a broad pattern can be identified and comparisons between the responses from stakeholders in the case studies can be made

Responses were elicited by undertaking two case studies. The two towns were chosen according to the composite indicator index that was done by the researcher. Kathu was near the top of this ranking and Barkly West was near the bottom - Kathu ranked 3rd in this index and Barkly West ranked 18th out of a total of 22 towns (according to findings in table 4.12). The two towns are in relatively close proximity to each other; about 230km apart. They fall under different local municipalities as well as different district municipalities. Barkly West was known for its diamond mining and Kathu is well-known for iron ore mining.

The next section gives the current climate in these towns. This was achieved by using census data and interviews held with key stakeholders by the researcher.

5.2 BARKLY WEST

Barkly West is situated about 30 kilometres north-west of Kimberley. The town falls under the Frances Baard District Municipality and is governed by the Dikgatlong Local Municipality. The other two small mining towns within local municipal boundary are Ulco and Delpoortshoop, which you will find if you keep travelling east on the R31 coming from Kimberley. Barkly West is one of South Africa's oldest mining towns; it is where the first diamond was found and it was part of the first diamond rush, together with Kimberley, in the late 1860s. Barkly West is therefore no stranger to the boom of a mining rush and the problems associated with this phenomenon.

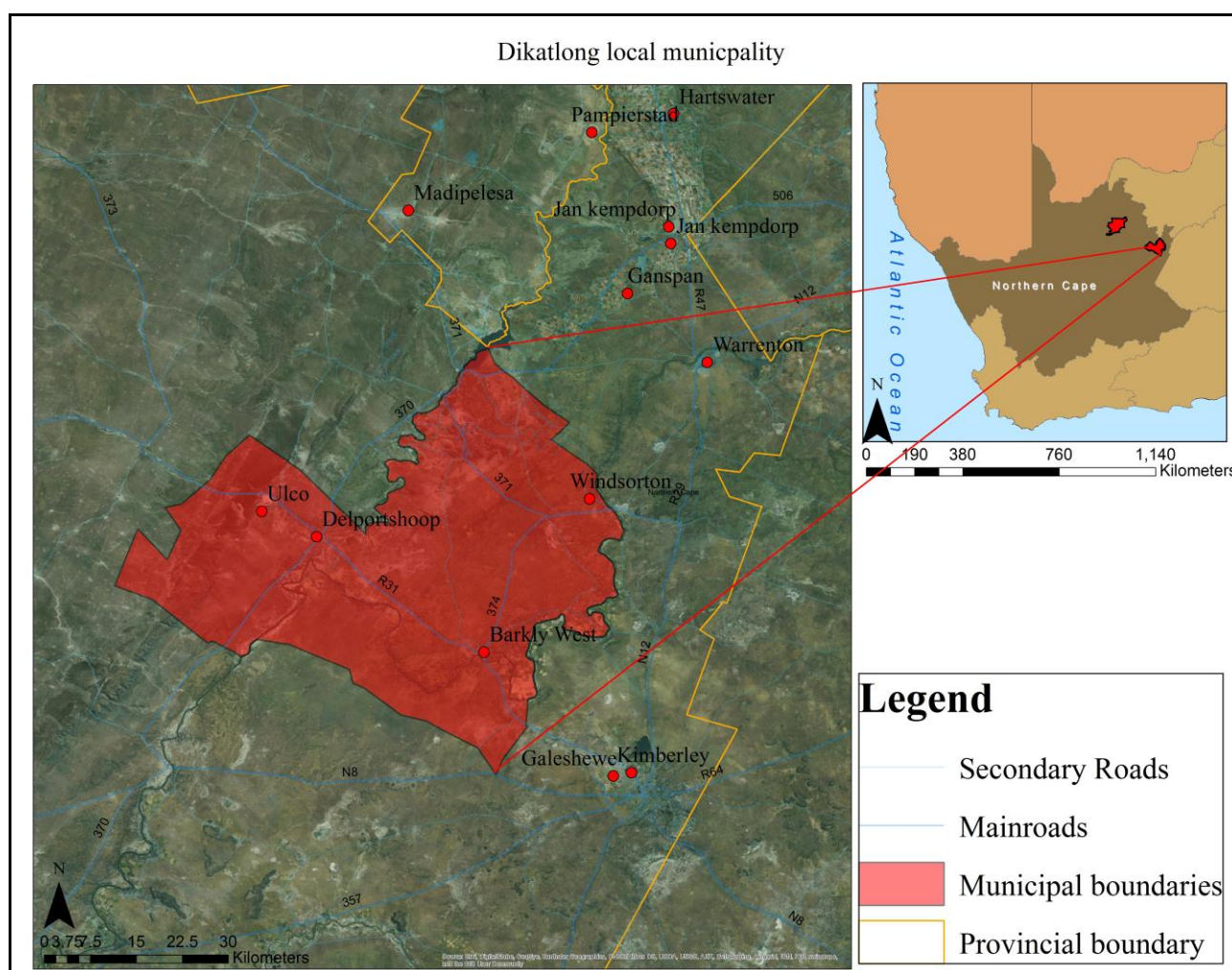


Figure 5.1 Location of Barkly West

Source: Author (2016)

Currently Barkly West is not as rich and flourishing as it was in the early 1900s. Mining in the area has declined, with Rockwell Diamonds being the last of the big internationally listed companies. Rockwell Diamonds finally sold the Klipdam mine, and moved operations to the Saxendrift mine at the Middle Orange River operations.

5.2.1 Profile of Barkly West

Barkly West scored at the lower end of the composite index ranking for all the small mining towns in the Northern Cape. Firstly, by looking at the population growth of the town, one can deduce that the population has fallen from just over 14 000 in 2001 people to just over 8200 people in 2011 (Figure 5.2). This exodus of people has had a knock-on effect on the workforce in the town, which has also declined dramatically by 70%, from just above 5000 in 2001 to under 1500 in 2011.

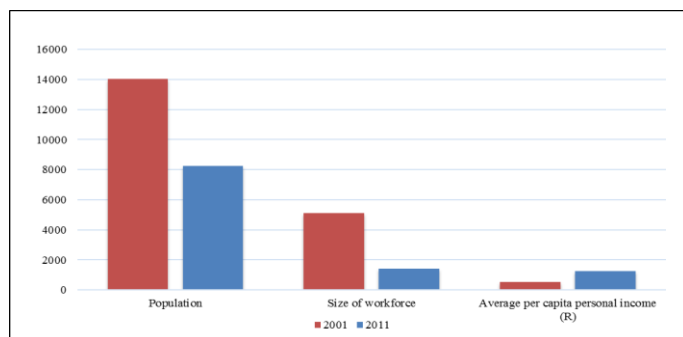


Figure 5.2 Population of Barkly West

Source: Author (2016)

When looking at the household infrastructure of the town, the mayor as well as the LED manager concurred that household infrastructure has improved. These statements can be corroborated by the census data. The census data indicates that the percentage of the population that living in informal housing has decreased by more than 50% in the ten-year census period. Due to the government building these houses, the access to basic facilities has also improved. This is evident by looking at Figure 5.3. More than 80% of the population have electricity in their homes and the figure of running water within the home has increased to above 60%.

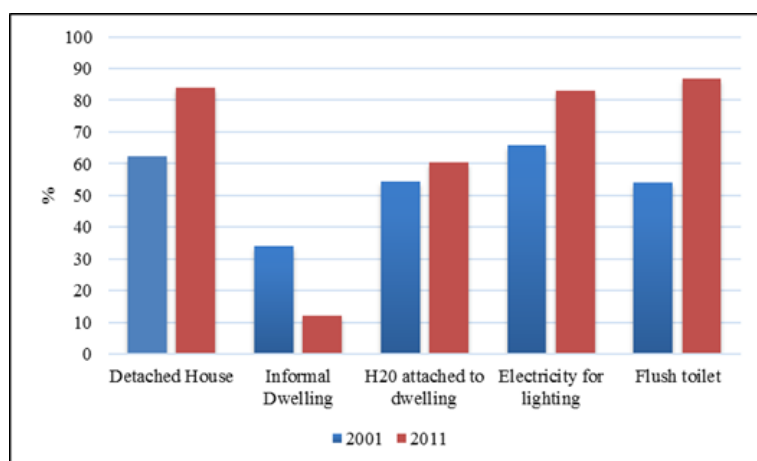


Figure 5.3 Household infrastructure of Barkly West

Source: Author (2016)

Toilet facilities have also improved from just above 40% in 2001 to 80% in 2011. Considerably more households have water and electricity connected to their homes. Furthermore, the demographics of

Barkly West have more or less stayed the same. The coloured population has declined by 2% and the white population by 6%, which can be seen as significant because the white population was already in the minority (see Figure 5.4). The black population in Barkly West has increased from 34% to just over 40%.

