# Evaluating the effectiveness of a Performance Management System to enhance sustainable development: a case study of Boikhutsong

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# DEDICATION

This dissertation is dedicated to Daan Joubert (12 October 1930 – 17 August 2017). You never had the opportunity to further your studies and therefore took a lot of pride in the education of your children and grandchildren. I promised to make you proud, hence I will add another graduation photo to your wall.

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# ABSTRACT

The Constitution (1996) of South Africa grants everyone the right to housing and services such as water, healthcare and education, but South Africa faces serious challenges in ensuring the provision of services to especially rural communities to enable sustainable development. Where development has been poor, citizens have protested, particularly those residing in rural settlements. In 2013, the frustration of the community of Boikhutsong led to violent and illegal protests during which residents barricaded the road between Ventersdorp and Rustenburg. Despite the employment of mitigation measures, there have been numerous illegal protests in rural areas about the absence of sustained development.

International organisations such as the OECD recommend the application of indicators to monitor sustainable development. In South Africa, the Municipal Systems Act (2000) and the White Paper on Local Government (1998) advocate the use of an Organisational Performance Management System with indicators to ensure the development of sustainable human settlements by local governments. Boikhutsong falls within the domain of the Ventersdorp Local Municipality and this research project studies whether the Performance Management System used by the Municipality is effective in ensuring sustainable development of Boikhutsong. Employing a mixed method research methodology, a qualitative approach was used to investigate the knowledge and awareness of Ventersdorp municipal officials concerning the case study area (Boikhutsong) and their use of a Performance Management System to ensure sustainable development in Boikhutsong. Further to this, quantitative methods were engaged in order to examine the municipality's performance in service delivery by appropriately weighting data collected from existing sources.

The challenges for Boikhutsong as identified by municipal officials include the provision of water, electricity, sanitation, transportation and good governance. This correlates well with the national community survey conducted by Stats SA in 2016. However, there are insufficient reliable and verifiable data related to these challenges in the Ventersdorp Municipal documents. Results of the quantitative study indicate that Boikhutsong lags behind all other areas included in the comparative analysis. This suggests that the Performance Management System of the Ventersdorp Local Municipality cannot be regarded as an effective tool in ensuring sustainable development within its rural areas.

The results of this study indicate that improvements are needed in the performance management systems of some local governments. It is recommended that good governance and strong public participation be included in Municipal Performance Management Systems to render them more effective tools in ensuring sustainable development within rural areas.

## OPSOMMING

Die Grondwet van Suid-Afrika (1996) bied aan almal die reg op behuising en dienste soos water, gesondheidsorg en onderwys, maar Suid-Afrika staar ernstige uitdagings in die gesig om seker te maak dat dienste in veral plattelandse gebiede gelewer word op so ‘n wyse dat dit volhoubare ontwikkeling moontlik maak. Waar ontwikkeling gebrekkig was, het burgers geprotesteer, veral diegene wat in plattelandse gebiede woon. In 2013 het die frustrasies van die gemeenskap van Boikhutsong gelei tot hewige en onwettige proteste waartydens die inwoners die pad tussen Ventersdorp en Rustenburg geblokkeer het. Ten spyte van die toepassing van mitigerende maatreëls was daar verskeie onwettige proteste in plattelandse gebiede rakende die afwesigheid van volhoubare ontwikkeling.

Internasionale organisasies soos die OESO beveel die gebruik van indikatore aan om volhoubare ontwikkeling te moniteer. In Suid-Afrika ondersteun die Wet op Munisipale Stelsels (2000) en die Witskrif oor Plaaslike Regering (1998) die gebruik van ‘n Organisatoriese Prestasiebestuurstelsel om te verseker dat die ontwikkeling van volhoubare mense-nedersettings deur munisipaliteite gedoen word. Boikhutsong val binne die domein van die Ventersdorpse Plaaslike Owerheid en die doel van hierdie navorsingsprojek is om te bepaal of die Prestasiebestuurstelsel effektief is vir volhoubare ontwikkeling in Boikhutsong. Deur die toepassing van ‘n gemengde metode navorsingsmetodologie, is ‘n kwalitatiewe benadering eerstens gebruik om die kennis en bewustheid van die Ventersdorpse amptenary rakende die gevallestudie-area (Boikhutsong) te bepaal, sowel as hulle gebruik van die Prestasiebestuurstelsel om volhoubare ontwikkeling te verseker. Daarbenewens is kwantitatiewe metodes aangewend om die munisipaliteit se prestasie in dienslewering te ondersoek, deur toepaslike geweegde data te versamel vanuit bestaande bronne.

Die uitdagings vir Boikhutsong soos deur die amptenary geïdentifiseer sluit die voorsiening van water, elektrisiteit, sanitasie, vervoer en goeie bestuur in. Hierdie korrelleer goed met die nasionale gemeenskapsopname wat in 2016 deur Stats SA gedoen is. Daar is egter nie genoeg betroubare en verifieerbare data wat verband hou met hierdie uitdagings in Ventersdorp se munisipale dokumentasie beskikbaar nie. Dit suggereer dat die Prestasiebestuurstelsel van die Ventersdorpse Plaaslike Munisipaliteit nie beskou kan word as ‘n effektiewe aanduider om volhoubare ontwikkeling in hierdie plattelandse gebied te verseker nie. Die resultate van hierdie studie dui aan dat verbeteringe nodig is in die Prestasiebestuurstelsels van sommige plaaslike regerings. Dit word aanbeveel dat goeie oorsig en sterk publieke deelname ingesluit moet word in die Munisipale Prestasiebestuurstelsels in plattelandse gebiede.

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| | |
|---|---|
| BNG | Breaking New Ground |
| CASS | Chinese Academy of Social Science |
| CEROI | Cities Environment Reporting on the Internet |
| CoGTA | Cooperative Government and Traditional Affairs |
| CPA | Community Property Association |
| CSD | Commission on Sustainable Development |
| CSIR | Council of Scientific and Industrial Research |
| DDLGH | Department of Development Local Government and Housing |
| DRDLR | Department of Rural Development and Land Reform |
| DRKKDM | Dr Kenneth Kaunda District Municipality |
| EA | Enumeration Area |
| ECP | European Citizens' Panel |
| EFA | Education for All |
| EIP | Environmental Implementation Plan |
| EU | European Union |
| FAO | Food and Agricultural Organisation |
| GDP | Gross Domestic Product |
| GNI | Gross National Income |
| GP | Gauteng Province |
| HSRC | Human Sciences Research Council |
| IDP | Integrated Development Plan |
| IFAD | International Fund for Agriculture Development |
| IN | Intermediate |
| IPPC | Intergovernmental Panel on Climate Change |
| IISD | International Institute for Sustainable Development |
| ISRDS | Integrated Sustainable Rural Development Strategy |
| KPA | Key Performance Area |

| | |
|---|---|
| KPI | Key Performance Indicator |
| LED | Local Economic Development |
| MFMA | Municipal Finance Management Act (56 of 2003) |
| MIG | Municipal Infrastructure Grant |
| MPPMR | Municipal Planning and Performance Management Regulations of 2001 |
| MSA | Municipal Systems Act (32 of 2000) |
| NC | Northern Cape |
| NDP | National Development Plan |
| NKPA | National Key Performance Areas |
| NKPI | National Key Performance Indicators |
| NPMAC | National Performance Management Advisory Commission |
| NSDP | National Spatial Development Perspective |
| NW | North West |
| NWU | North-West University |
| OECD | Organisation for Economic Cooperation and Development |
| OPMS | Organisational Performance Management System |
| PDP | Provincial Development Plan |
| PGDS | Provincial Growth Development Strategy |
| PIG | Provincial Infrastructure Grant |
| PM | Performance Management |
| PMS | Performance Management System |
| PR | Predominantly Rural |
| PSDF | Provincial Spatial Development Framework |
| PU | Predominantly Urban |
| RDP | Rural Development Plan |
| RDS | Rural Development Strategy |
| READ | Rural Environmental and Agricultural Development |

| | |
|---|---|
| RRA | Remote Rural Areas |
| RSA | Republic of South Africa |
| SCOPA | Standing Committee on Public Accounts |
| SDBIP | Service Delivery Budget Implementation Plan |
| SDF | Spatial Development Framework |
| SDI | Sustainable Development Indicator |
| SDSN | Sustainable Development Solutions Network |
| SPLUMA | Spatial Planning and Land Use Management Act (16 of 2013) |
| STATS SA | Statistics South Africa |
| UN | United Nations |
| UNCHS | United Nations Conference on Human Settlements |
| UNDP | United Nations Development Programme |
| UNECE | United Nations Economic Commission for Europe |
| UNESCO | United Nations Educational Scientific and Cultural Organisation |
| VTSD | Villages, Townships and Small Dorpies |
| WECD | World Commission on Environment and Development |

# GLOSSARY

| | |
|---|---|
| **Formal rural areas** | Areas that consist of a farm, smallholding, recreational, industrial, institution and hostels |
| **Indicator** | A quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor |
| **Integrated Development Plan** | IDP is a strategic planning instrument that guides development planning in a municipal area |
| **Key Performance Areas** | The priorities which the municipality announces to focus on to address the needs of the community |
| **Key Performance Indicators** | Management tools, which assist in making performance based decisions regarding strategies and activities. It also defines how performance will be measured along a scale or dimension (e.g. number of houses, kilometres of road, percentage increase, etc.) to achieve KPAs |
| **Marginalisation** | A vision of being side-lined from participating in an activity, or, in other words, being able to participate, but only at the margins |
| **Marginalisation of rural areas** | Rural areas that are side-lined from participating in an activity, or, being able to, but only at the margins |
| **Mitigation** | Limits or reduces the degree, extent, magnitude or duration of adverse impacts |
| **National Key Performance Areas** | These can be regarded as the key areas of focus determined at a national level and mandatory to all municipalities across South Africa |
| **National Key Performance Indicators** | Key indicators determined at national level and mandatory for all municipalities in South Africa to report on regularly |
| **Organisational Performance Management** | Any integrated approach to improving institutional/ organisational performance to achieve certain goals and thereafter promote the institution's or organisation's mission and values |

| | |
|---|---|
| **Performance Management** | A process which measures the implementation of the organisation's strategy. It is also a management tool to plan, monitor, measure and review the performance of indicators to ensure efficiency, effectiveness and impact of service delivery by the municipality |
| **Performance Management System** | Framework that describes how a municipality's processes of performance, planning, monitoring, measuring, reviewing, reporting and improvement will be conducted, organised or managed |
| **Remote rural area** | A rural area located a long distance from any urban centre |
| **Risk** | The likelihood or probability of an event occurring |
| **Rural** | A non-urban environment which includes factors such as life-style, social and economic activities including a culture different from that which can be found in urban areas |
| **Rural area** | Any region that is not classified as an urban area, taking into account its fiscal location, population density and socio-economic factors. |
| **Service Delivery and Budget Implementation Plan** | An expression of the objectives, as set out in the IDP, of the municipality in terms of quantifiable outcomes that will be implemented by the administration for one financial year at a time |
| **Sustainable development** | Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs |
| **Sustainable development indicator** | A particular type of indicator used in pursuing the overall goal of sustainable development |
| **Tribal areas** | Rural areas that mainly consist of tribal settlements, recreational, industrial and institutional areas |
| **Villages** | A geographical entity that includes a cluster of commercial, residential establishments and farm areas. Under each large administrative settlement, various villages exist |

# CHAPTER 1: INTRODUCTION

## 1.1 Background

After the first democratic election of 1994, South Africa today still faces serious challenges regarding poverty, unemployment and inequality. These challenges can be seen as some of the key factors that cause citizens to initiate and take part in protests in order to draw attention to their frustrations regarding poor service delivery (Managa, 2012:1). Furthermore, it is stated in an article by Allen and Heese (2011:1) that service delivery protests often take place within informal settlements on the margins of cities, where communities are excluded from society. This means that they do not have access to economic or social opportunities and often find themselves on the outside looking for a way in. Yet it is proposed by Allen and Heese (2011:2) that these communities still have better access to local services than communities located within the rural areas of the country. A possible reason why communities in informal settlements are more likely to engage in service delivery protests than those in rural areas, may be that they regularly observe citizens in more formalised areas benefiting from better services.

Poor service delivery to rural areas may be deemed a legacy of apartheid in South Africa. However, as stated by the Human Science Research Council (HSRC) and Chinese Academy of Social Science (CASS) (Pillay et *al*. 2012:14), the growing demand for service provision and improved services is not unique to South Africa. Countries within the Asian and sub-Saharan African regions also find this to be a major challenge.

## 1.2 Problem statement

According to Sections 24, 26, 27 and 29 of the Constitution (1996) of South Africa it is clearly stated that everyone has the right to a safe environment, and to housing and services such as healthcare, water and education. It can therefore be argued that housing and services must be provided for in every human settlement, regardless of its location, if adequate living standards for everyone are to be met. Because of this, as stated by Ngxubaza (2010:iii) the newly elected government after apartheid committed itself to the creation of sustainable human settlements in South Africa. The purpose of the implementation of sustainable human settlements is to assist in the creation of better living conditions for previously disadvantaged people who have been living in neglected rural areas for most of their lives (Ngxubaza, 2010:1). In order to develop sustainable human settlements, especially in rural areas, it is stated within section 38(a) and (b) of the Municipal Systems Act (2000) that municipalities are required to develop a Performance Management System (PMS) that is commensurate with its

resources; best suited to its circumstances; and in line with the objectives, priorities, indicators and targets contained in its Integrated Development Plan (IDP). In support of this, the Department of Development Local Government and Housing North West (DDLGH, 2009iii) states that the objective of a PMS is to achieve acceptable service delivery which has a positive impact on the lives of communities in the municipality, especially rural areas.

Conversely, one of the major challenges that municipalities face is the need to achieve these development goals and objectives which are contained within their IDPs (Motingoe, 2011:iii). Because of this and the continuous service delivery protests, the effectiveness of a PMS to ensure sustainable rural settlements is being questioned. The mandate for sustainable development originates from Section 195 (1) (e) of the Constitution (1996) and responsibility lies with National, Provincial and Local government.

For the purpose of this research project, it is important to note that an IDP refers to a strategic planning instrument that guides development planning in a municipal area (Midvaal, 2013:v).

The aim of this study is to evaluate the effectiveness of a Performance Management System to enhance sustainable development.

### 1.3 Research Questions

According to Hofstee (2006:85), research questions are utilised in order to outline what the study attempts to find out. The research questions for this research project are:

- What challenges do rural communities face?
- To what extent does a Municipal PMS utilise indicators to address these challenges and ensure sustainable development?
- Can a PMS, with regard to its underlying indicators, be considered an effective tool to ensure sustainable development in rural areas?

### 1.4 Research objectives

Hofstee (2006:86) states that the research objective must provide an indication of what researchers wish to achieve in their work. In this study, the research objectives are:

- To understand what rural areas and rural settlements are.
- To illustrate the various challenges faced by communities in rural areas.
- To assess whether a PMS utilises indicators that are in line with SDIs as adopted by various global organisations, and how far challenges in rural communities are addressed by the SDIs.

- To state the various pieces of legislation and policies that underpin a PMS and its indicators.
- To investigate the challenges faced by the community within the case study area and compare them to country-wide challenges as found in the literature.
- To determine to what extent the indicators of the Local Municipality's PMS address the challenges of the case study area.
- To compare performance regarding sustainable development of the case study area (Boikhutsong) with the neighbouring village (Goedgevonden) and the ward that these two villages fall within (Ward 5).

### 1.5 Delineation of study area

The case study area identified for this research project is known as Boikhutsong, which is one of six villages located within the Ventersdorp Municipality in the North-West Province. The area was chosen because of apparent issues with regards to service delivery. Notably, an article by the South African Government (North West, South Africa, 2013a) pointed out that the lack of service delivery within Boikhutsong forced the community to engage in a violent protest. It may be argued that acquisition of resources and services poses a huge challenge for the inhabitants of Boikhutsong due to the distance from the Ventersdorp urban area. Boikhutsong is situated approximately 20km north of Ventersdorp, between the Ventersdorp-Derby and Ventersdorp-Swartruggens provincial (R30) road (Ventersdorp, 2010:39).

Further information about the background of the case study area is provided in section 6.

### 1.6 Research methodology

A mixed method research methodology was employed in this study. Both qualitative and quantitative research methods were used to evaluate the effectiveness of a PMS to enhance sustainable development within rural areas. Firstly, a qualitative approach was chosen because the nature of qualitative research is to take its departure point as the insider-perspective (Babbie & Mouton, 2011:53). Particularly, insider-perspectives of the officials involved with the relevant PMS were important for this study, given the respective responsibilities regarding adequate services, because the emphasis of qualitative research is on methods of observation and investigation that is closely related to the subject (Babbie and Mouton, 2011:53). Direct observation of the case study area and semi-structured interviews were therefore conducted. The aforementioned, as stated by Pinel (2014:170), may be regarded as an ethnographic research method. Secondly, a quantitative approach was used to assess municipal performance with regards to service delivery. The Analytical Hierarchy

Process (AHP) (Saaty, 1990:9) was used to prioritise the relevant Sustainable Development Indicators. Quantitative data were collected from existing sources and weighted with the results from the AHP. The analysis provided quantitative results indicating the performance of the areas under investigation in relation to each other.

### 1.6.1 Literature study

The literature review conducted in this study included articles, books and government publications. Welman *et al*. (2005:41) regard these publications as primary (government publications) and secondary literature (books and journal articles) sources. It is also stated by Welman *et al*. (2005:38) that conducting a literature review assists the researcher in formulating a clear research problem.

A preliminary search was conducted at the North-West University's Ferdinand Postma Library as well as the University of Pretoria's Library. Adequate research material is available at these libraries to carry out research on this topic. A preliminary internet search also assisted in obtaining relevant sources.

### 1.6.2 Databases consulted

In order to obtain study material for the purposes of this research project, the following databases were consulted.

- Catalogue of books and EBSCO Discovery Service: Ferdinand Postma Library (NWU).
- Catalogue of Books: Pretoria University (TUKS).
- Google Scholar.
- Internet.