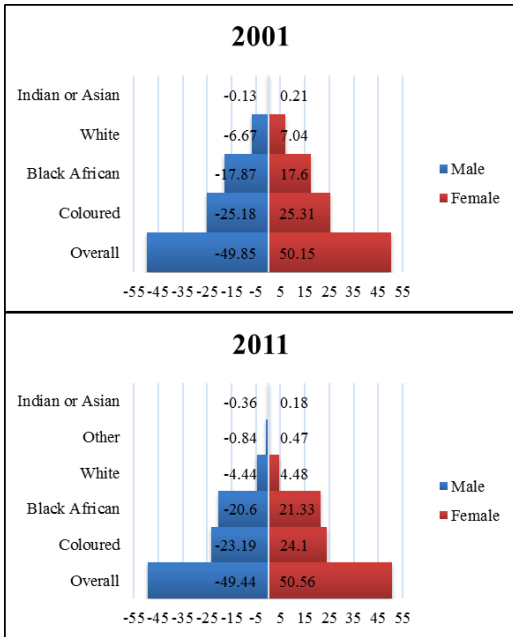


Figure 5.4 Race and gender change 2001 vs 2011

Figure 5.5 shows the age group compilation for males and female respectively. Barkly West has an even spread of the age groups between male and female, but the town has a young population with over 60% being below the age of 35.

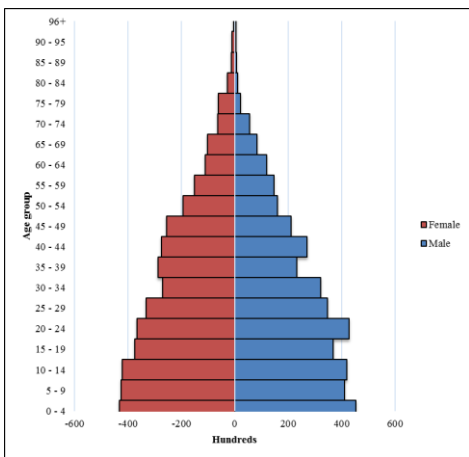


Figure 5.5 Age group pyramid of Barkly West 2011

Source: Author (2016)

Employment status in Barkly West is shown in figure 5.6. This figure shows the difference between gender as well as youth and adults who are employed. This indicates that the work force is dominated

by males between the ages of 36 and 65. For policy-makers this graph shows the lack of jobs for the youth, with 70% of the male youth not having jobs. The situation is even worse as far as females are concerned, with 80% of women between the age 15-35 being unemployed.

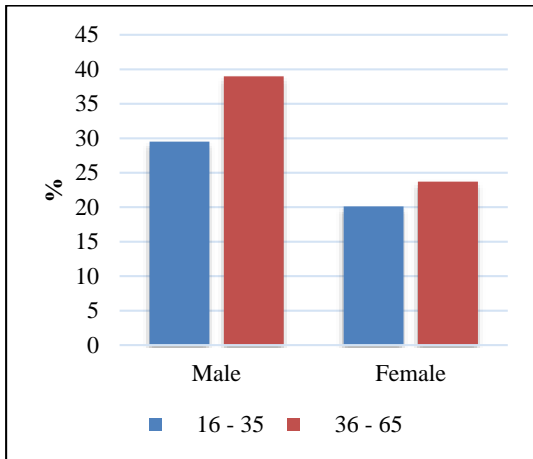


Figure 5.6 Youth employment status in Barkly West 2011 Source: (Author: 2016)

This problem of the unemployed can be linked to the lack of education skills of the youth. Figure 5.7 illustrates the level of education of the youth (15-35) and adults (36-64) respectively. The number of youth which have not completed high school is over 40%, with only 30% having matric as their highest qualification.

The adult population's level of education is worse than the youth, with more than 15% not even having completed primary school, and 20% of the adults having no schooling at all. 20% of the adult population has completed matric, which is also lower than the youth. This data suggests that the level of education in Barkly West is very low to say the least.

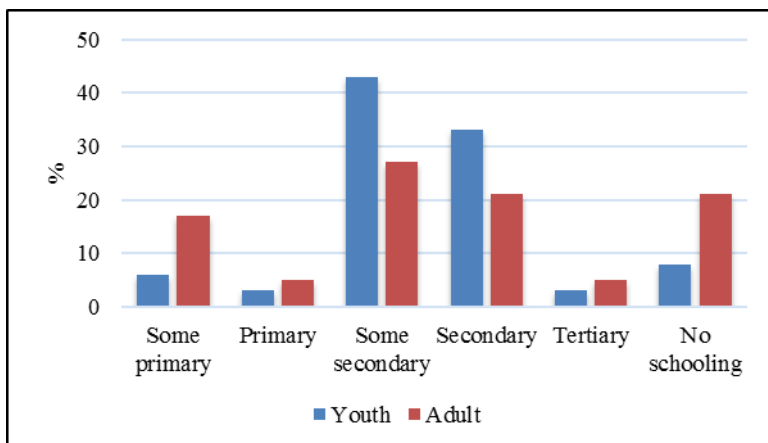


Figure 5.7 Level of youth and adult population of Barkly West 2011

Source: Author (2016)

Lastly, Figure 5.8 shows that 60 % of Barkly West is in the low income category, with low income households earning less than R76 400 per year. Still, almost 20% of the population report that they have no source of income.

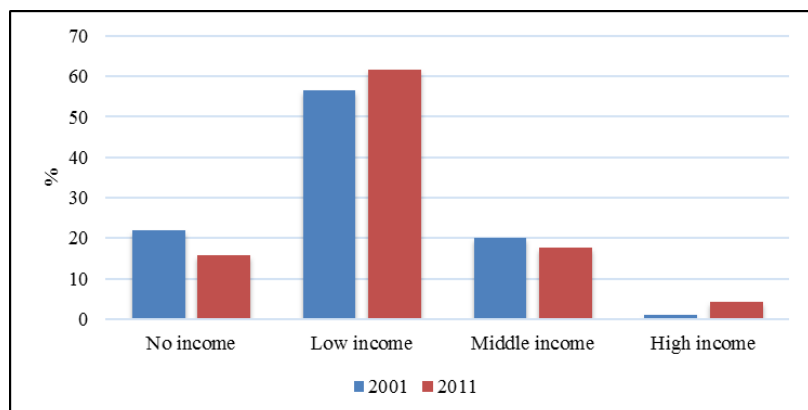


Figure 5.8 Level of household income per annum in Barkly West 2001 Source: Author (2016)

Taking all the data into account, one can see why Barkly West is at the bottom end of the composite indicator ranking of small mining towns in the Northern Cape. Barkly West has a big problem with youth unemployment due to lack of education and skills. It is difficult to gauge why the basic education level is so low because Barkly West has primary as well as high schools in the town. The other issue is that of female unemployment. The level of women employed is much lower than that of the males, which is an issue the government needs to address.

The next sub-section discusses the perceptions of stakeholders on the impact that mining has had on Barkly West. Keeping in mind the level of quality of life as discussed in this section, the perceptions of stakeholders will help to understand what the impacts of mining were and what the other outside factors were (such as the responses of government and the private sector who have a vested interest in the community), contributing to current low levels of development and quality of life.

5.2.2 Stakeholder perceptions on Barkly West

Semi-structured interviews were held with key stakeholders in the municipality. Appendix A shows the questions asked. These questions probed the various respondents on their perceptions of the impacts of mining on the community as well as the relationships between government and private enterprises, and the various responses from these entities to the development issues within Barkly West.

Table 5.1 identifies the interviews held with stakeholders in Barkly West. The researcher travelled to the Northern Cape for the interviews set up beforehand. Not all respondents the researcher wanted to interview responded to emails and telephone calls to set up interviews, and certain respondents were

not in the area when the researcher visited Barkly West. Other methods such as telephonic interviews and emails were also used.

Table 5.1 Stakeholders interviewed in Barkly West

Barkly West		
Date	Format	Stakeholder
24/8/2016	Face-to-face	LED Manager, Dikalong local municipality
24/8/2016	Face-to-face	Councillor, Mayor of Barkly West
20/8/2016	Email	Head of town planning, Frances Baard District Municipality
24/8/2016	Face-to-face	Manager mineral laws & environmental management, Rockwell Diamonds
24/8/2016	Email	Founder of Thabiso NGO
25/8/2016	Telephonically	Director, Die Barkly Wes kinder en gesinsorg vereniging
24/8/2016	Face-to-face	Manager, Queens Drankwinkel
24/8/2016	Face-to-face	Employee, Hoola-hoop Creche

The perceptions on how Barkly West has changed in the last 10 years was the starting point of all the interviews. The consensus was that Barkly West had extensive population growth over the last 10 years. The researcher found this confusing because of the data showing that the population had decreased considerably from 2001 to 2011 (Figure 5.1 above). This, however, does not mean that Barkly West has become more developed economically or socially; on the contrary. Concerning the population, one municipal respondent mentioned that the white population seemed to have diminished. He could not tell why the white population had moved from Barkly West, but his statement seems to be true with Figure 5.3 above (corroborating this statement) showing the percentage of the white population declining from 14% to below 10%. The response to the same question put to the mining company was also that Barkly West had expanded over the past 10 years, even though mining activities had diminished in the Barkly area. The respondent said that this expansion was not positive, aesthetically speaking, in the sense that the town looks dirty and gives the impression that service delivery is not able to cope with the problems associated (rubbish removal etc.) with the influx of people.

The mayor however commented that the municipality reacted positively to the influx and infrastructure development has been one of the main priorities of the municipality which has seen a major improvement in the 10-year census period. When asked why people choose to come stay in Barkly West and not Kimberley where there are more employment opportunities, the municipal official answered that Barkly West has a much shorter waiting list for government housing, as well as the recently built Prof ZK Mathews hospital that provides free healthcare for the population. Barkly West also has a primary as well as a high school which attract people. Regarding infrastructure, the mayor's claim that improvements in basic household infrastructure has been made, seems to be true (see Figure 5.2 above). The number of people living in informal housing has diminished from over 20% to 10% currently, with 80% of households living in detached housing with electricity and toilets in the homes.

The current feel in Barkly West is that the economy has moved away from mining as the main economic base in the area. Rockwell Diamond was the last listed company to mine in the area. The Klipdam mine at Holpan just outside Barkly West, which was previously owned by Rockwell Diamonds, is now being mined by a private entity but on a much smaller scale. When interviewing the company who no longer has any interests in Barkly West, the true nature of the relationship between the company and the local government came to the fore. The respondent who worked in the area when the mine was still operational, said that working with the municipality is very difficult, even though the social labour plans were agreed upon. These plans dictate the terms of the social responsibility which the mine has towards the community for a five-year period. These plans have to be adhered to otherwise the company can lose its rights to mine in the area. Where the problem arises, is that development is in a changing environment and projects which seem appropriate at the time of development of the social labour plan might not be important in three years' time. If the projects in the labour plan are not completed, the mine can be found to be non-compliant and its licence to mine can be taken away.

The problem lies in the red tape and difficulty in changing the social labour plan to cater for urgent issues as they arise. An example of this is when the mining company in Barkly West worked with the SAPS in upgrading a local community park. After the park was upgraded with new playground equipment and fencing around it, the park fell into disrepair within a year and equipment and fencing was stolen. This illustrates the ineffectiveness of a local municipality with regard to the management of facilities after projects are completed.

The respondents within the municipality also gives this feeling of inadequateness to manage a facility after it has been upgraded or built. One respondent within the municipality elaborated in this regard, referring to the building of a new library in Barkly West. When probed about inter-departmental

cooperation some respondents from the municipality answered that it is not the local government's responsibility to run and manage the library; it should come from provincial or national government. They simply do not have the funds. It must also be noted that the researcher really tried to get an interview or a response from the Prof ZK Mathews hospital to gauge how this facility is being run and what the state of inter-departmental cooperation is. Since the researcher felt that the management of this facility could be a good indicator of state cooperation.

Funding is a major problem in Barkly West. Respondents from the NGO sector corroborated the statement that the local municipality simply does not have the budget to provide social services such as after school care and projects to stimulate children and parents. The NGO also provides internet facilities to school children for project work, and also homework support. These projects are aimed at early childhood development and aim to prepare the children for primary school. This phase is important for children to succeed in primary school and hopefully finish matric. It is hoped that these interventions will have a knock-on effect and improve the overall education and skills levels within Barkly West.

When asking all the respondents about the mining situation and downscaling of the mining operations for the past fifteen years as well as what the impacts have been, many if not all the respondents mentioned that Barkly West's economy has moved into agriculture as a primary source of work for the community as a whole. The company cited was a big agriculture company called Wildeklawer which produces big revenue through the export of onions, potatoes and butternuts. According to the mayor and the LED manager, Wildeklawer employs more than 2000 people in the Barkly West area. The responses from local businesses to the question was that they had not really felt an impact of mine closure, while the manager of the SPAR (unplanned informal chat on 26/8/2016, in Barkly West) commented that business has actually picked up because the SPAR was only built seven years ago.

Rockwell Diamonds' response to the mine closure was that from the 400 people who worked at the site only five chose severance packages. The rest of the workforce chose to stay with the company and is currently employed at the Saxendrift mine. The company bus them in and out. Once at the mine, they stay and work on site for two weeks, after which they get bussed back home for a week off. This method of drive-in-drive-out (DIDO) has been in operation in Australia as discussed in the literature, and it seems to be a viable option in frontier regions such as the Northern Cape although it takes away the will for development because people do not remain at the site of the operation.

Concerning the IDP and SDF of the municipality, various shortcomings were mentioned as to why plans and frameworks did not work as well as intended. Various municipal officials commented that

the existing SDF was not aligned with the Northern Cape PSDF nor with SPLUMA. Data used in the SDF did not include the most recent data (2011). The current SDF was also compiled without complying to best practice norms. In addition, the framework was compiled before the current economic recession. The SDF also incorporated views and opinions on development of the community that was more than five years old. The municipality as well as Rockwell Diamonds commented that the current SDF was implemented inadequately and was not comprehensive enough. This means that various projects aimed at improving quality of life in Barkly West have not been successful and this reflects in the current status of the town in terms of the composite indicator index as well as the level of quality of life as previously shown by the researcher.

Various development issues came to the fore through the interviews. Some respondents stated that Barkly West showed apartheid settlement characteristics, and in many cases these characteristics have become more entrenched since 1994 (residential segregation, for example). Another problem which complicates development and eventual improvement of the quality of life of the residents is the climate. With the current drought, small scale agriculture becomes difficult because farming requires irrigation and Barkly West is situated in an arid region which compounds the problem. Even though Barkly West is situated on the Vaal River, due to recent dilution problems associated with the drought and the location of big cities, the quality of water for agriculture deteriorates every year.

To conclude, after taking into account all the responses and perceptions of key stakeholders, Barkly West seems to be in a dire situation and the municipality finds itself incapable of improving the level of quality of life for its residents. Without nearby mines such as the Afrisam owned mine in Ulco, and having to pay for service delivery, one can conclude that the municipality of Dikgatlong will struggle to provide basic services to its community. Also, even though the municipality claims that inter-departmental cooperation is working, it seems not to be the case if one reads between the lines this is not the case. It seems that each department does what that department seems fit to do and there is minimal streamlining of ideas to help the community.

It is also a fact that Dikgatlong Municipality is in debt and it is therefore difficult for the municipality to spend money on skills development for the youth; it is totally dependent on private sector mining companies to implement projects for this to happen. It can also be deduced that to a large extent the expanding agriculture sector is keeping the town alive. More investment from provincial and national government would be needed for small scale farming to flourish around Barkly West. One of the potential areas of development by the private sector that can be made a priority is the upgrading of the main street, which the researcher observed to be partially happening with the opening of a new

SPAR, and the redevelopment and upgrading of the petrol station. The main road is situated on the R31 which is the main thoroughfare from Kimberley, and has a lot of potential for small businesses.

From a quality of life perspective, the level of development of the towns in Dikgatlong municipality, and Barkly West is seen as the town with dominant economy in the area, is disconcerting. It was also found, after consulting the Dikagatlong SDF, that many projects and plans to solve quality of life issues have been proposed. The biggest problem is that most, if not all of these plans are still just proposals or are in the planning phase. Through the interviews and data, the researcher concludes that this is the main problem in Barkly West at the moment; there are plans on paper and in boardrooms, but very little observable implementation. The end result is that the level of quality of life in Barkly West remains low and is expected to become worse in the future.

5.3 KATHU

Kathu, known as the town under the trees, is also the iron ore capital of the Northern Cape. It is situated 240 km North-West of Kimberley. The other major town nearby are Kuruman (about 30 a minutes' drive away) which lies between Vryburg and Upington which are about 2 hours' drive either way. Figure 5.2 shows the location of Kathu in the Northern Cape. Kathu is governed by the Gamagara Local Municipality which falls under the jurisdiction of the John Taolo Gaetsewe District Municipality. Kathu is the economic base of the district.