### 1.6.3 Empirical study

During the empirical research phase, semi-structured interviews were conducted with officials who are associated with the PMS that encompasses the case study area, namely Boikhutsong. As Boikhutsong falls within the Ventersdorp municipal area, these included six Ventersdorp municipal officials, an official from the Dr Kenneth Kaunda District Municipality (DRKKDM) and an official from the provincial Department of Local Government and Housing. The interviews assisted in gathering information regarding the different indicators utilised within the municipality's PMS that aim to meet the needs of the community of Boikhutsong and to ensure sustainable development in the area. Semi-structured interviews were chosen in favour of more conventional structured questionnaires for flexibility to allow in-depth exploration. Indeed, Smith *et al*. (1995:9) are of the view that semi-structured interviews assist

the researcher in gaining a detailed perspective of a participant's perceptions of or beliefs in a specific topic.

A visit to the case study area (Boikhutsong) provided the opportunity to take photos and directly observe the current situation with regards to the provision of services. This made it possible to compare service delivery as stated in policies, as required by the PMS, with reality.

The second phase of the empirical research was an assessment of the effectiveness of the Ventersdorp Local Municipality's PMS, measured against that of other municipalities in the district, province and country. Additionally, its performance with regards to sustainable development in Boikhutsong is compared to a neighbouring village (Goedgevonden) and the ward that these two villages fall within (Ward 5).

### 1.6.4 Data-collection techniques

Semi-structured interviews were conducted in order to gather information on the various tools, such as indicators and policies, utilised by the municipality's PMS that are designed to ensure that the needs of the community in Boikhutsong are met. Pre-determined semi-structured questionnaires were prepared of which the main function was to guide the researcher during the various interviews. These questionnaires were not revealed to the participants before or during the actual interviews.

Direct observation of the study area was carried out by the researcher, evidenced by photographs.

The Analytical Hierarchy Process (AHP) may be regarded as a structured methodology that can be utilised to prioritise a set of elements for analysis by assigning weights to them (Saaty, 1990:9). As a result, it is used in the assessment of the effectiveness of Performance Management Systems of local municipalities. Data were obtained from reliable sources, mainly from Statistics South Africa in the form of National Census data.

## 1.7 Limitations of this research

This research project placed its focus on the utilisation of indicators within a PMS in order to address the challenges in rural areas. In the same way, the research project identified various policies guided by a PMS which also identify these indicators. However, it was not the purpose of this research project to investigate or discuss these policies in depth. It was essential that the main focus of the research project remained on the effectiveness of a PMS.

Due to the local government elections on 3 August 2016, it was decided not to include the community of Boikhutsong during the interview process. It was advised that a possibility existed for misinformation regarding the provision of services to be provided to the researcher. For this reason, it was preferable to visit the case study area investigating the provision of services first-hand to eliminate the collection of biased information.

The focus of this research project was directed at organisational performance management systems (OPMSs) and not employee-based individual performance management systems.

Various elements of an OPMS, such as performance targets and SMART principles, were not discussed in detail. This research project directed its attention mainly at an OPMSs' underlying Key Performance Areas (KPAs) and Key Performance Indicators (KPIs) as these were deemed most important in driving effective service delivery.

### 1.8 Research hypothesis

It is expected that the PMS of the Ventersdorp Municipality includes sufficient indicators specifically for the development of its rural areas. However, it is also expected that these indicators are not implemented effectively, therefore keeping the rural areas of the Ventersdorp Municipality in a marginalised position.

### 1.9 Chapter overview

An outline of the dissertation is provided in Table 1.1.

**Table 1-1: Chapter overview**

| Chapter | Title | Description |
|---|---|---|
| | **Literature** | |
| **Chapter1** | Introduction. | This chapter provides information on the problem statement, research objectives, delineation of the study area and the research methodology used. |
| **Chapter 2** | Theoretical understanding of rural settlements. | This chapter describes the terms 'rural' and 'rural area'. It outlines and discusses the factors leading to the marginalisation of rural areas and the consequent challenges of marginalisation. The chapter then attempts to provide examples of current mitigation measures and the effects thereof. |

| Chapter | Title | Description |
|---|---|---|
| **Chapter 3** | Sustainable Development Indicators. | Leading from sub-section 2.6.5 to chapter 3, it transpired that indicators may be viewed as a solution to ensure sustainable development in rural areas. This chapter is therefore devoted to describing what sustainable development indicators are, and how they are utilised by organisations. |
| **Chapter 4** | Performance Management Systems. | Leading from section 3.7 to Chapter 4, it was outlined that indicators similar to those utilised by different organisations to ensure sustainable development are prescribed in municipalities' PMSs. Chapter 4 therefore provides an overview of what a PMS is, and its link with indicators. |
| **Chapter 5** | Policy and legislative framework. | This chapter highlights the policy and legislative support provided to a PMS and its underlying indicators. |
| **Empirical** | | |
| **Chapter 6** | Case study of a rural settlement within the Ventersdorp Municipal Boundary. | This chapter provides a brief overview of the literature including the objective of the empirical research phase. Furthermore, Chapter 6 outlines the status quo and city model of the case study area. |
| **Chapter 7** | Survey of challenges in case study area. | Chapter 7 outlines the survey procedure followed. Additionally, the chapter provides the answers provided during each questionnaire. |
| **Chapter 8** | Analysis of the effectiveness of Performance Management | In this chapter, the effectiveness of the Ventersdorp Local Municipality's PMS is measured against that of other municipalities in the district, province, and country. |
| **Conclusion and recommendations** | | |
| **Chapter 9** | Conclusion | This chapter presents several conclusions drawn from the study. These conclusions are based on the research questions and objectives outlined in Chapter 1. |

| Chapter | Title | Description |
|---|---|---|
| **Chapter 10** | Recommendations | Recommendations for planning interventions and further research. |

**Source: Own construction (2016)**

# CHAPTER 2: THEORETICAL UNDERSTANDING OF RURAL SETTLEMENTS

The focus of this chapter will be to provide a broader understanding of rural settlements. This entails a brief overview of the evolution of the urban form and rural areas including its underlying settlements.

Rural areas are marginalised due to distinct geographical characteristics such as distance from urban centres. Because of this, certain challenges within rural settlements exist, for example poverty, shortage of economic activity, shortage of information and communication technologies, and many other related issues (Grimes, 2000). An overview of current mitigation measures that exist to address these challenges will be provided.

The diagram below (Figure 2.1) illustrates a graphical overview of Chapter 2.

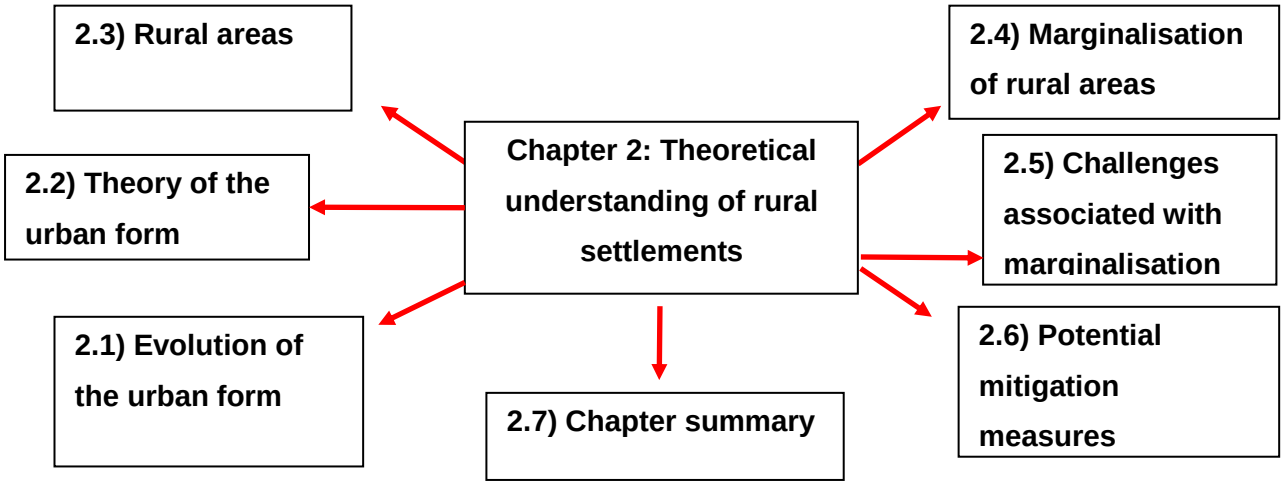


**Figure 2.1: Theory on rural areas**
**Source: Own construction (2014)**

## 2.1 Evolution of the urban form

To evaluate the effectiveness of a PMS to enhance sustainable development within rural areas and settlements, it is firstly important to outline an understanding of rural areas, rural settlements and the hierarchy of settlements it forms part of. This includes an overview of the historic background to and evolution of the urban form.

### 2.1.1 Palaeolithic era (2.5 million- 10 000BC) to Neolithic age (6000- 2000BC)

Prior to the advent of agriculture, the nomadic lifestyles of people meant an absence of permanent shelters. These people were constantly exposed to various hazards of life, such as plundering tribes and wild animals (Mandal, 1979:90).

Rural settlements according to Mandal (1979:90) originated when people moved closer together into areas where they could all benefit from fertile agricultural land, water supply and security. For this reason, they were often close to river courses, which gave rise to settlements with permanent agriculture. These were, however, informal gatherings of people resulting in unplanned settlements (Mandal, 1979:90). It is thus evident how water supply, a natural world determinant, contributed to the urban form of this era.

### 2.1.2 Early cities (8$^{th}$ Century BC)

From the 8$^{th}$ Century BC, human-made determinants played a major role in the development of the urban form. The Greeks for example, constructed and settled around an acropolis for religious and defensive purposes. Human determinants such as economic, political and social factors led to the expansion of these cities (Fagan & Scarre, 2015:2790). The formalisation of city planning is widely credited to Hippodamus of Miletus (498 BC- 408 BC) who used a rectangular grid model for dividing cities into different parts for different purposes. This is referred to as the Hippodamian plan. This model was based on a grid pattern of housing usually constructed around an agora with the temple or amphitheatre being placed on higher ground (Haverfield, 1913:10). However, it was not until after 350 BC that houses were formally arranged in a definite pattern and system (Haverfield, 1913:13).

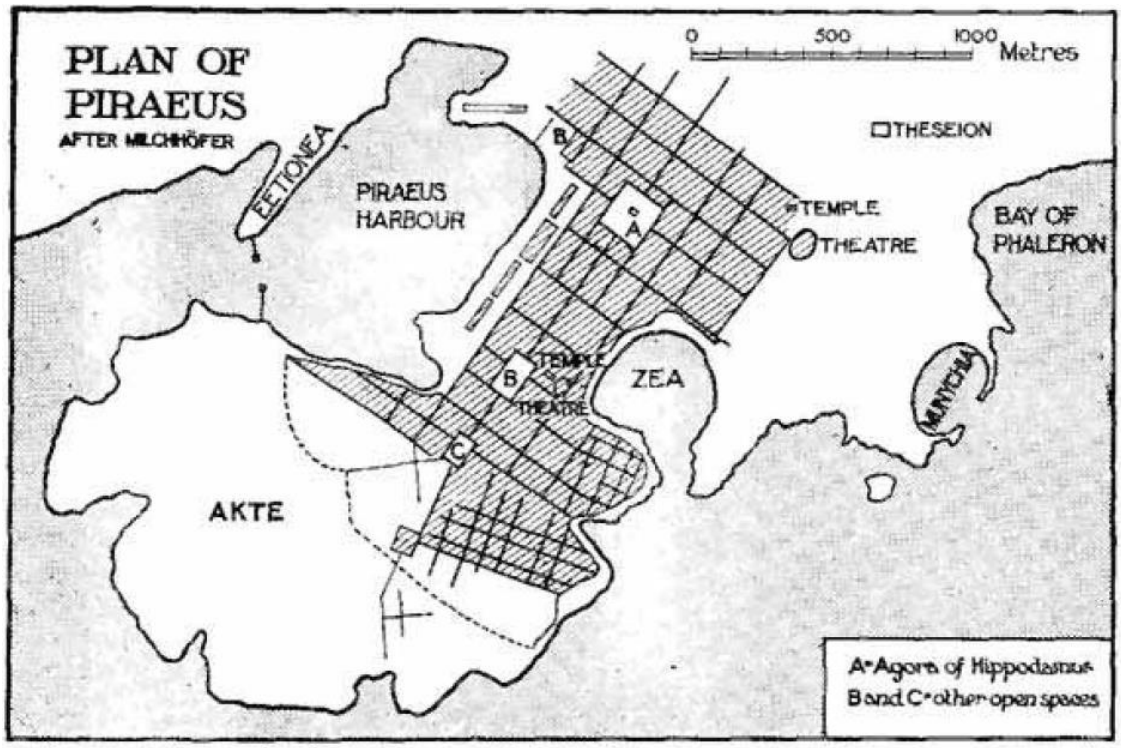


**Figure 2.2: Hippodamian plan**

**Source: Haverfield (1913:10)**

The orthogonal method of planning, depicted above, continued to be used by the Roman Empire and therefore was employed across most of the western world by 400AD (Morris, 1972:39-42). The disintegration of the Roman Empire in the 5th Century, and the resultant devastation caused by various invaders, led to widespread destruction of cities and their underlying designs. This cataclysm created a hiatus which wasn't really filled until the start of the Middle Ages (Morris, 1972:39-42).

### 2.1.3 Medieval era

During the medieval era, development was determined by feudalism and the influence of the church (Morris, 1972:94). The layout of houses and other infrastructure was focused around fortresses or abbeys which in most cases were built on higher ground. Development took place along the elevation contours which, when viewed from above, were similar to the annular rings of a tree. In time, and with further development, a wall around the city was constructed for security purposes. Land beyond the wall was used for agricultural purposes. This is illustrated in Figure 2.3.


**Figure 2.3: The medieval urban form**
**Source: Taylor (2013:390)**

These pre-industrial cities were small-scale walking cities. The core of the city was mainly reserved for the elite while the masses found themselves forced to the periphery of the built-up area (Knox & Pinch, 2010:37).

### 2.1.4 Industrial Revolution

The beginning of the Industrial Revolution in the 18th Century brought about the slow and steady spread of industrialisation which had dramatic effects on urban development and the countryside. This included, firstly, the appearance of urban-located factories drawing on a rural-born labour force; secondly, the economic conversion of agriculture and subsistence farming into a capital growth-based system; and thirdly, a greater interdependence between town and country. Each of these effects contributed to massive and rapid urbanisation. For example, in Britain, by the middle of the 19th century, half of the population lived in urban areas and by the turn of the century this proportion had escalated to three-quarters (Lewis, 1979:23). The working classes were drawn to live closer to the factories. The influx to the urban areas led to serious overcrowding and poor living conditions (Williamson, 2002:236). The Industrial Revolution therefore overturned the structure of the pre-industrial city by relocating the poor into low-quality inner-city areas while the middle and upper classes moved back to the periphery (Knox & Pinch, 2010:37)

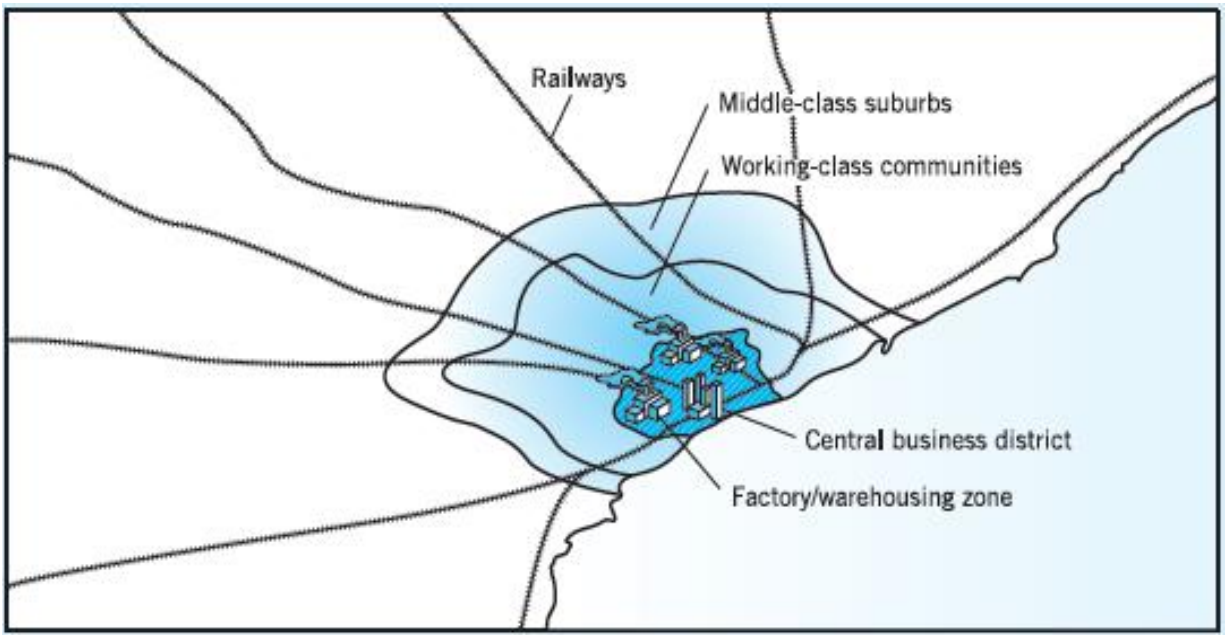


**Figure 2.4: Urban form of the Industrial Revolution**
**Source: Knox and Pinch (2010:31)**

Not only did industrialisation change the layout of the city, it also affected rural areas because of changes to agriculture. The mechanisation of agriculture changed the operational division of labour according to the capabilities of inhabitants. This gave rise to professional settlements distinct from the ones inhabited by general agricultural communities. As these professional settlements grew, other smaller hamlet villages or sub-villages formed on their fringes, occupied by communities with similar or related professions. It is therefore evident that rural settlements grew from dependence on fertile agricultural land to incorporation of professions independent from land – similar to what would be found in more urbanised areas (Mandal, 1979:91).

### 2.1.5 Contemporary world

After the Second World War, a system of production and consumption within sub-urbanised locations emerged. This is often referred to as the long boom of Fordism (Knox & Pinch, 2010:24). Due to the growth of the motor industry and the construction of roads, people were able to live in sub-urbanised locations on the periphery and commute to the city centre for work. This is illustrated in Figure 2.5.