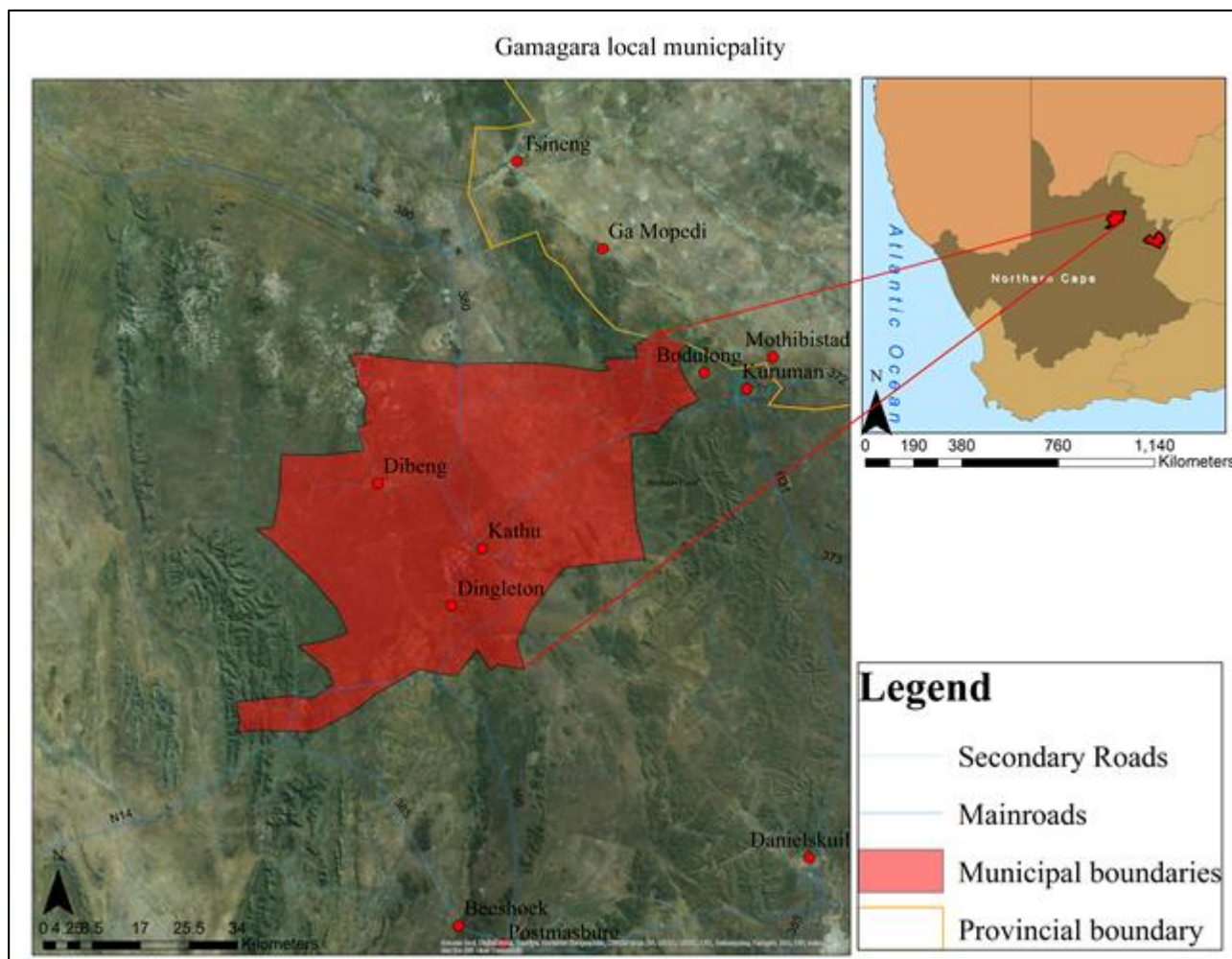


Figure 5.9 Location of Kathu

Source: Author (2016)

Kathu has a history of mining; the town was established because of Iscor's mining operations in the Kalahari. Municipal status was allocated to the town of Kathu in July 1979. Kathu is connected by rail (Dingleton Station) via Kimberley, as well as by road, to all the main centres namely Johannesburg, Bloemfontein, Windhoek and Cape Town, and has an airport with a tarmac runway. The municipality originally consisted of two towns, namely Sesheng and Kathu.

The Gamagara municipal area has experienced a lot of inward migration as a result of economic opportunities brought about by the exploration of iron ore and manganese deposits under the jurisdiction of the John Taolo District Municipality (Gamagara IDP 2016). The town of Kathu, which is the administrative and economic hub of the municipality, is in the centre of the Gamagara Mining Corridor. Because of this the town bears the brunt of the needs of both ends of the economic spectrum since it has to cater for the needs of the poor and the wealthy.

5.3.1 Profile of Kathu

This section provides a brief overview of the demographics, the wellbeing, and quality of life in Kathu which was ranked near the top of the composite indicator index. If you take Kleinzee and Koingnaas out of the equation, for reasons already explained, Kathu ranks at the top of the composite ranking. Figure 5.10 shows an increase in population from about 8000 in 2001 to almost 12 000 in 2011 people in 2011. There are various reasons why Kathu has had an influx of population, but the main reason is that mining operations expanded in the 10-year period, and people moved into Kathu because of the promise of work. The size of the workforce grew to 6000 people. As the workforce grew, so did the average per capita personal income from below R4000 per month to over R6000 per month in a ten-year period.

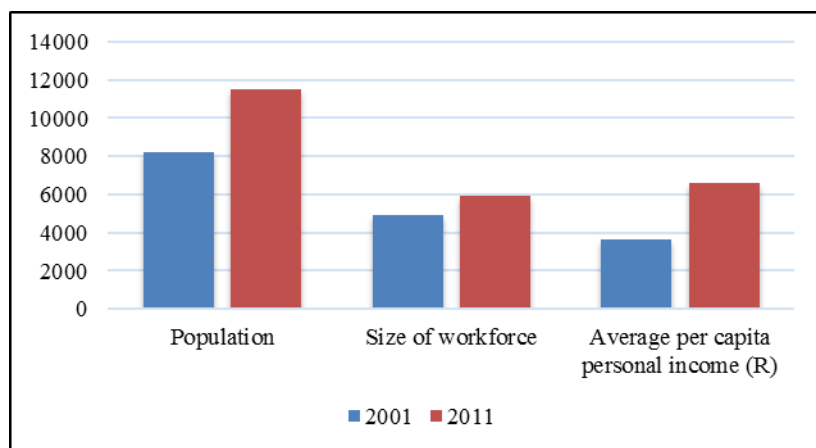


Figure 5.10 Population of Kathu

Source: Author (2016)

Household infrastructures in Kathu are of high quality, with most people living in detached housing with basic infrastructures. The level of rented houses is high with almost 50% of people choosing to rent, rather than buy.

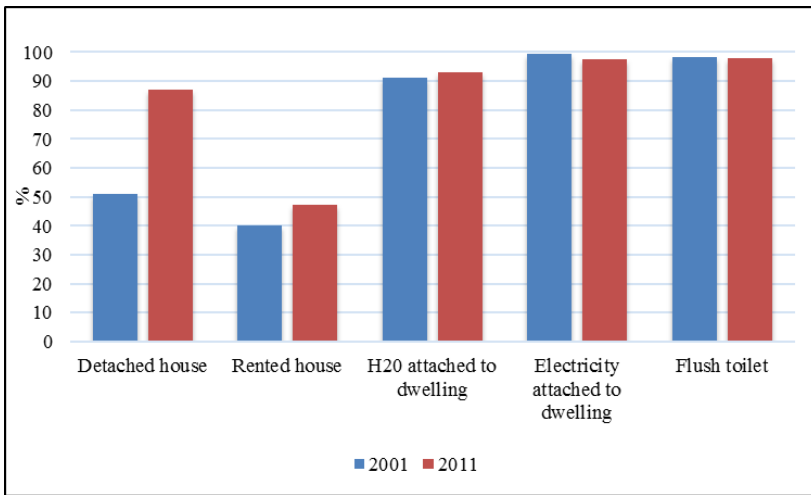


Figure 5.11 Household infrastructure of Kathu

Source: Author (2016)

The racial and gender make-up of Kathu has changed noticeably since 2011 (Figure 5.12). The white and black populations diminished by 8 % each, from both making up 46% of the population respectively in 2001, to 38% each in 2011. The coloured population, however, increased from 8% to now making up 22% of the population.

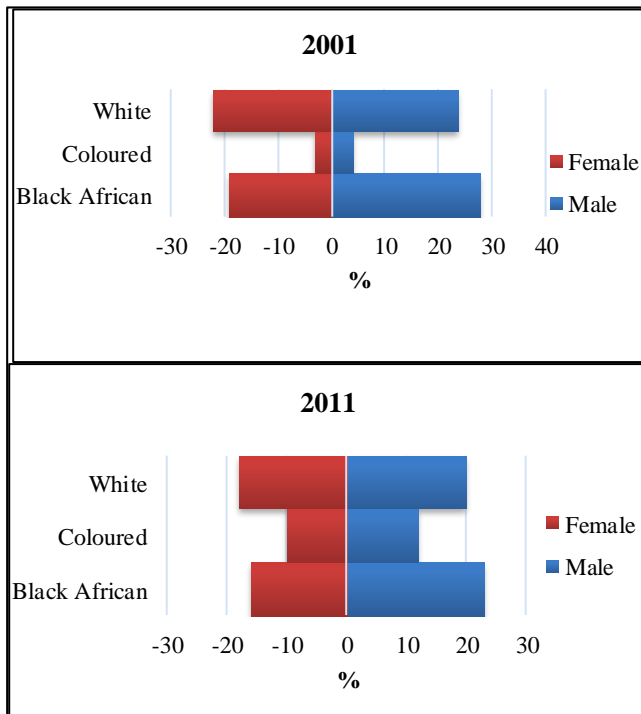


Figure 5.12 Race and gender Kathu 2001 vs 2011

Source: Author (2016)

The age pyramid (Figure 5.13) of Kathu shows most importantly that the largest group of the population is between 25-29 years old. This is worrying when you take into account the youth unemployment figures on South Africa as a whole. Kathu is experiencing the same problem. This is

confirmed by Figure 5.14, which shows that 50% of people in the 19-25 age category are unemployed or not economically active.

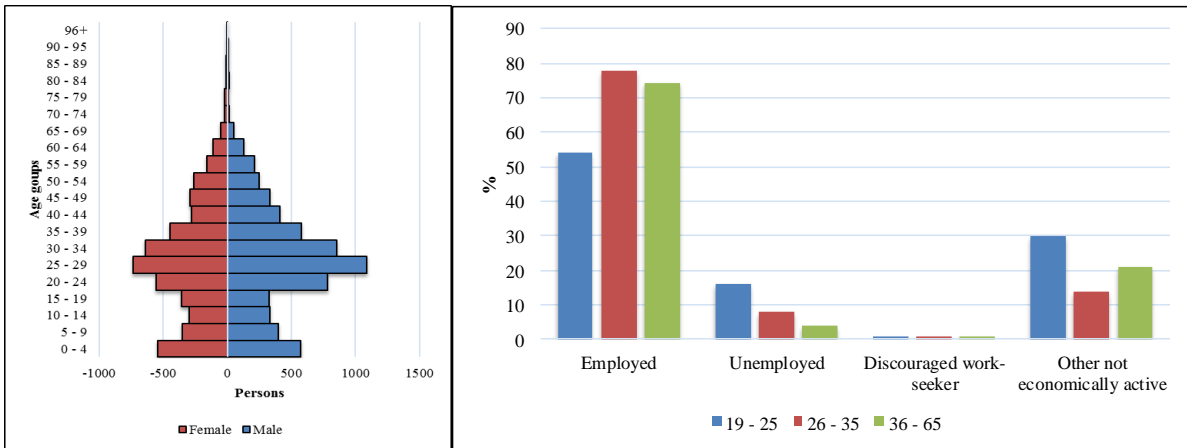


Figure 5.13 Age pyramid and employment by age group in Kathu 2011

Education levels of the youth show why more of them are possibly not employed. Only 40% of the people in the 20-25 bracket have completed matric and another 20% have tertiary education. The level of tertiary qualification seems to be higher for the people aged 30 and above (Figure 5.14). This may suggest that current access to higher education is not possible for the youth in Kathu. This is either due to lack of funding, not achieving the prerequisites to get into higher education institutions, or the fact that higher institutions are too far away from home to be viable for further studies.

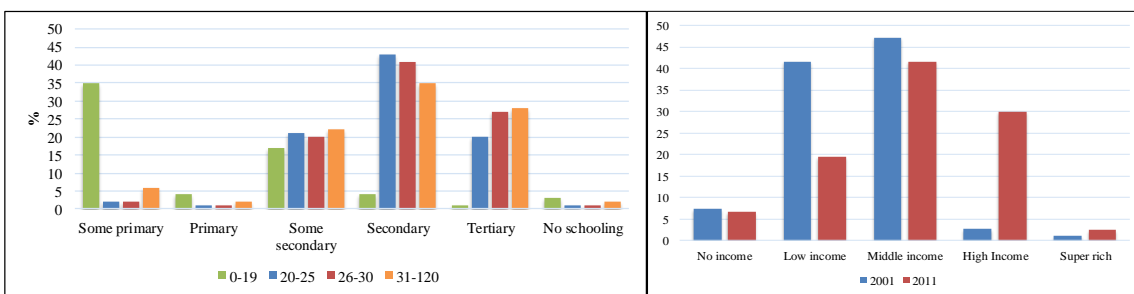


Figure 5.14 Highest education level per age group and household income in Kathu 2011

Source: Author (2016)

From these statistics it seems that the situation in Kathu is not as dire as in Barkly West, with inhabitants of Kathu clearly having a higher level of human wellbeing, and a better quality of life. The next section captures the perceptions of key stakeholders who gave their opinions about the current state of development, and to what extent the impact of mining and government have affected levels of wellbeing in Kathu.

5.3.2 Stakeholder perceptions of Kathu

One of the first observations the researcher made, was that when setting up the interviews with the stakeholders in Kathu, the responses were received in a short time. Compared with the time it took to set up interviews with stakeholder in Barkly West, the researcher came to the conclusion that people in Kathu were more willing and better organised when it came to setting up interviews, especially when liaising with municipal officials. One might argue that this already shows that the level of competency is better than in towns which scored low in the index. Table 5.2 shows the interviews held in Kathu.

Table 5.2 Interviews held in Kathu

Kathu		
Date	Format	Stakeholder
25/8/2016	Email	Director strategic services, Gamagara
25/8/2016	Face-to-face	LED Manager, Gamagara local municipality
26/8/2016	Face-to-face	Sidney Ntabo, sustainable development, Kumba resources
27/9/2016	Telephonically	Tanye Aucamps, HR manager, Kumba
24/8/2016	Face-to-face	Dr Louis Ellis, locum doctor at Kumba iron ore
25/8/2016	Face-to-face	LED officer, Gamagara
25/8/2016	Face-to-face	Manager, Sishen golf club
31/9/2016	Email	Councillor, Democratic Alliance
30/9/2016	Telephonically	Former head of the Kathu business chamber
25/8/2016	Face-to-face	CEO, Gamagara Development Fund

The general response from all the stakeholders was that over the last ten to fifteen years Kathu has changed for the better. This change was due to the steel industry booming in Kathu. One respondent commented that fifteen years ago Kathu was a small little mining town with a great golf course. The key drivers of the social and economic change were the big iron ore operations run by Anglo American in the form of Kumba Iron Ore. This company is the main change agent when it comes to economic investment in the community of Kathu. After the expansion of Kumba's operations, employment figures spiked and the town grew rapidly. One respondent working in the private sector responded that this rapid expansion as well as workers getting a lump sum bonus in 2011 resulted in a steep rise in house prices. The respondent also mentioned that many of the people who received bonuses did not invest wisely; he knows many who bought expensive pickup trucks and cars. He feels

that these people, based on income and living standard increases, believed that the resource boom would last forever.

With the growth in mining activities, the town of Kathu and adjacent townships have seen a growth in accommodation needs. Due to the high demand, rental prices have gone up leading to unaffordability and the mushrooming of illegal second dwellings (log homes in Kathu) and backyard shanties in Sesheng. To address this problem, the municipality will need to have a strong building inspectorate division and stringent law enforcement. There is also a need to develop affordable rental houses both in Kathu and Sesheng. One of the respondents in the private sector who has knowledge of the housing sector, commented that many of the shops in the newly built malls have closed down and their windows are papered up. Even a restaurant franchise had to close its doors after a year. He also commented that in the housing market a few years ago, houses easily sold for over a million Rand.

With the big demand and insufficient supply at the time, people had no choice but to pay those prices. Renting a house would easily cost around R30 000 a month. One respondent commented that she knows a person who bought a house for almost 2 million Rand when the housing market was booming, and now the bank values the house at around a half a million Rand. One respondent who lives in Kuruman recently invested with the prospect of attracting businessmen from a Spanish energy company who would rent these properties, while working at the big solar park being built just outside Kathu.