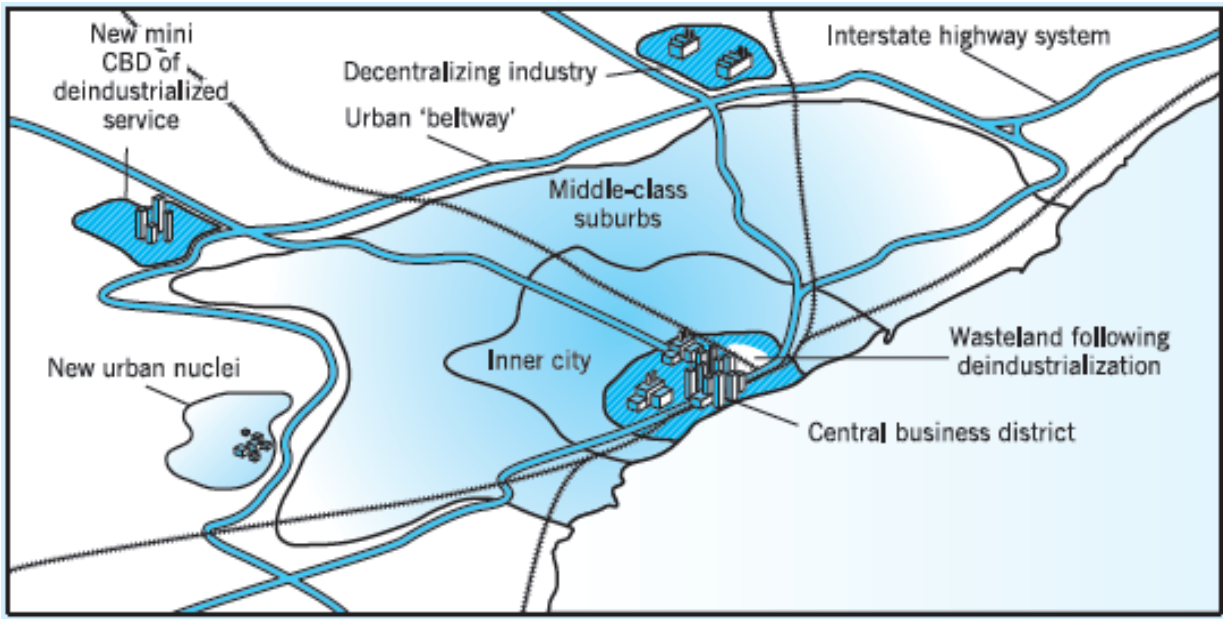


**Figure 2.5: Fordist City (1945- 1975)**

**Source: Knox and Pinch (2010:31)**

Around 1975, the problems associated with the Fordist system, such as the increasing costs of raw materials, labour unrest and increasing costs associated with industrial safety legislation led to a shift away from the traditional assembly-line production towards a more knowledge and service-based economy. The increased flexibility of industries through the use of technology such as computer-aided design and manufacturing allowed the growth of new industrial spaces in rural semi-peripheral areas.

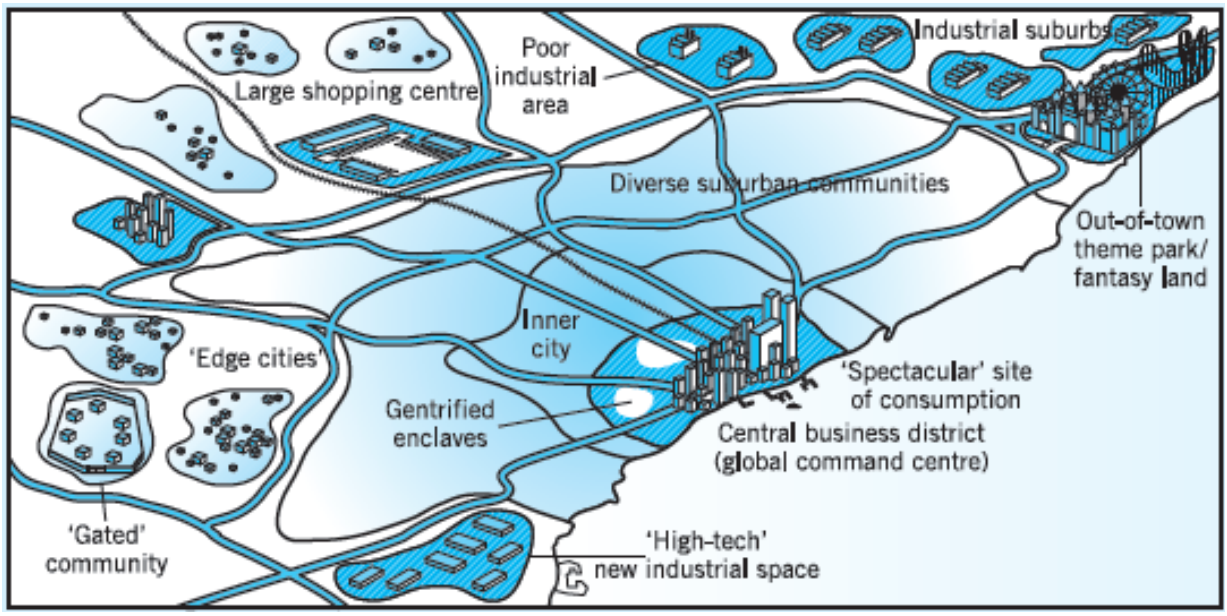


**Figure 2.6: Neo-Fordist City/Metropolis (1975 onward)**
**Source: Knox and Pinch (2010:31)**

More recently, globalisation has led to the emergence of megacities that are international centres of corporate and financial control. Advanced telecommunication systems allow the exchange of information over large distances and may be associated with future decentralisation and the decline of the city centre. Formal and informal relocation of populations to the outskirts of the city centre causes Urban Sprawl (Knox & Pinch, 2010:37).

Apart from understanding the evolutionary changes of urban settlements, it is also important to recognise the geographical theories that seek to explain the size and location of human settlements. One such theory is the Central Place Theory of Walter Christaller (1933**)** who proposed that settlements function as central places to provide products and services to surrounding areas. In addition to this, in order to gain an understanding of the hierarchy and distribution of settlements, Christaller's (1933) theory can be augmented with Philbrick's (1957) concept of the areal functional organisation.

## 2.2 Theory of the urban form

Theories related to the urban form identify the hierarchy under which rural settlements fall. This aids in the understanding of the spatial setting and potential for development of rural settlements, which in turn aids in the evaluation of a PMS to ensure sustainable development.

### 2.2.1 The Central Place Theory

The Central Place Theory is one of the most significant and influential theories of theoretical geography and spatial economic analysis. The concepts and methodological basis of the Central Place Theory were originally formulated during the first half of the twentieth century by geographer Walter Christaller (1933).

In his book, “Die Zentralen Orte in Süddeutschland”, published in 1933, Christaller proposes a landscape structure within a spatial distribution model of cities and towns of numerous sizes. This forms part of an essential feature of Christaller’s theory which discusses the functional hierarchical system of central places on a completely homogeneous plain (Von Boventer, 1969:117).

Christaller’s theory focuses on three key concepts, namely customer/consumer choice, agglomeration, and the functional hierarchy (Blanco, 2014:281). For the purposes of understanding urban form, it is necessary to describe these concepts:

Christaller’s research began with the market areas of separate goods and services on a homogeneous plain. The size of a market area of a specific product or service was determined through the cost function of a product or service, its transportation costs and the demand for it (von Boventer, 1969:118). The Central Place Model predicts that, due to the increase of transport costs, the demand for a product will decline proportionately as the distance from the source of the supply to the market increases. Past a certain point, the demand for a specific product will drop to zero because the transport costs outweigh its value to the consumer. This was termed the market area or ‘range’ of a product. Similarly, a minimum demand level existed before the products were made available. This level, called the ‘threshold’, varies from item to item (Brown, 1993:71). Blanco (2014:282) summarises the definition of threshold as the minimum customers needed to ensure that a business remained viable, and range is defined as the average maximum distance that people will travel to acquire certain products or services.

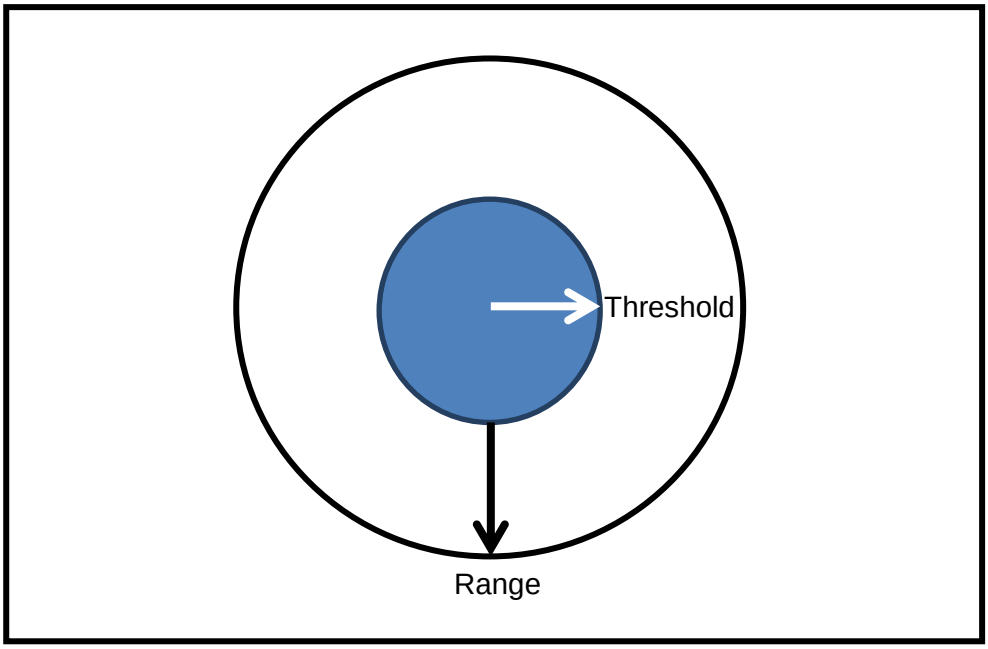


**Figure 2.7: The range and threshold of a product or service**
**Source: Adapted from Cilliers (2010: 10)**

#### 2.2.1.1 Higher and lower order central places

The Central Place Theory also indicates that customers are willing to travel greater distances for expensive and infrequently purchased products, such as jewellery. This gives them greater ranges than inexpensive, everyday purchases such as groceries for which consumers won't travel great distances. It gives rise to the concepts of higher and lower order central places. Expensive and infrequently purchased products with greater thresholds and ranges are located in higher order central places whereas the inexpensive and more frequently purchased products are located in lower order central places (Brown, 1993:71). Figure 2.8 provides an example of this.

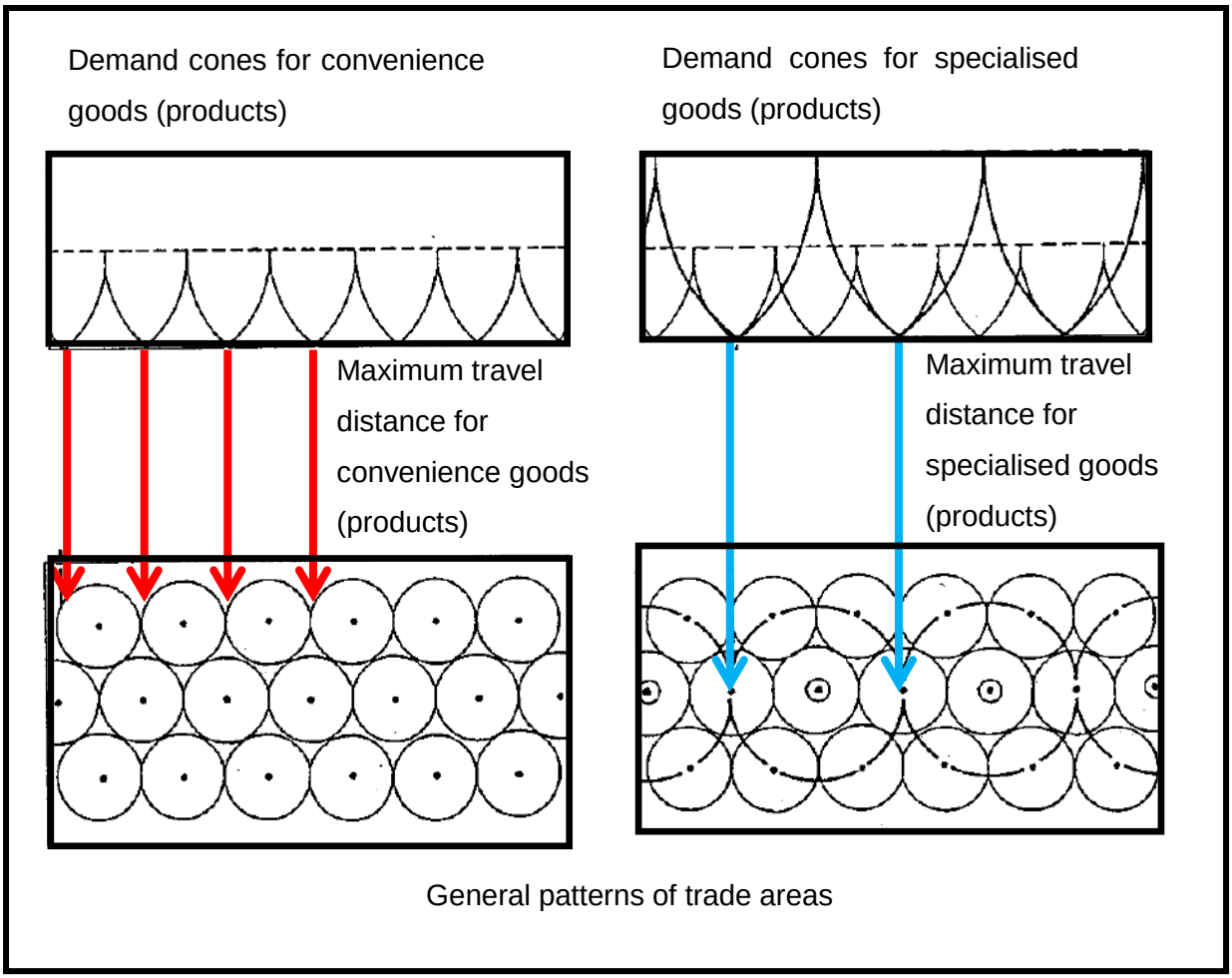


**Figure 2.8: Travel distance to higher and lower order central**
**Source: Adapted from Brown (1993:72)**

#### 2.2.1.2 Central places

Brown (1993:71) points out that the Central Place Model not only assumes identical sellers, simultaneous free entry and that every customer is served, but also that retailers of each item will be evenly spaced in a triangular arrangement with equally sized, hexagonal market areas (hinterlands), the extent of which reflects the order of the product.

An overlay of the market areas for higher, lower and every other order products as defined by the Central Place Theory can be portrayed as a hierarchy of centres. Besides this, it is outlined by Blanco (2014:282-283) that each type of settlement has its place in the hierarchy, and its centrality determines the order of the products. Christaller (1933) places these settlements in a hierarchical arrangement, where large cities can be located in the centre of the constellation of smaller towns and villages. These cities, towns and villages are central places that provide products and services to their residents, lower order central places and rural hinterlands.

Central places, according to Mulligan *et al*. (2012:407), can be viewed as a series of locations which themselves provide products and services, thereby attracting customers from nearby locations. Likewise, King and Golledge (1978) (cited by Chen, 2011:2) state that a 'central place can be defined as a settlement at the centre of a region, in which certain types of products and services are available to consumers'.

From the above comparison of the various authors' definitions, it can be concluded that central places refer to a hierarchy of settlements that provide products and services to their residents within nearby locations that include lower order central places and rural hinterlands. The exact composition of the hierarchy is displayed in Table 2.1:

**Table 2-1: Evolution and structure of Christaller's planning hierarchy**

| **Central Place Order** | **Stages of development** | | |
|---|---|---|---|
| | **STAGE 1** | **STAGE 2** | **STAGE 3** |
| Non-Central Place | Farm | | |
| Non-Central Place | Neighbourhood | | |
| Non-Central Place | Village-Hamlet | | |
| 1 | Group Village<br>• Main Village | Group Village<br>• Main Village<br>• Elevated Main Village | |
| 2 | Large Administrative Settlement<br>• Administrative Centre | Administrative District<br>• Administrative Centre<br>• Elevated Administrative Centre | |
| 3 | Large County<br>• County Town/ Main City | County Region<br>• Main County Town<br>• Elevated Main County Town | |
| 4 | Small Province<br>• Provincial Capital | Provincial Region<br>• Provincial Capital | Urban Centred Region<br>• Provincial Capital |
| 5 | | | Major Region<br>• Regional Capital |
| 6 | | | German Empire<br>• National Capital |

**Source: Preston (2009:15)**

Referring to Table 2.1, it should be noted that the hierarchy of settlements embraces all settlements from individual farms to the capital of the German Empire (Preston, 2009:14). Each of these settlements serves market areas comprising lower-level places and rural areas (Mulligan *et al*., 2012:408).

In order to gain a topographical perspective of the placement of settlements within the hierarchy, Preston adapted the following figure from Christaller.

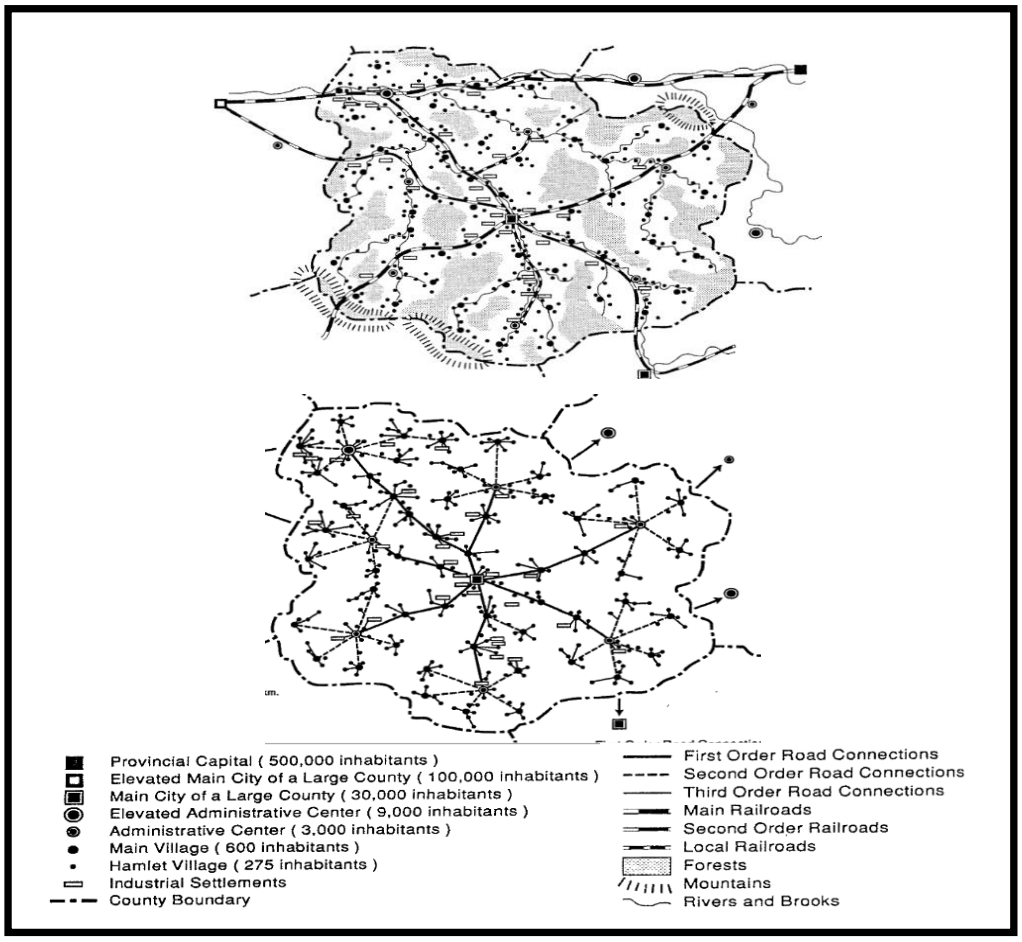


**Figure 2.9: Example of the settlement pattern within its proposed hierarchy**
**Source: Preston (2009:19, adapted from Christaller, 1940)**

Figure 2.9 above demonstrates that under each large administrative settlement, various villages exist. According to Figure 2.9, it can also be identified that under each village, a number of hamlet villages exist.

Christaller's theory (1933) is criticised on account of it being perceived as not in harmony with the results of geography. A homogeneous plane does not exist in the physical or economic

sense of the word. In addition to this, one cannot measure the degree of centrality of a town, not to mention testing the model against reality (von Boventer, 1969:117-118). August Lösch (1941) proposed further development of the theory. Whereas Christaller used the concepts of threshold and range to provide a top-down approach regarding the placements of markets, Lösch conceived a more complex bottom-up central place system. Lösch investigated how a self-sufficient farm with its own market area, can be the starting point of other central places (Lösch, 1941:105). Lösch adds a sense of realism by proposing that smaller places, such as farms or villages can in certain cases serve larger central places (Mulligan *et al.*, 2012:409).

### 2.2.2 Allan K. Philbrick's Areal Functional Organisation

Whereas Christaller's theory focuses on goods and services, which on their own attract people and development, Philbrick's theory (1957) focuses on explaining the growth from a particular point, for example a farm, all the way through to major cities by gaining certain attributes. This includes the development of interconnections between communities. Above all, Philbrick's paper, "Principles of areal functional organisation in regional human geography", provides a clear perspective of the hierarchy that exists in the urban form.

Philbrick's concept of areal functional organisation provides a better understanding of functional and hierarchical structures (Kikuchi, 2007:126). More comprehensively, Philbrick (1957:303) not only defines, but also classifies units of occupancy and explores their observable combinations in a hierarchy of larger areal units of functional organisation. Furthermore, the purpose of Philbrick's paper is to develop principles according to which a specific areal organisation evolves to other units of varying scales of magnitude (Philbrick, 1957:303).

#### 2.2.2.1 Areal Functional Organisation

'Areal Functional Organisation', according to Philbrick (1957:302), may seem an awkward term. However, this term consists of three words which should be understood separately. 'Areal' refers to "the study of phenomena in the context of their geographical distributions". The word 'Functional' is used as 'the different yet associated purposes or functions of human establishments that compose in aggregate the different functional patterns of human activity, which make generalisation about society possible in the context of areal distribution'. Lastly, the word 'Organisation' is used in this context seeing that 'human activity is interdependent and interconnected within an area' (Philbrick, 1957:302). The actions of people in different establishments interconnect them with other people in different establishments, thereby creating areal units of human organisation larger than their current establishments (Philbrick, 1957:302).

### 2.2.2.2 Hierarchy of areas

Philbrick (1957:310-314, 323-332) recognises a ladder of functional organisational areas. These functional organisational areas form part of a hierarchy which starts at a level of a first-order, and through the acquisition of certain principles enables it to transition to higher-order levels in the hierarchy. However, Philbrick (1957:322) continues to emphasise that each higher-order unit persists in containing all its lower-order components (Philbrick, 1957:322). He proposes the following areas of functional organisations:

1) First-order areas of functional organisation: Philbrick (1957:303-305, 310-311) uses the concept of a farm to illustrate this point. The establishment of first order, which can be regarded as the farm as a whole, centres on a focal point, for example the farmhouse or barn, which can be regarded as the headquarters for all farming operations. This is the areal nerve or focal area of the entire establishment. The farmstead is surrounded by an arrangement of fields.

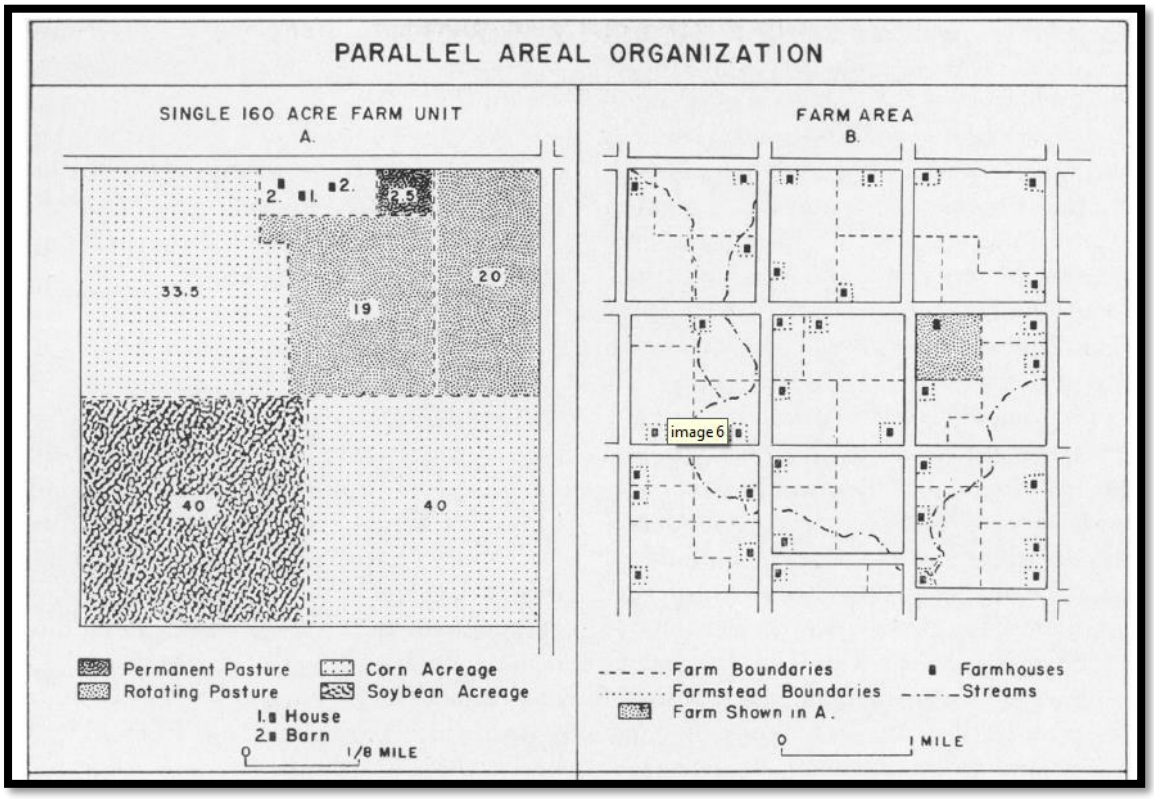


**Figure 2.10: First order areas of functional organisation**
**Source: Philbrick (1957:304)**

According to Philbrick (1957:305), establishments such as those illustrated in Figure 2.10, can be located in positions relative to other establishments. These farms/establishments are interconnected with each other by means of linear roads. Interconnections also refer to radio and telephone communications. These farms are all part of the same township and are served by the same school and belong to the same farm organisation, etc. In addition to this, Philbrick (1957:310) outlines that all establishments make use of 'One-Step Bi-Polar Interconnections' which refer to the connections between A and B, for example, the interaction between a doctor and a clinic, a farmer and farm market or a child and a school.

**Table 2-2: Components of the first-order areas of functional organisation**

| *Order* | *Internal area* | | *External area* |
|---|---|---|---|
| | *Inner* | *Outer* | |
| I. Establishment Example: Farm | Farmstead | Fields | One-step bi-polar interconnections outside the internal area |

**Source: Philbrick (1957:312)**

2) Second-order areas of functional organisation: A village, or as Philbrick refers to it, a 'geographical entity' can be considered a second-order area of functional organisation. The components of this order typically include a cluster of commercial, residential establishments and farm areas. The combinations of these components result in a circular shape which is the functional unit of which its core is the primary focus (Philbrick, 1957:312). The village of Boswell in the United States is depicted in Figure 2.11 as an example of a second-order area of functional organisation.

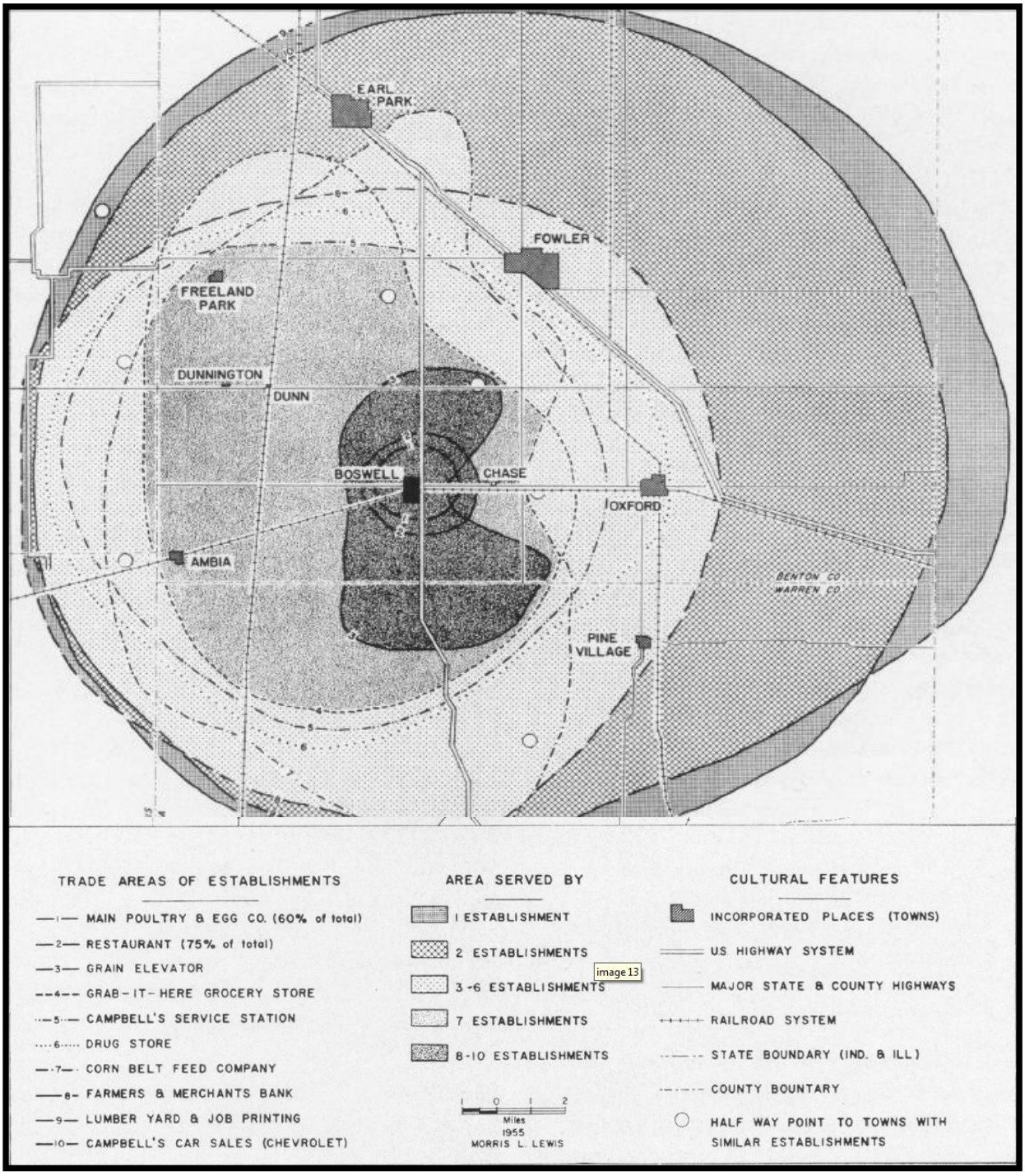


**Figure 2.11: Second order areas of functional organisation**

**Source: Philbrick (1957:311)**

The internal portion comprises two parts, the core and periphery. The core is the built-up area (e.g. Boswell in Figure 2.11). The periphery can be seen as the agricultural surrounding area. Philbrick concludes from this that retailing and service establishments characterise the function of the second-order focal place (Philbrick, 1957:312). The external area consists of one-step bipolar interconnections with other areas of functional organisations which focus on other cores. These other areas tend to be much further away (Philbrick, 1957:313).

**Table 2-3: Components of the second-order areas of functional organisation**

| *Order* | *Internal area* | | *External area* |
|---|---|---|---|
| | *Inner* | *Outer* | |
| II. Focal place..... Example: Boswell, Indiana | Build-up area of town | Service area of primary focus | One-step bi-polar inter-connections outside the area of primary focus |

**Source: Philbrick (1957:314)**

The transition from a first-order to a second-order functional organisation takes place when a number of areas of a similar type develop around a focal place, for example; farms and village residences around a business district (Philbrick, 1957:314).

3) Third-order areas of functional organisation: Two distinct characteristics of a third- order functional organisation are contiguous clusters of focal places and non-contiguous clusters of focal places. The former relates to third-order functional organisations that arise when second-order organisations are clustered together and integrated within a larger areal unit. For example, this usually happens when additional shopping centres are developed along linear routes or clustered at the intersection of roads in order to serve a growing population (Philbrick, 1957:315). The non-contiguous cluster of focal places mainly takes place on the periphery of the built-up area of a city. It normally refers to the addition of specialised functions which are not available at other nearby centres. However, it is not the mere presence of such a function, for example, a pharmacy, that raises the level of a town to a third-order focal place. Rather, it is the development of interconnections between, for example, doctors serving the community, who in turn, are served by the pharmacy. This, in principle, can be regarded as the step that brings a higher order of areal organisation into existence. It can therefore be said that it is not a single function or establishment that comes into existence which raises the level to a third-

order of functional organisation, but the interconnection of various functions in order to serve, not only the community, but also each other (Philbrick, 1957:315).

**Table 2-4: Components of the third-order areas of functional organisation**

| *Order* | *Internal area* | | *External area* |
|---|---|---|---|
| | *Inner* | *Outer* | |
| III. Cluster of focal places . . . . . Example: Kankakee, Ill. | Contiguous cluster of focal places | Non-contiguous cluster of focal places | One-step bi-polar interconnections outside the areas of primary focus of all parts of the internal area |

**Source: Philbrick (1957:316)**

Similar to the first and second-order areas of functional organisations, the third-order organisation also has an internal and external area. The internal area, likewise, consists of a core and a periphery (Philbrick, 1957:315).

4) Fourth-order areal organisation: According to Philbrick (1957:323), the main aspect that leads to the transition of a city, a third-order area, to the centre of a fourth-order area of functional organisation is the specialisation of the treatment and shipment of products, people and information. However, it must be kept in mind that every focal place or establishment contains some degree of transportation and communication. It can therefore be stated that it is not the mere existence of this function that leads to a higher order area of functional organisation. When the treatment and shipment of products surpass the needs of a current locality and also serve the needs of several other clusters of focal places, it allows a third-order centre to become the focus of an area of fourth-order organisation. The following figure uses South Bend in the USA as an example of an area of fourth-order organisation.