Moreover, three malls were built in quick succession, all this for a population of less than 15000. This can be seen as positive, but one respondent mentioned that if the researcher interviewed the stakeholder a few months earlier, some of the answers would be skewed. She mentioned this because of the price of steel having plummeted as well as Anglo American announcing that their prospects in China were bleak. This caused the company to decide that they have to let almost 4000 employees go. This has had a knock-on effect with the price of houses falling and many housing developments which was built because of the boom, not selling. This retrenchment can also cause many more stores in Kathu to close, with more people losing their jobs as a result.

Many of the officials at the Gamagara Municipality responded that the municipality has or is starting to plan for the problems of a one-industry town. The strategic services manager as well as the mayor commented that the municipality is driving development. The mayor saw this problem a while back, and commissioned a 2030 development plan that would enable the municipality to develop towns

independently from the mines. They also highlighted the fact that an industrial park is being built. This is the municipality saying that they know secondary industries are needed for the future development of Kathu.

When the researcher asked the question about inter-departmental cooperation in government, one respondent said that national government development plans are sometimes made without consulting local governments and this leads to problems. He mentioned that national government's relentless drive for renewable energy has been pushed at all costs and many solar power projects have popped up all over the Northern Cape. Although this 'solar corridor' implemented by government is a great initiative with loads of potential for creating jobs and clean power, the official mentioned that one big problem which has not been taken into account is that solar power panels need to be washed every three to six months to work effectively. The mayor commented that within the Gamagara municipality, they are therefore trying to stall these developments because of major water shortages.

If these projects continue on the scale that they are currently being developed at, they will place tremendous additional strain on the already strained water supply to the community. Continuing with the water theme, the manager at the Sishen golf club made a statement that although the golf club is a big tourist attraction, and they regularly have national golf tournaments throughout the year, keeping the golf course at the standards required to host these tournaments is becoming increasingly difficult with the shortage of water throughout the Northern Cape, if not the whole of South Africa.

Some respondents said that a negative impact is rapid growth itself. Many feel that rapid growth in such a small town is dangerous because of the town being vulnerable to changes in commodity prices. The respondent said Anglo wanted to expand too quickly and bought millions of Rands worth of additional heavy machinery and they were still mining the same amount of ore, not more. They feel that resources should have been used more sparingly to curb too rapid development in order to make sure that job creation in the town is sustainable so that people in the mining and secondary industries have job security. Many feel that Kathu's development path is going the same route as Oranjerivier Copper Company (Okiep and Carolusberg), and also Kleinzee and Koingnaas following the withdrawal of De Beers.

5.4 CONCLUSION

Responding to this, the mining company official mentioned a few impacts of mining and the significance thereof. One of the negative impacts was that of contractor hiring practices. These practices go against the mine's conscious effort to deliver the planned socio-economic benefits. Secondly, the high level of unemployed youth in Kathu makes the ongoing socio-political instability worse, which disrupts mining activities. Thirdly, the local municipality is unable to expand bulk service infrastructures to meet the demand. This is putting an effective moratorium on mining development in the Kathu area. Fourthly, the respondent concurs with previous comments and states that Kathu will become a ghost town when the Sishen mine starts scaling down, if diversification of the economy does not materialise.

From an NGO perspective, the biggest problem is that the Gamagara Development Fund GDF receives money from Kumba Iron Ore's BEE deal to fund projects to benefit the communities after the mines have left. But the Gamagara Development Fund's funding was solely derived from the BEE deal, and with steel doing so badly, the GDF last received aid three years ago. The NGO itself has retrenched people. Of twenty employees only four remain. On the question of the reuse of infrastructure, the respondent replied that many projects are just 'white elephants'. A computer centre that does not have internet connection, and a youth centre that stands empty and is being vandalised are just two examples. At the moment the NGO is struggling to survive, where a few years back they were able to provide ten bursaries a year. Now there are not even enough funds to keep the soup kitchen operational.

In his case study of the impact of minerals on the regional development of the Northern Cape, Hanekom (1976) refers to statements made by various parties concerning the development of the Northern Cape in the 1970's. In welcoming delegates to a regional development conference in 1968, the mayor of Springbok made a comment that the Namaqualand will take the place of the Witwatersrand gold mines and Springbok will replace Johannesburg as South Africa's resource capital (Hanekom 1976:2). In 1972 the author of a review article in the *Cape Argus* declared that the Northern Cape will develop into a second Witwatersrand (Hanekom 1976:2).

In 2016, exactly 50 years after Hanekom quoted these people in his doctoral thesis, we can safely declare that the mayor and the author of the article in the newspaper were rather bullish and over-optimistic, and that none of the statements made more than 50 years ago have since come true. Some of the towns may be in the same state of development than they were then, at best.

The situation of a specific town and the purpose for which it was established should be taken into account in the initial planning and development phases. Some towns were developed by the mine companies themselves for the sole purpose of housing the labour force, as is definitely the case in Kathu, established in 1979. The problem is that planners did not take into account that the resources will eventually run out and that the people who moved in might then be marooned. Socio-economic wellbeing then becomes an issue. It seems as if when people consider the short-term economic benefits they tend to forget about the future, and this applies to both the mining companies and local government. Local government seems to have minimal effect on the level of socio-economic wellbeing within these towns, for the pure reason that these towns are so dependent on the single economic sector that if there is a down-turn in the market in that sector or the resource is depleted, there is no way the local government has the capacity to permanently improve the socio-economic wellbeing of these towns. The question then arises whether these towns should be kept “alive”, or how it should be done. These questions will be addressed in the concluding chapter.

CHAPTER 6: SUMMARY OF FINDINGS AND RECOMMENDATIONS

In this final chapter the main findings are summarised and the objectives and limitations of the study are outlined and assessed. Recommendations are made about how government and the private sector can improve or sustain the level of human well-being and quality of life

6.1 REVIEW OF AIMS, OBJECTIVES AND RESULTS

Objective 1: To provide a literature review on the effects of mining on mining town communities as well as responses to these effects on human wellbeing and quality of life

To achieve this objective, theories, models, hypotheses and frameworks in the scholarly literature were examined. The literature extended beyond geography into journals, books, reports, theses and conference proceedings in the subject fields of the resource curse, boomtowns, resource dependence, corporate social responsibility, mine closures and downscaling as well as socio-economic well-being and quality of life. Recourse was made to appropriate literature to assist with the development of the research instruments and to find support or contradictions of the research findings. The literature produced evidence that a connection does exist between mining and the level of well-being within small mining towns. The literature revealed that different factors can influence the responses by government as well as the mining companies to the development conundrum in such isolated frontier towns. The very complex nature of development of communities is evident in the literature from scholars' constant seeking of new approaches to investigate why certain development trends seem to occur and under what specific circumstances these trends manifest themselves. Despite the long and continuing attention to the social and economic development of communities of mining towns and factors which influence the response from government and companies, no consensus has been reached on the factors that reliably address this complex issue of the relatively low level of human well-being and quality of life in single industry dependent communities.

Objective 2: Identify key indicators to determine social and economic wellbeing of the selected small mining towns

This objective was to investigate how and why certain indicators were chosen in certain frameworks to show the level of human well-being and quality of life. The OECD better life index (2011) was used as a framework for identifying possible dimensions and indicators which show the level of

human wellbeing and quality of life. Through the data available from census data, three of the dimensions could be portrayed using that data. These dimensions are economic living conditions, housing and household infrastructure and lastly education and skills. Under the dimension of economic well-being the following indicators were available to portray this dimension: household income per annum, individual monthly income, the amount of people employed and in which sector these people work. The second dimension housing and household infrastructure was supported by the type of dwelling, tenure status of this dwelling, access to water, access to flushing toilets, access to electricity and the size of the household. Lastly, the dimension of education was supported by the level of education of the workforce and the number of people with some form of completed tertiary education. These dimensions were then grouped together to form a composite indicator ranking index.

Objective 3: Use 2001 and 2011 Census data of the towns to show if there was a change in demographics and human wellbeing over a ten-year period, and try to identify the contributing factors

The overall demographics of the small mining towns have not changed very much over the 10-year census period between 2001 and 2011. Population growth has occurred but it is not more or less than the average for South Africa. This said, certain towns grew exponentially and some declined rather heavily. These cases were towns which experienced either new mining operations that opened (growth) or towns where operations were downscaled or closed (decline). What is apparent is that in these single industry towns the population figures can be directly linked to the stage of the mining cycle. Due to the lack of other industries and sectors which can absorb this over-supply of workforce (Barkly West, Kleinsee and Koingnaas, for example), people move to where there is a greater demand (Postmasburg, for example). The gender and race profiles suggest that the white males in these towns have moved away due to mines downscaling and mechanisation suppressing the demand for specialised and skilled labour. Through the analysis of the data it can be confirmed that government has fulfilled its promise of providing the communities with basic services and infrastructure, with high levels of people living in formal housing with basic services connected to the dwellings (water, flushing toilets and electricity).