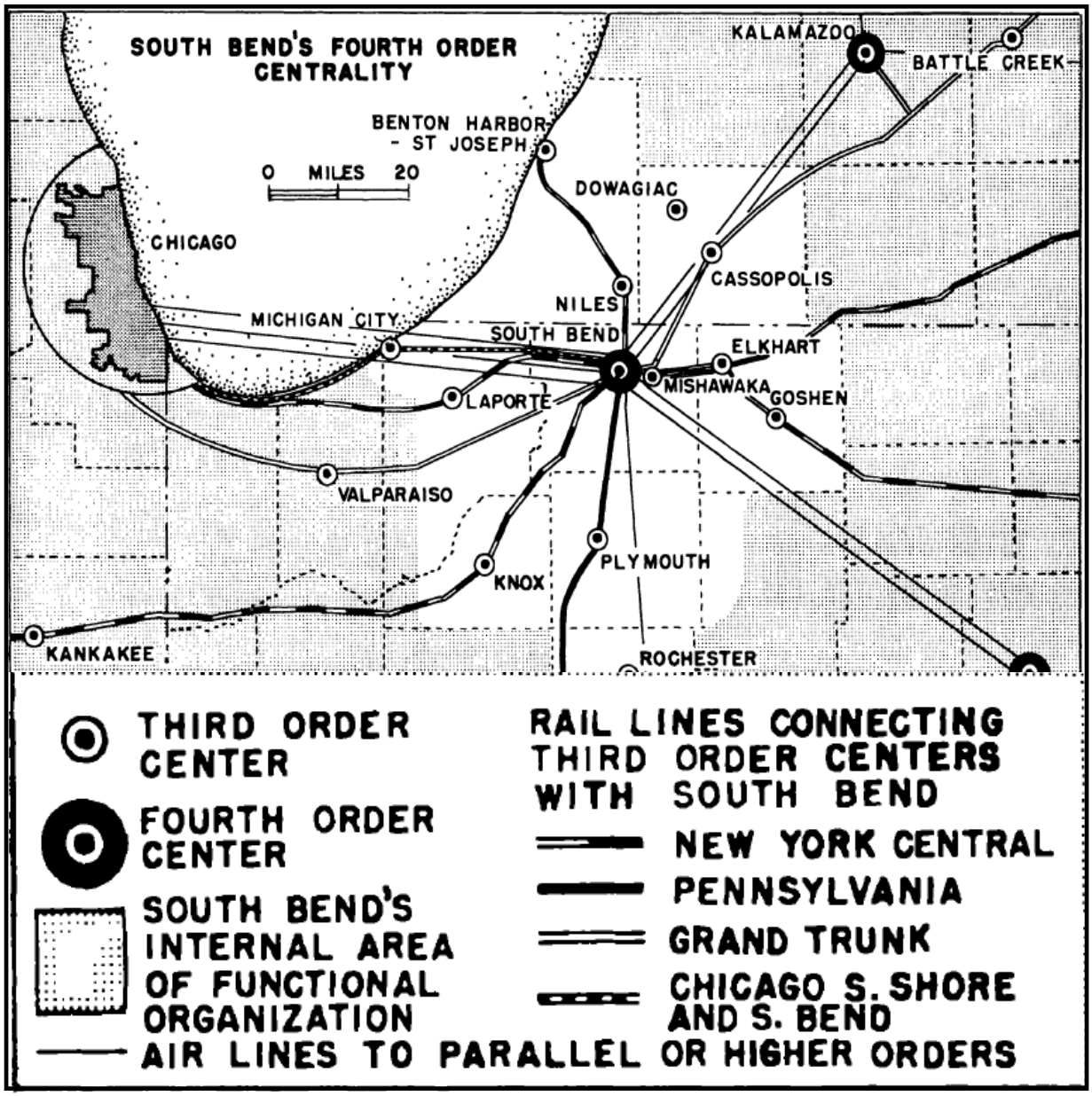


**Figure 2.12: Fourth-order area of functional organisation and its related transport routes**

**Source: Philbrick (1957:326)**

Serving various other third-order cities by means of transportation routes such as highways, rail and air, thereby connecting residential areas with major manufacturing focus points of employment and connecting wholesale establishments with other retail centres, South Bend becomes a focus point for all the other third–order areas, thus transitioning itself to a fourth-order area of functional organisation (Philbrick, 1957:326).

5) Fifth-order centres of areal functional organisation: Chicago, one of the largest cities in the United States of America, is cited by Philbrick (1957) as an example of a fifth-order centre of areal functional organisation. Chicago has dominance in the field of transportation and can be regarded as the pivot between the pre-industrial north-south axis and the twentieth-century industrial axis eastward from Chicago to New York. The same fifth-order functions of Chicago can also be located in a number of other cities. This includes a large number of the following: railway carriages, rail interconnections, air carriers, highway carriers and ocean-shipping companies, all of which service fourth or higher-order areas. The following figure provides an example of such (Philbrick, 1957:329).

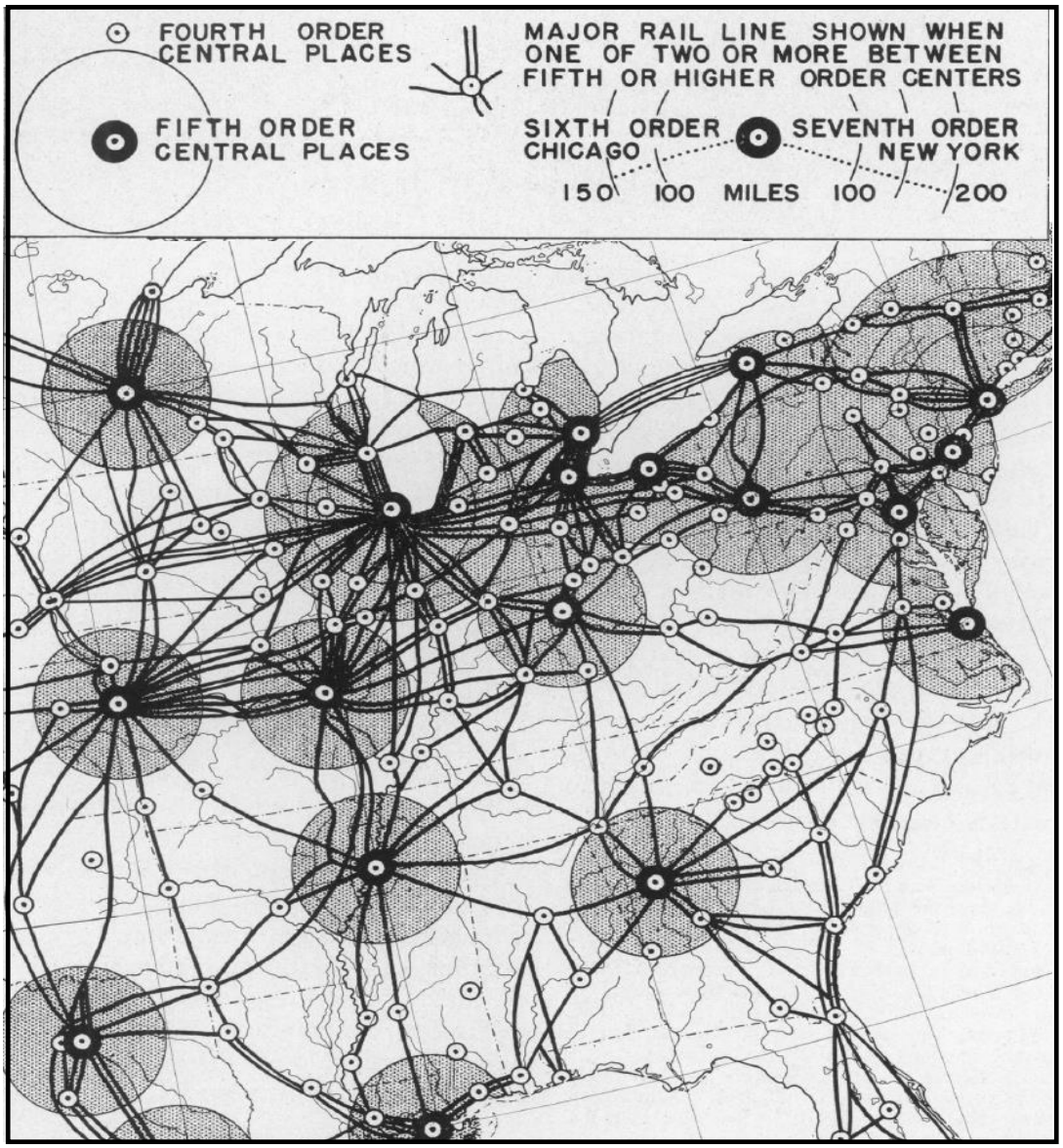


**Figure 2.13: Areal functional organisation in the eastern United States**
**Source: Philbrick (1957:330)**

The various areal functional organisations, as already discussed, is summarised in the Table 2.5:

**Table 2-5: Areal functional organisation in regional human geography**

| *Order* | *Internal area* | | *External area* |
|---|---|---|---|
| | *Inner* | *Outer* | |
| I. *Establishment*<br>Example:<br>Farm | Farmstead | Fields | One-step bi-polar interconnections outside the establishment |
| II. *Focal Place*<br>Example:<br>Boswell, Ind. | Built-up area of the town | Service area of primary focus | One-step bi-polar interconnections outside the area of primary focus |
| III. *Cluster of Focal Places*<br>Example:<br>Kankakee, Ill. | Contiguous cluster of neighborhoods | Non-contiguous cluster of focal places | One-step bi-polar interconnections outside the areas of primary focus |
| IV. *Central Place*<br>Example:<br>South Bend, Ind. | Contiguous and non-contiguous cluster of focal places focused on fourth-order center | Non-contiguous clusters of focal places of third order | One-step bi-polar interconnections outside the areas of primary focus |
| V. *Hub of a Group of Central Places*<br>Example:<br>Chicago, Ill.* | Contiguous or non-contiguous cluster of central places focused on a fifth-order center | Non-contiguous group of fourth order central places | One-step bi-polar interconnections outside the areas of primary focus |

**Source: Philbrick (1957:335).**

In summary, Christaller's Central Place Theory can be demonstrated as follows: The Central place, for example the city of Rustenburg, provides the surrounding areas with goods and services of high cost whereas low-cost goods are supplied by local markets in the surrounding areas, for example in this case, the town of Ventersdorp. High-cost goods are sold in larger cities because the thresholds and ranges of these goods are high enough to sustain a shopping centre. Necessities like bread and milk will be sold in shops in small towns (e.g. Ventersdorp) and villages (e.g. Boikhutsong) surrounding the central place. It is clear that population distribution decreases as you move away from one central place (Rustenburg) and rises again as you approach the next lower order central place (Ventersdorp). The midway point between two central places (e.g. Boikhutsong) is where land will be least expensive, and is often used for farming.

However, Christaller's theory cannot be seamlessly applied, as many of his assumptions do not hold in the real world. Large areas of flat land are rarely available; government interventions such as Land Use Schemes often influence the location of industry; and shopping trends are influenced by various consumer factors such as income and cultural

preferences. Philbrick's theory of Areal Functional Organisation, on the other hand, is based more on real-world examples.

Notwithstanding the criticism, the Central Place Theory describes the location of trade and service activity, and this has particular relevance for economies that are shifting from manufacturing to services. In fact, according to Philbrick's theory, it is indeed the interconnection between different service providers that brings about a higher order of areal organisation.

### 2.2.3 Friedmann's core and periphery model of regional development

John Friedmann developed the core-periphery four-stage model of regional development in 1966. His theory proposes that 'where economic growth is sustained over long periods, its incidence works toward a progressive integration of the space economy' (Friedmann, 1966:35).

The core-periphery model explains the spatial organisation of human activity, based upon the assumption of equal distribution of power in the economy and in society. The spatial relationship between core and peripheral areas are explained by spread-backwash processes. For example, a spatial impact of increased development occurs due to the spread effect, and a spatial impact of decreased development occurs due to the backwash effect (Gaile, 1979).

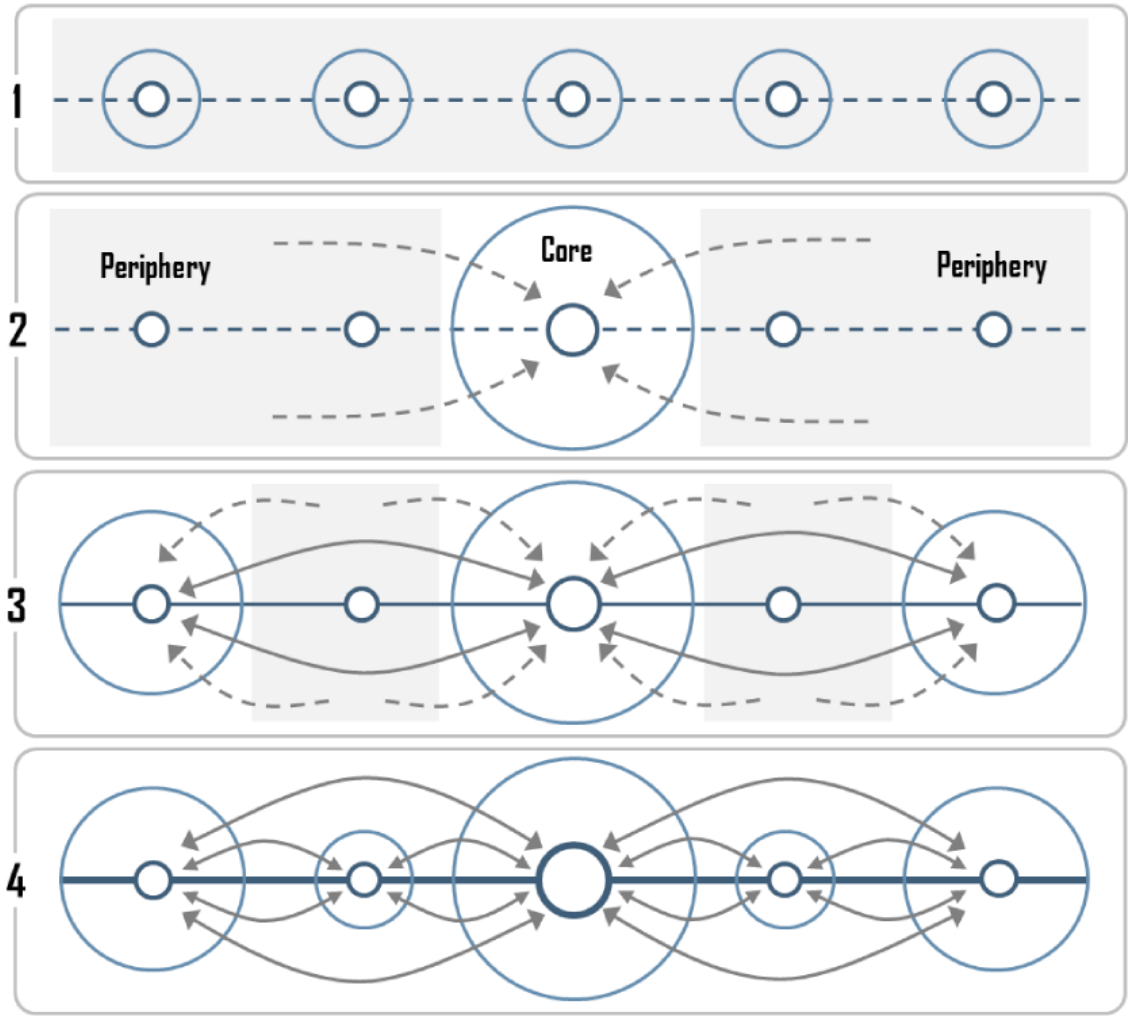


**Figure 2.14: Four stages of the core and periphery of regional development**
**Source: Rodrigue (2017), adapted from Friedmann (1966, Regional Development Policy)**

The stages in Friedmann's core-periphery four-stage model depicted in Figure 2.14 are explained as follows:

Stage 1:
Pre-industrial systems that are mainly agriculture-based. Settlements are structured in small, dispersed and isolated units. At this stage, people and goods have low mobility.

Stage 2:
Development starts to occur in one centre, possibly due to better location, with an accumulation of capital. Labour and goods migrate to the centre as technological and industrial development happens. The economy is concentrated within this core, and the core dominates

the periphery. The disparity between the core and periphery increases due to the backwash effect on the periphery.

Stage 3:
Industrialisation increases the mobility of labour and goods. Trade increases and economic activity is diffused to other areas. For example, increasing input costs such as labour or land in the core area may lead to relocation of factories to outlying areas. As this spread effect occurs, sub-centres emerge.

Stage 4:
In the post-industrial system, there are technological advancement and increased economic activity between centres and sub-centres. This leads to the development of more centres and spatial integration between centres. An equilibrium is reached where optimum balance, equality and stability occurs.

According to Friedmann, sustainable development needs an increase in the interaction between core and periphery (Friedmann, 1966), which implies that transport, infrastructure and communication are essential. These may be regarded as key factors according to which a PMS should be evaluated to determine its effectiveness in ensuring sustainable development.

### 2.3 Rural areas

Although theory of urban areas encompasses explanations for areas of low population density; such areas are usually referred to as rural areas, as opposed to urban areas. According to The Oxford Dictionary (Brown, 1993), the word *urban* has its origin in the Latin “urbanus”, meaning city, while rural stems from “ruralis”, meaning country. However, it is necessary to explore the literature to understand how these terms are defined in practice, particularly rural areas, seeing that the case study area is classified as rural.

Figure 2.15 provides a visual representation of rural areas, comprising villages, hamlets and rural settlements.

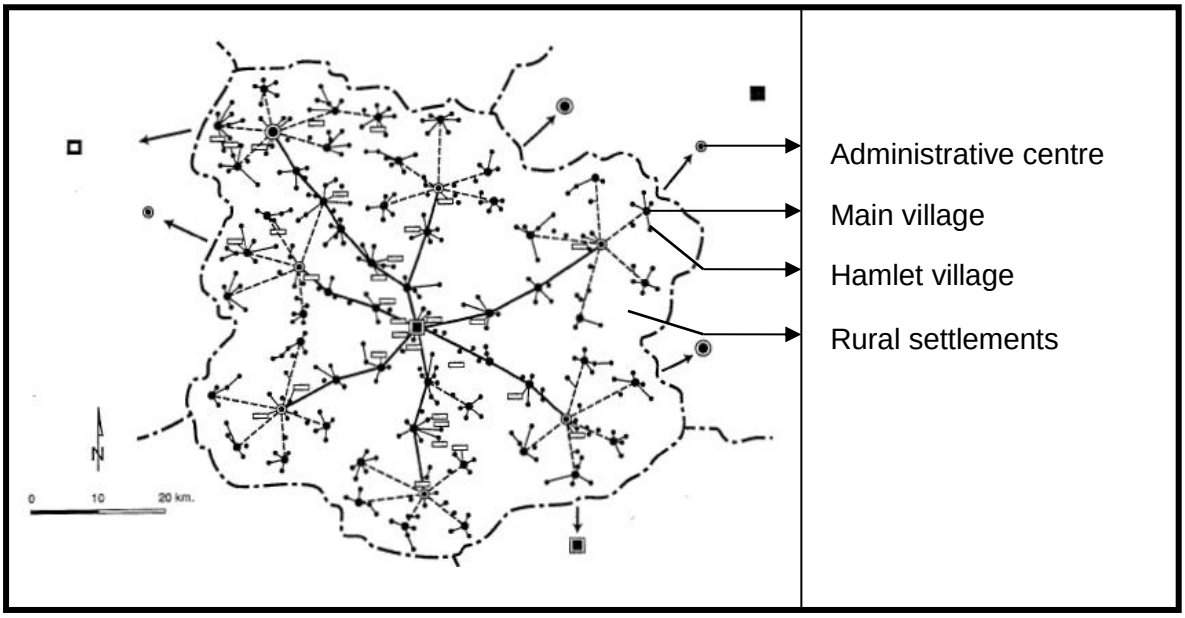


**Figure 2.15: Defining rural areas**
**Source: Adapted from Preston (2009:19) and Christaller (1940).**

Even though Figure 2.15 aids the geographical understanding of rural areas as comprising settlements and villages, it is evident that these two elements are defined within a hierarchy. Rural settlements as described by Mandal (1979:90) can be regarded as small residential communities placed within a larger geographical setting known as a rural area.
In all, it is apparent that a variety of factors can be associated with a rural area. Different authors' definitions for the term 'rural area' will therefore be discussed to find a relevant definition of the term. In addition to this, it is important to keep in mind that rural areas differ greatly, and no one definition is currently all-embracing (European Citizen's Panel, 2007:32).

It is firstly important to evaluate the different definitions for the term 'rural', seeing that it is linked with the term 'rural area' (Pacione, 1984:1-2).

- Rural

To the layman, the term 'rural' appears simple and straightforward, yet it is loaded with pitfalls and uncertainties, which are worsened by a failure to agree upon standard criteria of definition (Lewis, 1979:21). In addition to the statement by Lewis, Pacione (1984:1-3) points out that there is no agreed definition for the term 'rural'.

Hoggart (1988) contemplated a variety of definitions for the term ‘rural’ while trying to uncover the most conventional definition for the term. It was stated by Hoggart (1988:35) that there are numerous papers on the concept ‘rural’ and its empirical manifestations. To the general public, ‘rural’ only refers to a broadly understood settlement or landscape type. The concept according to Hoggart (1988) ‘is not used for the precise delimitation of rural areas and it is not imbued with powers to explain geographical differences in socio-economic conditions. For social researchers, however, these are key concerns’. It is therefore evident that the term ‘rural’ from a researcher’s point of view has to be described with much more detail as to what the members of the public might understand from the term. Researchers such as Woods (2009:429), whilst focusing on rural geography, find it of utmost importance to first confirm the definition for both the terms ‘rural’ and ‘rural areas’. Woods defines the term ‘rural’ as ‘nonurban geographical areas and the social and economic activities, lifestyles and cultures associated with them’ (Woods, 2009:429). In addition to the statement by Hoggart, this definition by Woods can be seen as an extension of the general public’s understanding of the term.

In order to define the term ‘rural’, Davidson and Wibberley (1977:1), discuss the term within a range of different contexts. Firstly, the term ‘rural’ can be associated with an environment which appears to many as discrete and recognisable, changeless, and by its contrast to the town, offering peace and naturalness. The term ‘rural’ is then explained as a way of life that harbours activities and values which are revered, and with traditions alien to the urban lifestyle. Davidson and Wibberley (1977:1) then also refer to rural economies, heritage, areas and settlements. Although no clear definition is decided upon by them, it is evident that according to Davidson and Wibberley (1977:1) the term ‘rural’ can be seen as an environment which includes a way of life, activity, economy, placement and heritage different from more urbanised areas. This corresponds with Woods. It is clear that both these authors agree that the term ‘rural’ consists of a variety of factors that include a non-urban environment with a certain life style, social and economic activities and culture that differ from urbanised areas.

In contrast to the above definitions, it is stated by Pacione (1984:1) that the precise definition of ‘rural’ has proved to be elusive. The national population consensus usually resolves the problem by implementing a legal definition of administrative areas delineated as rural or urban on the basis of population size or population density (Pacione, 1984:1-3). This, in other words, clearly indicates that ‘rural’ can legally be defined by referring to the population sizes of certain places. Furthermore, it is outlined by Lewis (1979:21) that whilst attempting to define the term ‘rural’, countries have failed to agree upon standard criteria of definition.

It is therefore evident that countries tend to attach population sizes and densities to the definition of the term ‘rural’, which in some cases can create confusion seeing that the relevant population sizes, in most countries, do not correspond. However, the first three definitions mentioned here do correspond with one another. In brief, Davidson and Wibberley (1977) and Woods (2009) agree that ‘rural’ must be associated with a nonurban environment which includes factors such as lifestyle, social and economic activities including a culture different from that which can be found in urbanised areas. This may therefore be regarded as the definition referred to whenever the term ‘rural’ is used during this research project.

- Rural area

The term ‘rural area’ according to Woods (2009:429) is more complex to define than the term ‘rural’. It was stated by Woods (2009:429) that ‘rural areas’ can be regarded as a categorisation of space which is imprecise and regularly contested. It was also mentioned that rural areas have traditionally been identified with geographical areas where agriculture dominates land use (Woods, 2009:429). From Woods’ evaluation of rural areas, it is evident that the definition of a ‘rural area’ is linked with the definition of rural geography. Rural geography according to Woods (2009:429) can purely be defined ‘as the study of people, places, and landscapes in rural areas, and of the social and economic processes that shape these geographies’. This implies that people, places and landscapes are located within rural areas, which furthermore agrees with Mandal’s statement. (Mandal, 1979:90)

Equal to what was initially stated by Woods, rural areas can be regarded as ‘areas within a country which show unmistakable signs of being dominated by extensive uses of land’ (Lewis, 1979:22).

Another definition as outlined by Hoggart (1988:35-36) states that ‘rural areas can be seen as small settlements separated by belts of open countryside’. It is also stated that these rural areas are different from urban areas, especially from a socio-economic point of view.

In the same way, Statistics South Africa (Stats SA) (2004: 14) defines rural areas as ‘Any area that is not classified as an urban area’. This definition corresponds with the statement made by Hoggart (1988-36), namely that rural and urban areas show much dissimilarity. Thus, in order to understand what a rural area is to policy makers, it is important to know how they define urban areas. An urban area as defined by Stats SA (2004:16) is ‘A classification based on dominant settlement type and land use. Cities, towns, townships and suburbs are typical urban settlements. Enumeration areas comprising informal settlements, hostels, institutions, industrial and recreational areas, and smallholdings within or adjacent to any formal urban settlement are classified as urban’. A definition for the exact opposite wasn’t adopted during

the census; however, further information of the different enumeration area types associated with both urban and rural areas was pointed out. For example, a distinction is made between formal rural areas and tribal areas. Formal rural areas according to Stats SA (2004:14) are those that that mainly consist of a farm, small-holding, recreational, industrial, institution and hostel enumeration area (EA) type, whereas tribal areas are rural areas that mainly consist of a tribal settlement, recreational, industrial and institutional EA types. According to Stats SA (2004:16) it is important to keep in mind that villages can be regarded as a settlement within a tribal area.

Similarly, to Stats SA, the Organisation for Economic Cooperation and Development (OECD) can also be regarded as a policy-maker, seeing that the OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation (OECD, 2006:2). The definition of 'rural areas' developed by this organisation can therefore be compared to that of Stats SA. The OECD compiled a document on regional typology where it was stated that the methodology of the document mainly focused on classifying different regions into one of three categories. These categories are known as predominantly urban, intermediate or predominantly rural (OECD, 2011:3). The methodology used by the OECD is based on a population density system where two main approaches are followed to define regions as predominantly urban, intermediate or predominantly rural. If more than 50% of the population of a specific region is living in rural communes with less than 150 inhabitants per square kilometre, it can be regarded and classified as a predominantly rural region. If 15% to 50% of a specific region's population lives within rural local units then that specific region can be classified as an intermediate region. Predominantly urban regions can lastly be seen as a region where less than 15% of the population lives within rural local units (OECD, 2011:3). An important part of the methodology used by the OECD which mustn't be overlooked is the changes which can be brought to the last-mentioned classifications under certain circumstances. It is stated by the OECD (2011:3) that if there is an urban centre with more than 200 000 inhabitants representing no less than 25% of the regional population in a predominantly rural region, it will be reclassified as intermediate. It is then also stated that if there is an urban centre with more than 500 000 inhabitants representing no less than 25% of the regional population in an intermediate region, it is re-classified as predominantly urban. It has been stated by the ECP (2007:31) that it is possible to make use of various criteria to describe rural areas which can include population, landscape, access etc. It is quite evident that the OECD defines rural areas and urban areas by using a population density methodology approach which is different from the approach used by Stats SA. However, when comparing the numbers stated by the OECD for when an area can be regarded as predominantly rural opposed to predominantly urban, one may come

to the conclusion that Stats SA and the OECD agree in principle on their actual classification of rural areas, even though their methods for defining a 'rural area' are different.

Above all, the European Citizen Panel (ECP) (2007:3) made it clear that figures attached to population sizes and territory sizes in the quest to define a rural area can only be approximate, seeing that this term (rural area) has never easily been defined. Furthermore, it is stated by the ECP that a rural area can be defined as *'the vacuum left after urban has been defined'.* In other words, a rural area can be defined as anything that is not associated with an urban area, thus agreeing with what was stated by Stats SA, Hoggart and the OECD if one considers it from a population density point of view.

The decision on a definition for the term 'rural area' for this study will be based on what the majority of authors, as evaluated above, agreed with. In all, it can therefore be concluded that a rural area is any region that is not classified as an urban area, considering its fiscal location, population densities and socio-economic factors.

The term Remote Rural Area (RRA) will also be frequently used during this research project. Assessing the term 'RRA' by means of comparing different authors' definitions will not be needed, because the term 'rural area' has already been discussed. The term 'RRA' according to Bull *et al*. (2001:356) refers to an area isolated in distance from an urban area. This term, for this study, therefore refers to a rural area located far away from any urban centre.

## 2.4 Marginalisation of rural areas

According to Grimes (2000), marginalisation may be regarded as one of three pitfalls when discussing rural areas. Furthermore, Prato and Longo (2012:4) state that access to resources is governed everywhere by power dynamics which contributes to the marginalisation of poor people living in rural areas. For this reason, understanding exactly what marginalisation is and how it is linked with rural areas and people living in rural areas is important for the purposes of this study.

### 2.4.1 Defining marginalisation

According to the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2009:1), there is no agreed-upon definition for 'marginalisation'. This statement was supported by Marschalek and Unterfrauner (2009:1) who stated that no congruent terminology referring to 'marginalisation' or 'being at risk of social exclusion' exists. It is also reasoned by Marschalek and Unterfrauner (2009:1) that marginalisation terms differ in contexts, perspectives and connotations. Marginalisation can refer to a variety of matters and can therefore not have a single definition. These two supporting statements will, however, be

tested by evaluating a variety of authors' definitions and viewpoints regarding the term. The evaluation will, on the other hand, also assist with determining the meaning of the term.

The UNESCO Education for All (EFA) Global Monitoring Report of 2010 entitled *Reaching the marginalised,* defines marginalisation as 'a form of acute and persistent disadvantage rooted in underlying social inequalities'. An example provided (UNESCO, 2010:8) refers to large sections of society that do not receive adequate education. These society groups who are left behind when it comes to education face the prospect of diminished life chances in many other areas, including employment, health and participation in the political processes that affect their lives. The lack of education according to UNESCO (2010:8) can also lead to poverty across generations.

Marginalisation does not only focus on educational purposes but can also focus on national economic situations. Marginalisation was discussed by Ravi Kanbur (2007) from an economic point of view. Kanbur (2007:2) defines economic marginalisation as an 'increasing income inequality within countries'. This forms part of a statement made that a category X cannot be marginalised in and of itself. It always has to be marginalised in relation to some other category which can be identified for that purpose as category Y (Kanbur, 2007:1). According to Kanbur (2007:1) it is therefore possible for marginalisation to be seen as a relational statement.

The Presidency of the Republic of South Africa (RSA) describes marginalisation within a spatial context and not directly within an educational or economical context as highlighted above (Presidency of the RSA, 2007:9). Spatial marginalisation can be associated with spatial disparities where certain settlements are placed far away from economic opportunities, denying them access to opportunities for employment, wealth creation and social progression (Presidency of the RSA, 2007:8-9).

An article on 'Social Inclusion of Young Marginalised People through Online Mobile Communities' by Ilse Marschalek and Elisabeth Unterfrauner (2009) mainly focused on the marginalised youth. Marginalisation is not discussed within an educational, economical or spatial context but rather from a viewpoint that focussed on opportunities for young people. The term *marginalised youth* according to Marschalek and Unterfrauner (2009:1) refers to 'young people with fewer opportunities'. This term ('marginalised youth') was used by Marschalek and Unterfrauner (2009) to define the broad target group of the social inclusion efforts of the European Commission's YOUTH Programme.

Considering the last-mentioned authors' and institutions' definitions and viewpoints regarding the term marginalisation, it is evident that the term can be used in a variety of contexts. These contexts are clearly different from each other as was stated by Marschalek and Unterfrauner. It can, however, clearly be seen that the above-mentioned definitions and viewpoints agree that marginalisation refers to a situation where certain groups of people are left out or put aside from a certain activity. Marginalisation according to Peters (2009:4) connotes *"a vision of being side-lined from participating in an activity, or, in other words, being able to participate, but at the margins".* It was also stated that marginalisation can be seen as a point on the continuum between inclusion and exclusion (Peters, 2009:4). This definition and viewpoint by Peters provide a clear view of how the term can be interpreted without placing a certain factor such as education, economy or youth to it. Yet this definition also corresponds with all the above-mentioned definitions, even though certain factors were included. This research project will therefore make use of the last-mentioned definition by Peters whenever reference is made to marginalisation.

The definition of marginalisation will be expanded to include rural areas. It is important to note that the definition for a rural area as decided on in sub-section 2.1.2 defines a rural area as any area or location that is not classified as an urban area which will take into account population densities, socio-economic factors and a certain way of living. Marginalisation of rural areas will therefore, for the purpose of this study, refer to 'rural areas that are side-lined from participating in an activity, or, being able to participate, but at the margins'.

### 2.4.2 Causes of marginalised rural areas

As stated in sub-section 2.2.1 it is evident that many factors such as education, economy, space and even age groups (e.g. the youth) are relevant and linked to marginalisation. Discovering what causes marginalisation will be the next step for this research project. A strategy of evaluating different authors' and institutions' viewpoints regarding the causes of marginalisation will once again be used during this sub-section. The causes of marginalisation within rural areas will be investigated to aid in identifying the challenges that a PMS should address to ensure sustainable development.

It is stated by Prato and Longo (2012:4) that access to resources and tenure is governed everywhere by power dynamics which contributes to the marginalisation of poor rural people who live in rural areas. In many countries, rural poor people have limited access to natural resources due to existing policies and institutions, resource degradation, land fragmentation, competition with state and private investors and conflict and its after-effects. Bird *et al*. (2002:12) describe the causes of marginalisation as related to rural areas in greater detail. It

is stated that the remoteness of certain rural areas creates limited access to markets placed within urban centres. The prices of inputs by people living in these distant rural areas are increased, which makes both economic and social services less accessible. Rural settlements are therefore marginalised partly because of their locations. The distance from social services according to Bird *et al*. (2002:12) can have an impact on a household's total income and therefore contribute to poverty. A study in Tanzania has estimated that households within 100 metres of a gravel road, passable by bus services, earn about one-third more per capita than distant rural settlements (Bird *et al*. 2002:12).

Similar findings from research carried out by the United Nations Development Programme (UNDP) provide evidence of rural areas in Africa being marginalised in terms of income, seeing that they are often isolated and unreached by well-developed physical and socio-economic infrastructure (UNDP. 1997:68). It was also highlighted that the livelihoods of people living in distant rural areas are directly affected by natural resource degradation and a lack of proper socio-economic conditions (UNDP, 1997:68-69). In other words, it can be said that RRAs are in some cases marginalised due to distance from socio-economic infrastructure and a lack of proper natural resources. The access to proper natural resources according to the UNDP (1997:69) is affected by climate, competition, common property resources and population pressure. Hard to reach groups such as people living in RRAs according to the UNESCO and EFA (2010:8) feel the full force of marginalisation in education. Great distances, according to UNESCO and the EFA (2010:8) also contribute to measurement problems seeing that RRAs are hidden from view, and government agencies sometimes have limited access to detailed data for monitoring their conditions.

In short, by evaluating the above-mentioned authors' viewpoints regarding the causes of marginalisation within rural areas, it is evident that there are two main factors that stand out. These two factors are distance and resource degradation. The role of distance is illustrated in Figure 2.16 and indicates how great the distances between rural and urban areas in large continents such as North America can be. Figure 2.16 makes use of a variety of abbreviations, namely: PU- urban (predominantly urban), IN- close to a city (intermediate close to a city), IN-remote (intermediate remote), PR- close to a city (predominantly rural, close to a city) and PR-remote (predominantly rural, remote).