One of the factors determining the level of employment is that job security is directly linked to the price of natural resources (iron ore, in the case of Kathu), which can force the mining companies to take austerity measures in order to still operate at a profit. This then suggests that resource dependent towns in frontier regions are economically at the mercy of global influences and fluctuations. This resource dependence directly causes the resource curse, as it is referred to in the literature. In most of

the towns economic development has actually declined, with more people earning low incomes (in contrast, towns like Kathu, which are in the boom phase of the mining cycle, show an upward curve in terms of household and individual income). However, corporate social responsibility programmes (social labour plans and the government working together with these companies) have improved the basic household infrastructure and basic services connected to these houses. The improvement in all these towns were markedly measurable in the ten-year measurement period. Lastly, education and skills levels in small mining towns in the Northern Cape are relatively low and priority should be given to enhancing the skills of the youth in order for them to be economically active.

Objective 4: Use Census data 2011 to rank each town in proportion to the level of wellbeing

Each dimension had indicators portraying that dimension. Firstly, towns were ranked in performance in each indicator, from best to worst. The indicators that fell in the same dimension were grouped together and the average rankings of these indicators were calculated in order to rank each town according to the dimension tally, thus the ranking is a composite indicator index. This index shows that the level of socio-economic wellbeing can be directly linked to the stage of the mining cycle the town finds itself in: the level of wellbeing is higher where the mining operation is still viable and profitable, whereas towns which experienced the boom-bust cycle were near the bottom of the ranking, except Kleinzee and Koingnaas. In the case of Kleinzee and Koingnaas this is due to the number of people who migrated away from the area, and the fact that the small remaining population is highly developed (housing and economically) and therefore can afford living there in such a manner that they are not dependent on the mining sector any longer.

Objective 5: Investigate the current climate of social and economic wellbeing in two case study towns (chosen from the composite indicator rankings)

Semi-structured interviews with key stakeholders were used to achieve the fifth objective. Face-to-face, telephonic as well as email interviews were held with respondents. The two towns chosen to use as case studies were derived from the composite indicators ranking of human wellbeing and quality of life. The two towns as case studies were Kathu, which ranked near the top, and Barkly West, which ranked near the bottom. The current climate of human wellbeing and quality of life can be directly linked to how well the mining operation in the area is doing. This becomes evident when one

compares the responses of the stakeholders in the two towns. Responses of the stakeholders in Kathu were positive, but with the recent fluctuations in the steel market they also issued a warning that development can come to a sudden halt at any given time if the mining company decided to downscale further. As far as Barkly West is concerned, the mining operations have long since diminished to smaller scale operations and the community is now dependent on other sectors of the economy, such as agriculture. Local government is still heavily dependent on these mining companies' social labour plans for investment within the communities to improve the level of human well-being and quality of life of all dimensions involved.

6.2 LIMITATIONS OF THE STUDY

The first apparent limitation of the study is that not all the dimensions of well-being and quality of life could be explored. This is due to the researcher not having access to certain data sets which measure these dimensions. The census data sets of 2011 and 2001 were also done on different scales, with 2001 data not going down to small place level. The researcher had to group together wards in order to get the 2001 data on the same level as the 2011 data. It is not known how Statistics SA precisely group together to get the results.

The scale of the operation needed to conduct surveys for each of the dimensions is immense and would need a vast amount of manpower and money to conduct. Future research in the dimensions of community and social connections, environmental quality, governance, health status, personal security and safety, work and life balance and lastly the subjective well-being of these 22 small mining towns would give a more accurate reflection of the overall level of well-being and the quality of life.

The remoteness of the towns was another limitation and not much general research on these indicators has been done which the researcher could use to put into the index. The dimensions used in this study to portray human well-being and quality of life are very objective. The researcher feels that for future research, a more subjective approach could be implemented to combine with the objective dimensions to get a better balance in the index. Some studies are more objective and others more subjective, but in recent times well-being and quality of life studies seem to follow a more balanced approach.

Another limitation concerns the age of the census data. The latest data is that of 2011 and the next census is only in 2021. The latest community profiles are also not on a small town level. Future research would be recommended with more up-to-date data, especially considering the down scaling

and mine closures since 2011. It would be of value as far as assessing the future impact of the recent drop in the price of steel on the town of Kathu is concerned.

Concerning the qualitative data, some of the respondents misinterpreted the questions or could not answer the questions as the researcher envisaged. Some respondents' perceptions and opinions were therefore considered to be more credible than those of others. Many of the respondents were out of town when the researcher left for the field work. The researcher tried to contact many people via telephone or email, but to no avail.

6.3 IMPLICATIONS AND RECOMMENDATIONS

Local communities, governments, mining companies, and other stakeholders have a variety of instruments to choose from to mitigate the social costs of mine closure. Labour market interventions can be a saving grace for workers after a mine has downscaled or closed. These interventions include the provision of severance payments, retraining schemes, and voluntary redundancy schemes. These instruments are mostly used by governments in the case of the restructuring of state-owned mines, but they are increasingly of interest to private mining companies (World Bank & IFC 2002). The companies may decide to play an active role in any of these arrangements as a partner of governments in mine closures or downscaling. In the case of urban communities, support for new business development and micro-enterprise financing can be very important. When lump sums are paid out to workers, training programmes can help them to start small businesses rather than spend the money on consumption.

As in the case of environmental issues at mine closure, it is imperative to set funds aside early to finance social mitigation measures. Such funds can derive from the central government's income from mining. They can also take the form of other types of contributions, made directly by the company or set aside by local government during times of high economic activity.

The research in this study adds value to the scholarship on human well-being and quality of life in mining communities in frontier regions. The findings of this research support the argument that the resource curse exists and is due to frontier regions being resource dependent, thus making the towns vulnerable to the problems of being a one industry or sector economy. Furthermore, mining companies have a direct impact on the communities which work for them, but it was found that a partnership with local government is important for social and economic developments to have the intended effect on improving the socio-economic well-being of these communities. Levels of socio-economic well-being seem to fluctuate with the life cycle of the mine, and no cases were found were

a town flourished after mine downscaling or closure. At present there seems to be no answer to the question what needs to be done as far as the future of a small mining town is concerned after the mining operations have come to an end. With the towns in the Northern Cape being so remote, expenditure on tourism seems to be futile, and investment in agriculture is a risk because the current drought compounds the issue of water scarcity and quality. The researcher feels that perhaps the issue is not to develop these towns, but rather to move to where the resources are and make use of the drive-in-and-drive-out method of providing labour at these sites. People can then move to nodes of economic activity, stay there permanently, and spend their money in that economy to help develop an area which has the potential to survive after the resources have been extracted.

6.4 FINAL QUESTIONS AND SUBJECT MATTER FOR FUTURE RESEARCH

It is in the nature of a debate and research to be ongoing and in this respect any research project, in the end, has its limitations. Unanswered questions and issues not raised become the subject matter for future research, and in the case of this study the situation is no different.

In the case of this research report (new) questions or concerns of a more general nature will no doubt be raised, and in this final paragraph the researcher wishes to provide some comments as far as at least three possible questions are concerned without attempting to provide “final answers”. The first two questions relate to the literature review, and the third one to the practical value of the research output. These three questions can be formulated as follows.

Question 1: South Africa is a developing country in many respects, and why was some literature on the socio-economic wellbeing of small mining towns in other developing countries not included in the literature review?

Question 2: Why was the literature not critically analysed in depth in an attempt to identify possible shortcomings – contradictions, hidden and/or unjustified assumptions, conclusions based on insufficient or inappropriate data, etcetera?

Question 3: Of what practical value is this research report? Can this document in some way be used by mining companies and/or local governments to attend to the problem of the socio-economic wellbeing of resource dependent small mining towns in the Northern Cape? To put the question in a crude form: So what?

These are important questions and the researcher wishes to respond against the background of the overall aim of the research. As stated at the outset in section 1.2, the rationale behind the decision to research the socio-economic wellbeing of people in small mining towns in the Northern Cape “is to assist interested parties in identifying the pitfalls of the extractive industry, especially the social and economic impacts on people who physically work and live in the areas where mineral extractions occur”. The important word here is “identifying”, and the five modest objectives of the research were formulated in accordance with this rationale, which is also the overall aim.

This aim is also reflected in the title of this report: “The socio-economic wellbeing of small mining towns in the Northern Cape”. It is a simple, neutral statement, even though it creates the expectation that the researcher suspects that there might be a problem. To attend to a problem one first needs to determine that there is, in fact, a problem, and understand what the problem is. In the final paragraph of the previous section the researcher concludes that a problem does in fact exist:

“The findings of this research support the argument that the resource curse exists and is due to frontier regions being resource dependent thus making the towns vulnerable to the problems of being a one industry or sector economy.”