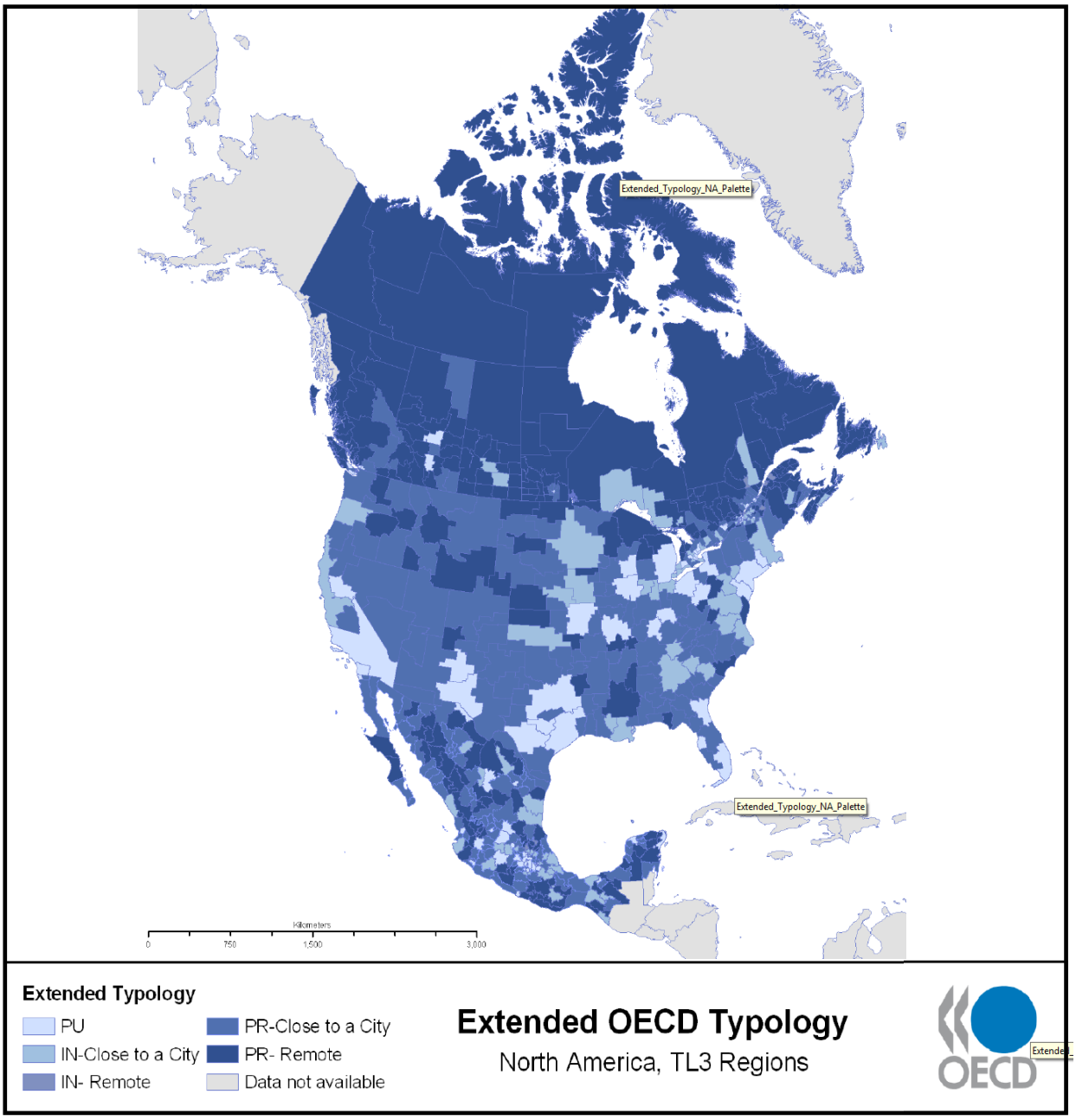


**Figure 2.16: Distance between rural and urban areas**

**Source: Dijkstra and Ruiz (2010:6)**

Referring to Figure 2.16, it is apparent that IN-Remote, PR- Close to a City and PR-Remote areas stretch over vast distances of land. Some pieces of this land are located closer to urban centres than others, but it is also evident that many of the rural areas are located far away from any predominantly urban activities hence people living in these settlements will have to travel vast distances to make use of any socio-economic services or resources located only in urban areas.

### 2.4.3 Marginalisation in South Africa

Now that the meaning and the causes of marginalisation have been discussed, attention will be shifted to marginalisation in South Africa. According to the United Nations (UN) (2014:8), Africa and Asia remained mostly rural while urbanisation occurred in Europe. Figure 2.17 displays the extent of the rural population of Africa in relation to other continents.

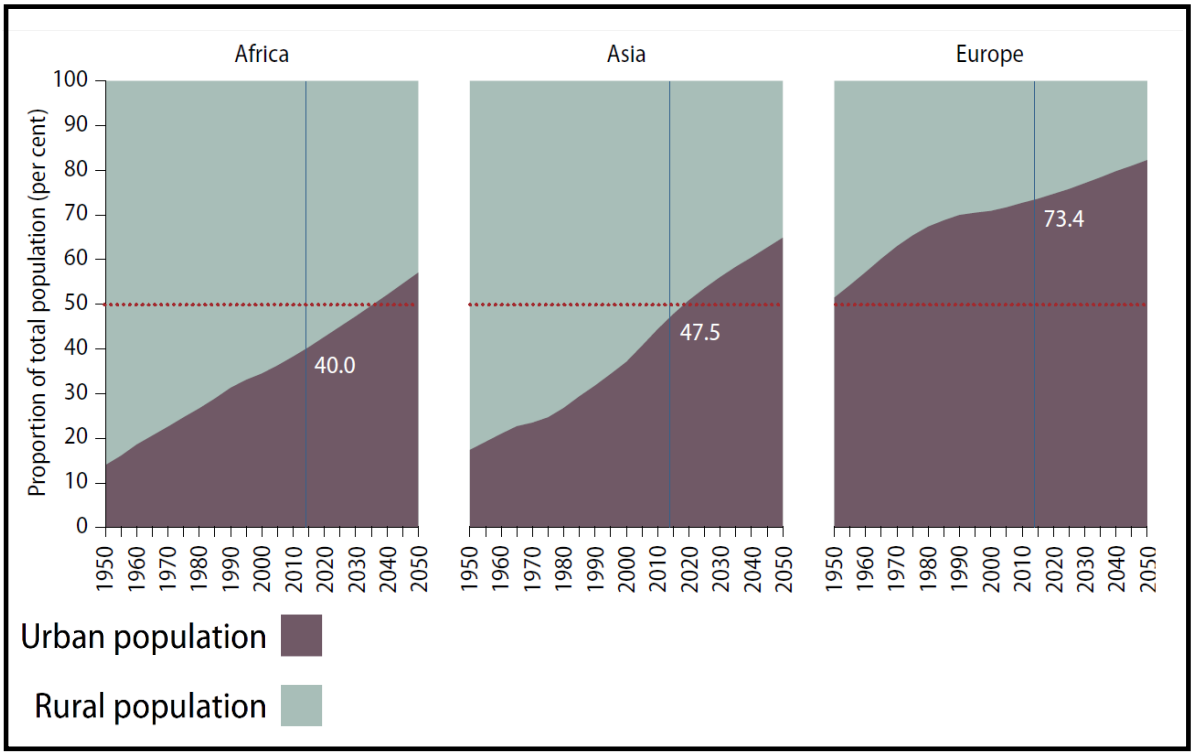


**Figure 2.17: Urban and rural populations**
**Source: UN (2014:8)**

As illustrated in Figure 2.17, most of Africa's population are still located within its rural areas, while most of Europe's population live within its urban areas. According to Figure 2.17, only 40% of Africa's population lived in urban areas at the time of measurement, compared to 47.5% for Asia and 73.4% for Europe. The UN (2014:21) revealed that for the year 2014, 39% of Southern Africa's population was still located within its rural areas. South Africa, according to these data, had 34% of its total population within its rural areas in 2014 (UN. 2014:21). It can therefore be stated that South Africa still has settlements within its rural areas, the extent of which must, however, be investigated. It must also be assessed whether and how marginalisation takes place within the rural areas of South Africa. This assessment will be based on the viewpoints of different authors and institutions. Different maps of South Africa will also be used in this sub-section.

The following figure (Figure 2.18) illustrates the population distribution, for the year 2010, within the rural and urban areas of South Africa.

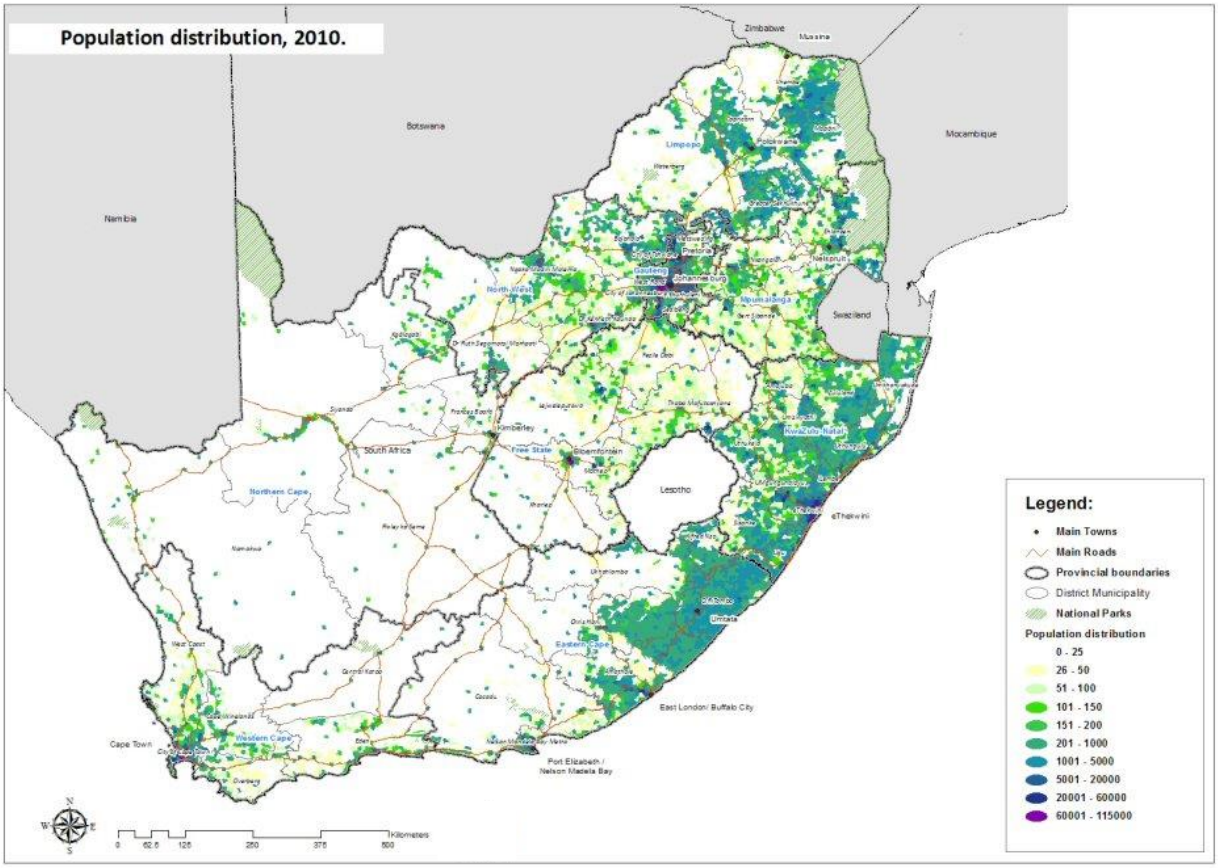


**Figure 2.18: Population distribution in South Africa**
**Source: CSIR (2010)**

Figure 2.18 clearly indicates that much of South Africa's population is scattered over vast distances. It can also be seen that rural populations are located far away from the majority of the population located within the major cities and towns.

South African rural communities according to Gaede and Versteeg (2011:99) experience substantial barriers to accessing health care, including financial barriers, inadequate transport, and distance to the nearest facility as well as limited services available. Understaffing and the poor state of infrastructure in many South African rural facilities further aggravate existing inequalities. Access to health care in rural communities is linked to 'population coverage'. Considerably greater access barriers are experienced by rural communities when compared to urban communities, including distance, time and cost of accessing healthcare and other basic resources (Gaede & Versteeg, 2011:101). In addition to this, it is stated by the Presidency of the RSA (2007:4) that in South Africa, some human settlements are scattered and fragmented over vast distances (Presidency of the RSA, 2007:4). Servicing these

scattered and fragmented settlements can be expensive, both in terms of initial capital investment and subsequent maintenance (Presidency of the RSA. 2007:4). On the other hand, well-connected settlements, with better public transport, are more conducive to spatial targeting of investment in nodes along such routes which will assist with the creation of jobs that are accessible to all.

The term *fragmentation* will not be used frequently during this research project. However, it is important to note that the term refers to 'a function of distance from urban centres' (Irwin & Bockstael, 2007:1). It is also important to know that fragmentation rises and falls with distance (Irwin & Bockstael, 2007:1).

Comparably to Figure 2.18, it is outlined by the CSIR (2012:11) that remote settlements are common in South Africa and are placed at least 20km away from larger settlements. In South Africa, settlements which are located within rural areas can have populations from 500 up to 25 000. Some of these villages are, for example, Merweville, Stella, Prieska, Pofadder, Loxton and Keiskammahoek (CSIR, 2012:11). It is then also stated by the CSIR (2012:13- 14) that in South Africa, not all of its citizens (especially those living in remote areas) are able to enjoy the same levels of access to services and resources located within certain facilities. Travelling costs to higher order facilities are expensive, seeing that they are usually located far away from other settlements (CSIR, 2012:13-14). This fragmentation of human settlements in South Africa, according to the integrated sustainable rural development strategy (ISRDS, 2000:6) reflects the discrimination of the past. The legacy of South Africa's former homeland system is one of continuing poverty. Homelands in South Africa were pieces of land where different cultures lived independently and also governed themselves. Many of these homelands were neglected and placed far away from any economic opportunities (ISRDS, 2000:7). Because of the past policies, South Africa now has dislocated settlements where people live in poverty. Many people live in these settlements isolated from economic opportunities, facing high transport costs to jobs and to accomplish the basic tasks of daily life (ISRDS, 2000:6).

The distressing legacy of the past is that rural areas are now viewed in a negative way. This is because of the miserable conditions under which people had to live in the former homelands. These rural areas are now regarded as areas where poor and old-fashioned people live (Gardiner, 2008:9). This, according to Gardiner (2008:9), is the view of many people but can today, be regarded as not the entire truth. Rural communities have come a long way since the fall of the homeland system. Rural communities have achieved hard-won methods of managing their affairs, where sophisticated communication networks and cultural practices have been developed. Unfortunately, people living in rural areas still work in cities and towns where they can only return home on weekends (Gardiner, 2008:9). This shows that

even though communication in rural settlements has improved, distance still plays an overwhelming role.

In conclusion, it is evident that marginalisation does exist within the rural areas of South Africa. These rural areas are marginalised by means of fragmentation (distance) from urban centres. It also appears that distance plays a fundamental role in the acquisition of basic services and resources. The following figure (Figure 2.19) supports the statement regarding distance from rural to urban settlements. This figure illustrates the towns, major cities and rural settlements (villages) within South Africa.

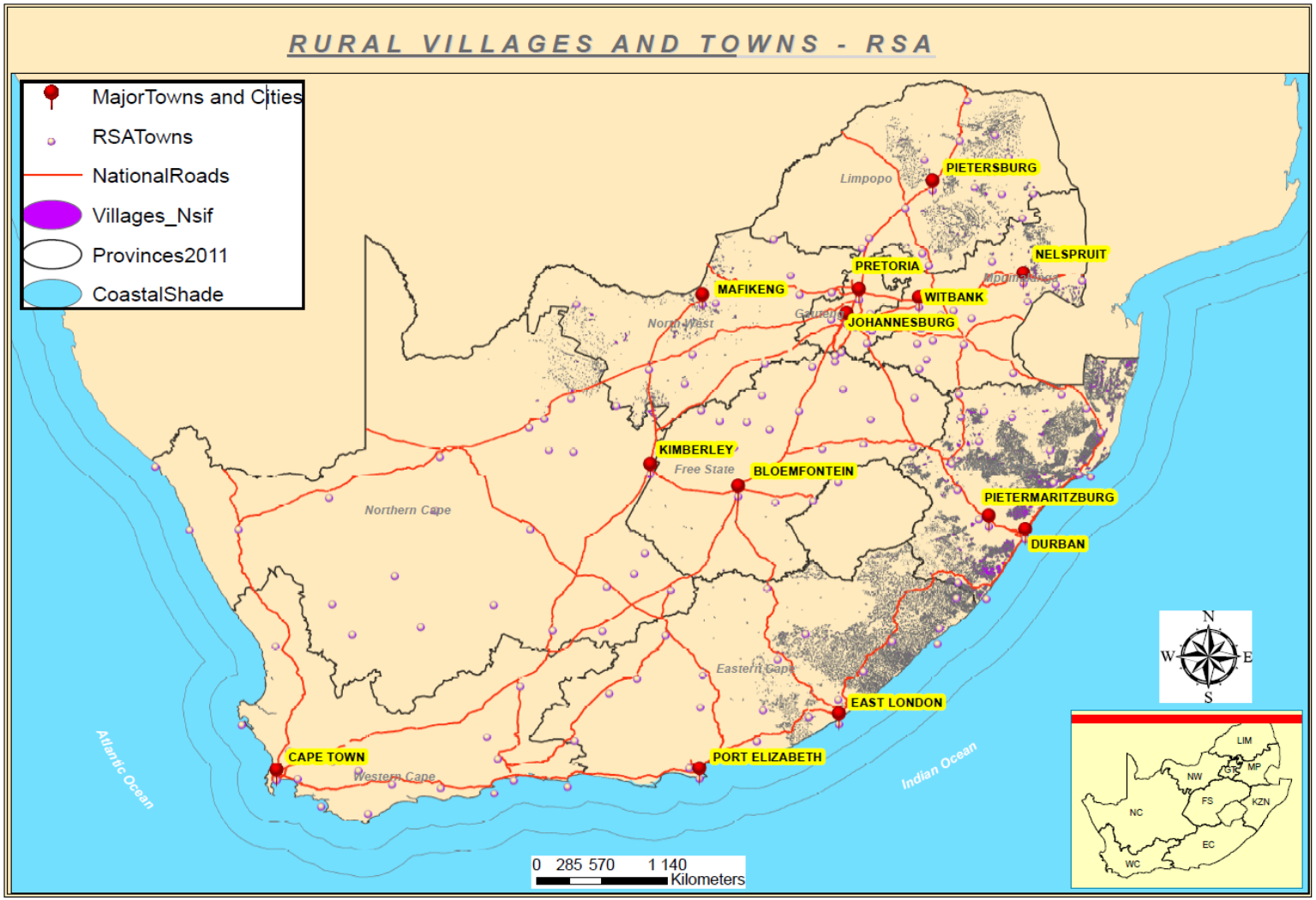


**Figure 2.19: Rural villages and towns in South Africa**

**Source: DRDLR (2014).**

## 2.5 Challenges associated with marginalisation

In section 2.2 it was shown that distance from rural to urban areas can have a negative effect on living standards and can also lead to marginalisation within rural areas. This can once again be emphasised by a statement made by Grimes (2000:13) who mentioned that rural areas are affected by varying levels of peripherality, depending on their distance from markets and their access to services. Urban areas have higher levels of economic development, which means that higher levels of opportunities and services are concentrated within urban areas (Grimes, 2000:13). The acquisition of services, basic resources and other opportunities can be difficult for people living in distant rural areas, consequently leading to rural areas and their respective communities being affected negatively. This section will therefore focus on identifying the different challenges that can be associated with marginalisation. Afterwards, these challenges will be discussed on an international, national, provincial and local level.