As far as question 1 above is concerned, the researcher is also of the opinion that too much attention to literature on the problems related to the resource curse in developing countries, where the problems are still developing, as it were, would have diverted attention from the overall aim and would have directed the research onto a side-track. The problems related to the resource curse in countries like Australia and the United States have manifested themselves more fully in these developed countries and the research literature is voluminous.

The same applies to question 2. An in-depth critical analysis of the existing literature is exactly that. It is in the nature of research that theories and concepts are developed and refined (and sometimes rejected) on an on-going basis, but progress made in this regard always relates to the central concepts in a specific field of study. The researcher concentrated on these central concepts in order to meet the more modest overall aim of the study. This does not mean, however, that the literature on the mining industry in developing countries and a critical review of existing literature are not important. On the contrary, and the researcher will return to this issue at the end of the section.

Having determined that there might be a problem, the next step is to acknowledge that the problem is serious enough to warrant serious attention. According to the 2011 Census the Northern Cape has a total population of 1.1 million. According to the same Census, 113 000 of those people reside in the small mining towns, constituting 10% of the total population in that province. These people are vulnerable to the problems associated with one industry economies, and the researcher would suggest that 10% is a large enough percentage to warrant urgent attention to the problem in the form of further in-depth research and practical measures emanating from that research being implemented.

However, the last comprehensive and in-depth study of the mining industry in the Northern Cape was that by Hanekom (1976), 50 years ago. This research is outdated. New concepts and theories have been developed since then, apart from the fact that the South African political and economic landscapes have also changed dramatically. Some research on isolated aspects of the problem has been done since 1976, but reports concentrating on isolated aspects of the problem and published in academic journals and newspapers at infrequent periods hardly constitutes serious research.

But acknowledging a problem is simply the first step in trying to solve it in a practical way. A final question therefore arises: What do we need to do in order to tackle the problems associated with the resource curse and improve the socio-economic wellbeing of small mining towns in the Northern Cape? At least five things.

Firstly, we need to find the money to assemble a qualified research team consisting of academics and fieldworkers to integrate a comprehensive literature review with data collected and interviews conducted with stakeholders in frontier regions. We need the best brains in the business to be on board. The costs involved might be substantial but monetary considerations should always be subordinate to the livelihoods and wellbeing of more than 100 000 people.

Secondly, a much more in-depth and comprehensive literature review than the one conducted in this study should be undertaken, and literature relating to the situation in the mining industry in developing countries - for example Littlewood (2004), Hammond (2011) and Acquah & Boateng (2000) – should be included.

Thirdly, a critical analysis of the existing literature and theoretical frameworks should be undertaken in order to formulate the “best” theory at present. Within this framework, clear hypotheses should be formulated and then put to the test using the data collected and the fieldwork undertaken. Without

this, the research will lack direction and the money spent on the costly exercise of such a research project will be money down the drain.

Fourthly, the general Corporate Social Responsibility (CSR) policies, and also the specific Social and Labour Plans (SLP's) developed by mining companies operating in the study area since the promulgation of the Mineral and Petroleum Resources Development Act, 2002 need to be reviewed, summarised and assessed. This is a vital component of research aimed at being of practical use to stakeholders since it is only against the background of existing policies and plans that (new) recommendations can be made.

Finally: Two reports need to be published after the completion of the research. The first one needs to be a comprehensive academic report of the highest order in order to establish the quality of the work undertaken, the soundness of the conclusions reached, and the validity of the recommendations made. This will enhance the credibility of the whole undertaking and promote confidence in the research findings.

However, stakeholders in a position to take decisions affecting the lives of others do not necessarily have the time and/or inclination to scrutinize an academic treatise in search of practical proposals formulated in terms which most people can understand, and for this reason a companion publication based on a condensed version of the more academic one should be available. This "manual" or "workbook" could then be used by stakeholders to assess their own efforts as far as improving the socio-economic wellbeing of small mining towns in the Northern Cape is concerned.

The researcher grants that the research project briefly outlined above is quite an ambitious one and that it will not get off the ground if there is no will to do so. However, a research project with some of the features proposed above needs to be undertaken if we are serious about solving the problem. Should the research reported on in this thesis in some way inspire someone to embark on, or at least assist in such an undertaking, the overall aim of this study as outlined in section 1.2 would have been achieved in a seriously significant way. That would be first prize, of course.

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PERSONAL COMMUNICATIONS

CEO 2016. Gamagara Development Fund. Kathu. Interview on 25/8/2016 about impact of mining on Kathu.

Councillor 2016a. Democratic Alliance. Kathu. Email on 31/9/2016 about impact of mining on Kathu

Councillor 2016b. Mayor of Barkly West. Barkly West. Interview on 24/8/2016 about impact of mining on Barkly West.

Director 2016a. Die Barkly West kinder en gesinsorg vereniging. Barkly West. Telephone interview on 25/8/2016 about impact of mining on Barkly West.

Director 2016b. Strategic services Gamagara Municipality. Kathu. Email on 25/8/2016 about impact of mining on Kathu.

Employee 2016. Hoola-Hoop Creche. Barkly West. Interview on 24/8/2016 about impact of mining on Barkly West.

Dr Louis Ellis 2016. Locum doctor at Kumba Iron Ore. Kuruman. Interview on 24/8/2016 about impact of mining on Kathu.

Former head 2016. Kathu busniness chamber. Kathu. Telephonic interview on 30/9/2016 about impact of mining on Kathu.

Founder 2016. Thabiso NGO. Barkly West. Email on 1/9/2016 about impact of mining on Barkly West.

Head 2016. Town Planning Frances Baard District Municipality. Barkly West. Email on 20/8/2016 about impact of mining on Barkly West.

LED manager 2016a. Dikgatlong local municipality. Barkly West. Interview on 24/8/2016 about impact of mining on Barkly West.

LED manager 2016b. Gamagara local municipality. Kathu Interview on 25/8/2016 about impact of mining on Kathu.

Manager 2016a. Mineral laws and environmental management, Rockwell Diamonds. Kimberley. Interview on 24/8/2016 about impact of mining on Barkly West.

Manager 2016b. Queens Drankwinkel. Barkly West. Interview on 24/8/2016 about impact of mining on Barkly West.

Manager 2016c. Sishen golf club. Kathu. Interview on 25/8/2016 about impact of mining on Kathu.

LED officer. Gamagara local municipality. Interview on 25/8/2016 about impact of mining on Kathu.

Sidney Ntabo 2016. Sustainable development, Anglo American. Kathu. Interview on 26/8/2016 about impact of mining on Kathu.

Tanye Aucamps 2016. HR manager, Anglo American. Kathu. Telephonic interview on 1/10/2016 about the impact of mining on Kathu.

APPENDICES

APPENDIX A: SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE

A semi-structured approach was guided by the following questions:

1. How do you perceive Kathu/Barkly to have changed in the past five to eight years? What drove this change? As regards this change, what would you consider to be positive / negative / neutral?
 - (a) Nature / scale of change
 - (b) Key drivers / causal factors and who has been responsible for these
 - (c) Positive
 - (d) Negative

(It is important to probe for the required empirical evidence related to the above questions.)

2. (a) How did you / your organisation react to (a) the positive and (b) the negative aspects?
(b) How appropriate were the reactions of the other role players (for example the municipality, the mines, the private sector, the NGOs)?
3. How effective has the municipality been in dealing with both the positive and the negative impacts?
4. What is/are the mine/s doing to deal with the positive and the negative impacts? Do you believe these responses to be appropriate and sufficient? What recommendations would you make to the mine/s in this respect?
5. If the mine/s downscale or close, how, in your opinion, will this impact on (a) the mining community in Kathu/Barkly West, (b) business in general; and (c) the municipality?
6. In the provision of services, infrastructure and social amenities, what consideration has thought been given to the implications of mine downscaling and the use or reuse of infrastructure after such downscaling?
7. How is the municipal strategic plan being implemented, updated and disseminated (IDP/SDF)? How is this integrated with the mines' social and labour plans? Probe.
8. For municipal interviews only: To what extent is there a co-ordinated process to integrate service delivery by or of the various government departments?

9. Bearing in mind the potential obsolescence of infrastructure, to what extent are both civil and social infrastructure being created so as to 'keep up' with demand and to develop? (i.e., is the spatial planning in terms of the location and linkages to the rest of the town of amenities for example crèches/ schools/ clinics, etc., such that new uses can in future be assigned to them?)