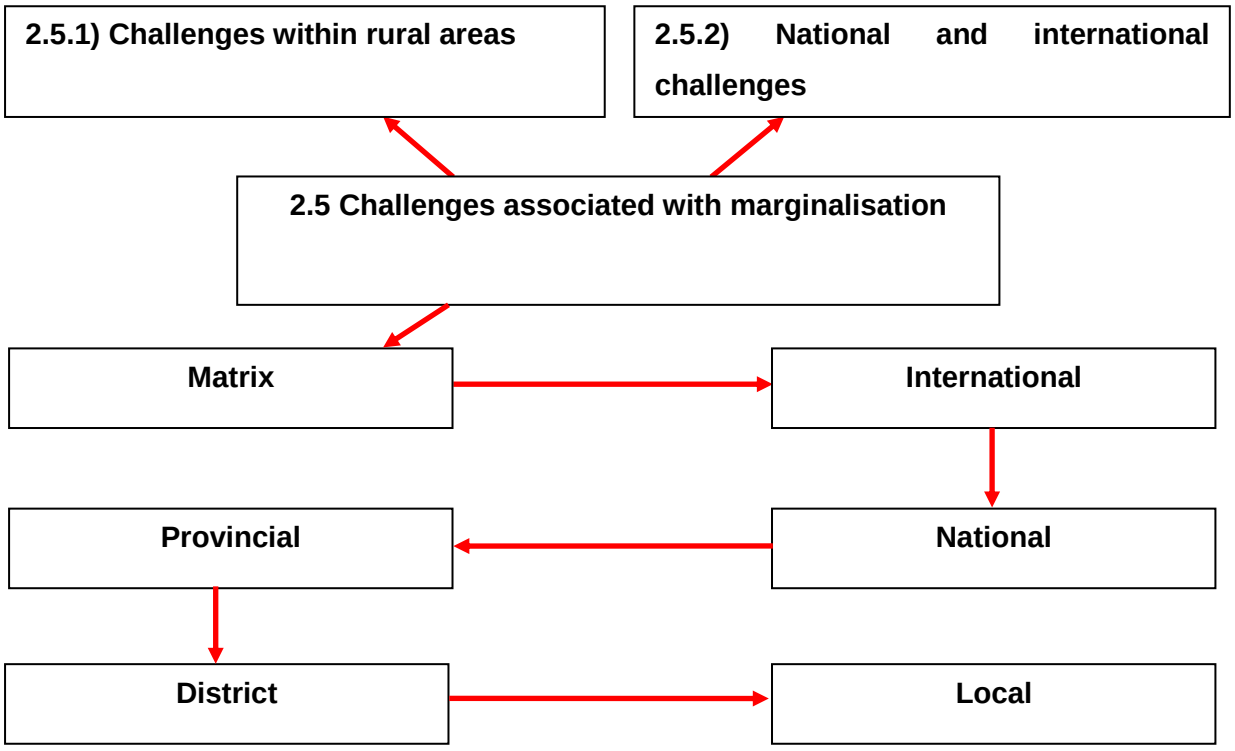


**Figure 2.20: Challenges associated with marginalisation**
**Source: Own construction (2016).**

### 2.5.1 Challenges within rural areas

The marginalisation of rural areas can be linked to a vast range of challenges. As stated by Gardiner (2008:8-10) these challenges include poverty, unemployment, access to clean running water, energy sources such as electricity, problems with transport, education and the scarcity of basic services. Bird *et al*. (2002:6) point out that access to safe drinking water, sanitation and primary health care are lower in almost all rural areas than in urban areas, which in turn is linked to higher levels of morbidity and mortality (Bird *et al*., 2002:18).

The challenges also impede social and economic development. An article by Iatisin *et al.* (2014:141) makes an appeal for the problems in agriculture in rural areas to be taken seriously. They call attention to challenges with unemployment, infrastructure development, conservation of cultural heritage, development of roads and communication (Iatisin *et al.,* 2014:141). These are factors that affect people's living standards.

Organisations such as UNESCO (2010:138) confirm that poverty, ethnicity, health, parental literacy and education are all characteristics of marginalisation, and that they do not operate in isolation. For example, a factor such as inadequate education is commonly found within RRAs, and because of its interactivity with other social and economic factors, problems with poverty and health may also be exacerbated in RRAs.

Ellis (1999:3-6) agrees with the aforementioned statements and makes it clear that rural areas are marginalised in terms of a variety of factors, including infrastructure, employment, human capital, electricity and agricultural activities (food security). The lack of employment and poor infrastructural development create poverty in rural areas. Rural households therefore engage in multiple activities and rely on diversified income portfolios. Yet, despite the diversification of income, the income of the rural poor is lower than that of people in urban areas. This is because urban people are able to participate in more advantageous labour markets than rural people, and are therefore better off. Poverty is thus clearly a challenge in rural areas, seeing that income diversification does not have an equalising effect on rural incomes overall (Ellis, 1999:3-6). Ellis also mentions that poverty is closely associated with low levels of education and a lack of skills. Human capital, which includes knowledge and workplace skills, can therefore be regarded as neglected within rural areas (Ellis, 1999:6). Akkoyunlu (2013:10) also evaluates the matter of the diversification of income within rural households. It is found that rural households do not have all the opportunities needed to share in external labour markets. Rural households are marginalised when it comes to agricultural technologies, human capital, health, communication, transportation, and electrification, and these all have a major effect on economic opportunities.

Gaede and Versteeg (2011:101) provided evidence that high levels of scarcity with regards to health and social determinants such as sanitation, purified water, food security, education and employment can have a large effect on the status of an individual's health. They highlighted that access to health care facilities within rural areas is very limited, and that people have to travel great distances to make use of clinics. The distance, time and cost to access basic resources and services such as healthcare services are far higher than for people living in urban areas. Rural populations are therefore disadvantaged regarding emergency transport to access healthcare facilities. Hence, adequate transportation systems must be taken into consideration (Gaede & Versteeg, 2011:101).

Governance limitations are also identified as a challenge in rural areas. For example, Ellis (1999:1) argues that governance of rural areas is yet to be reformed, and that it is necessary to facilitate economic development in rural areas. Goodhand (2001:11) argues that the weak presence of the state causes this to be a problem pertinent to remote areas, as it reduces accountability and increases conflict. He also links a decline in the government's role to reduced public entitlement, with a "lack of voice" to make claims on the state (Goodhand, (2001:16). It appears that governance and public participation go hand in hand.

In short, it is clear that distance from urban centres contributes to the challenges in rural areas. These challenges are summarised Table 2.6 and the rationale for each is provided.

**Table 2-6: Challenges associated with rural areas**

| Challenges within rural areas | Reason for being regarded as a challenge |
|---|---|
| Land (food security) | It is stated by Ellis (1999:3) that it is common for rural households to be landless for purposes of agricultural activities. Rural households can therefore not depend on agricultural activities alone to make a living, and must diversify their income portfolios. In cases where there is access to land, it became apparent that rural households depend on more profitable distant labour markets rather than engaging in agricultural activities close by. This causes labour availability to reduce within rural areas, hence the growing number of neglected farms (Ellis, 3-5). |
| Poverty | Most of the developing countries' poor are located in rural areas (World Bank, 1994:3). These people engage in multiple activities and rely on |

| Challenges within rural areas | Reason for being regarded as a challenge |
|---|---|
| | diversified income portfolios in order to make a living. Yet they remain at a disadvantage, as the better-off are able to participate in more advantageous labour markets than the poor (Ellis, 1999:3-6). |
| Transport | According to Otaran *et al.* (2003:21), distances to school in rural and urban areas tend to vary. For example, in Turkey, children living in rural areas travel greater distances than these who live in urban areas and the state therefore provides transportation for children in rural areas who live further than 2.5km from school. |
| Infrastructure | RRAs, according to Bird *et al*. (2002:14), are characterised as locations with limited infrastructure and communication technologies. This is due to influences such as geographical remoteness (i.e. physical distance of rural areas or villages from major cities), geographical isolation (usually caused by the difficulty of access because of topography) and physical constraints on agricultural productivity (Bird *et al.*, 2002:15). Poor maintenance of infrastructure can also be regarded as a major issue which reduces service quality and can be costly for users, some of whom install water tanks and back-up generators (World Bank, 1994:4). |
| Health | Threats to health security are usually greater for people living within rural areas, especially rural areas located within developing and industrial countries (UNDP, 1994:28). Bird *et al*. (2002:2) support this statement by pointing out that RRAs are characterised by high levels of risk with regards to ill-health and injury. Valdes *et al*. (2011:26-27) clearly state within the background paper for the International Fund for Agriculture Development (IFAD) rural poverty report that the rural poor have very limited access to healthcare clinics due to travelling distances, which is the opposite for the better-off. |
| Water | In developing countries approximately one billion people lack access to clean water. This is especially found in rural areas where women and children often spend many hours fetching water (World Bank, 1994:1). This statement is supported by the United Nations Development Programme |

| Challenges within rural areas | Reason for being regarded as a challenge |
|---|---|
| | (UNDP) (2015:121) which evidently reports that people living in rural areas spend most of their time gathering improved water resources. The reason for this is that travelling distances to ground water sources are great. |
| Sanitation | Together with lower levels of access to water, rural areas also have lower levels of sanitation than urban areas (Bird *et al*., 2002:6). |
| Energy | Difficult access to settlements within rural areas can be regarded as the main cause for the shortage of basic services such as electricity within rural households and schools (Gardiner, 2008:8-12). |
| Education | The conditions of poverty and under-development are reflected in the quality of education within rural areas. Only significant social and economic development within rural areas will lead to the achievement of good quality education. Currently, the education provided in rural areas limits people's opportunities to lead long, healthy and creative lives, or to acquire knowledge and enjoy freedom, dignity and self-respect (Gardiner, 2008:9). According to UNESCO and the EFA (2010:138) the marginalised in education are often poor households from ethnic minorities living in RRAs. The reason for this is that the marginalised are often hidden from view, and government agencies have limited data or access to data for monitoring the current conditions of the marginalised. |
| Economic development | According to Bull *et al*. (cited by Bull *et al*., 2001:356) changes in the economy of rural areas have caused both a decrease in working opportunities and the migration of younger populations. The global competition that agriculture and extractive industries within rural areas face, make them vulnerable to economic degradation. |
| Governance & Public Participation | Governance limitations may be particularly strong in remote rural areas due to the weak presence of the state (Goodhand, 2001:11), and a weak state reduces the voice of the public (Goodhand, 2001:16). |

**Source: Own construction (2016)**

The challenges stated above, including infrastructure, water, food security, electricity, transport, healthcare, and human capital (which includes education and workplace skills), if addressed, are all factors that can contribute to better living standards. However, when lacking, they can clearly be seen as factors that not only arise from, but also contribute to the marginalisation of rural areas. These challenges can be ordered into higher and lower order themes as in Table 2.7:

**Table 2-7: Summary of challenges within rural areas**

| **Factors of marginalisation** | |
|---|---|
| **Higher order theme** | **Lower order theme** |
| | |
| 1. Poverty | 1.1 Income poverty and inequality |
| 2. Basic services | 2.1 Water |
| | 2.3 Sanitation |
| | 2.3 Energy (lighting and heating) |
| 3. Education | |
| 4. Healthcare | |
| 5. Land | 5.1 Land use and status |
| 6. Infrastructure | 6.1 Piped water |
| | 6.2 Sewer systems |
| | 6.3 Electricity |
| | 6.4 Paved roads |
| | 6.5 Physical structures, e.g. housing, clinics & schools |
| 7. Economic development | 7.1 Sustainable public finance |
| | 5.2 Employment (UN, 2007:10-14) |
| 8. Transport | 6.1 Mobility (UN, 2007:90) |
| 9. Governance & Public Participation | 7.1 Good governance<br>7.2 Public participation |

**Source: Own construction (2014)**

Table 2.7 presents the various higher and lower order themes which are parallel to the factors, as identified in sub-section 2.3.1, and which can be regarded as challenges within rural areas.

To determine whether similar challenges can be located within all spheres of government and internationally, the same lower and higher order themes will be illustrated in Table 2.8.

### 2.5.2 National and international challenges

The challenges identified by the various authors in sub-section 2.5.1 are used in this sub-section to explore whether similar challenges occur nationally and internationally. Nationally, a better understanding needs to be gained as to whether these challenges are found at provincial, district and local level. Internationally, literature on Brazil and Mexico is searched, as these countries are also classified as developing countries.

The provincial level information is derived from Northern Cape (NC), North West (NW) and Gauteng (GP). The NC, according to the Provincial Spatial Development Framework (PSDF) (2011:4) is geographically the largest of all the nine provinces in South Africa and covers approximately 372 889 square kilometres, which is 30.5% of the total land area of the country. The NC Province has a population size of 1 145 861 which makes it the province with the smallest population in South Africa (Stats SA, 2011:14). On the other hand, GP has a land cover of only 18 178 square kilometres which makes it the smallest province in the country (Stats SA, 2011:9). This province is the one with the biggest population in the country, which stands at a staggering 12 272 263 (Stats SA, 2011:14). Because of this contrast between the NC and GP, it will be interesting to understand whether they face similar or different challenges. The NW province is also included, seeing that it is the province within which the case study area of this research project is located. The local municipality chosen is known as the local municipality of Ventersdorp, which is the municipality within which the case study area can be found.

Information obtained from the literature regarding the challenges faced by rural areas at an international and national level is depicted in Table 2.8.

**Table 2-8: Matrix of challenges of rural areas internationally and in South Africa**

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| **International - Brazil** | The UN (2014:24) calculated that for the year 2014 the rural population for Brazil was 29 429 000. The population within urban areas during the year 2014 was estimated to reach 172 604 000. | It is stated by the International Fund of Agricultural Development (IFAD) (2001:1) that in Brazil 5% of the urban population are classified as extremely poor, compared to an estimated 25% of the rural population. | In Brazil, people living in rural areas lack access to clean water, agricultural land, credit, skills training and improved technologies that would help boost productivity (IFAD, 2011:2). | Approximately 40% of rural households are made up of farmers who rely on land to produce for their livelihoods. On the other hand, 46% of rural households are landless, unemployed labourers (IFAD, 2011:1). | Rural communities in Brazil according to the IFAD (2011:2), lack basic infrastructure which could be used for economical or skills development (IFAD, 2011:2). A study of farming and non-farming families within the rural areas of Goiatuba (Brazil) has shown that a minority of families have access to private transport. Sugar cane farmers on the other hand are an exception seeing that the majority of sugar cane farmers own vehicles. Plans are put in place to assist people living in rural areas with transportation (Campos *et al*., 2013:8). | Brazil's positive economic growth and development strategies assisted in reducing rural poverty within the country by half. Unfortunately, extreme poverty remains a concern in Brazil's rural areas (IFAD, 2011:1). |
| **International - Mexico** | In Mexico, rural regions account for more than 80% of the country's land and are home to 36% of Mexico's | In Mexico, 56% of the rural population live in poverty and 28% in extreme poverty (OECD, 2007:16). | Mexico's rural population can be seen as highly dispersed as 24 million people live in more than 196 000 remote localities. This makes the | Agriculture is the most predominant activity in dispersed rural municipalities (with 44% of their population occupied in the | Infrastructures within rural areas are inferior to the standards of infrastructure within urban areas. These rural infrastructures are also uneven across the rural regions. Access to basic infrastructural services within rural areas is, | The state of Mexico has been working on a number of economic reforms and policy changes that have created brighter political opportunity for rural |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| | population (OECD, 2007:14). | | acquisition of basic resources and services very difficult (OECD, 2007:14). | primary sector). Many households are constrained to the subsistence use of agriculture (OECD, 2007:14-17). | however, improving (de Janvry and Sadoulet, 2004:3).<br>The development of transport infrastructure is essential for providing mobility to residents located in rural areas. This will allow them to access better employment centres within urban areas. Transportation in rural areas can therefore be seen as a real issue (de Janvry and Sadoulet, 2004:14). | development. Some of these policies include the National Development Plan and the programme to Democratise Productivity (IFAD, 2014:3). |
| **South Africa - National** | In South Africa, approximately 36 % of the population are located within rural areas. The rest of the population (approximately, 64%) are located within or close to urban areas (UN, 2014:21). | In the year 2011 approximately 68.8% of South Africa's rural dwellers were still living in poverty. From the year 2006 to 2011 the rate of reduction in poverty levels in rural areas was approximately 15%. In urban areas, this rate was | Basic services such as free water, energy and sanitation are provided to only 18.6% of poor households in South Africa. Only 12% of poor households have access to free education and healthcare (Stats SA, 2008:9). | It was shown indicated by Stats SA (2008:35) that only 13.9% of poor households (mainly located in traditional/ rural areas) have access to land that could be used for growing food or raising livestock. | During 2011, only 39% of rural households had access to clean piped water, 11% had access to flush toilets, and 79% had access to electricity (Stats SA, 2014:58). Rural transportation in South Africa can also be seen as a pressing issue. It is stated within the NSDP that in order to address the challenges of spatial distribution within South Africa, it is important to develop improved transportation networks which will allow people located in rural areas, far away from urban | Historically, in South Africa most of the development funding was invested within townships and cities, resulting in developmental backlogs in rural areas which left inhabitants exposed to economic stagnation and poor progress regarding |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| | | 24% (Stats SA, 2014:33). | The majority of poor households are located in (traditional) rural areas (Stats SA, 2008:13). | | centres, to travel quickly and safely to work (Presidency, 2007:xii). | social services (Department of Community Safety and Liaison, 2010:9). |
| **South Africa – Provincial**<br><br>**NC** | In South Africa, urbanisation takes place in a dispersed manner. This leaves some provinces with greater rural populations than others (Stats SA, 2006:22-23).<br>Limpopo- 90%<br>Northern Cape- 80%<br>Eastern Cape- 62%<br>Mpumalanga- 61%<br>North West-59%<br>KwaZulu-Natal- 55%<br>Free State- 25%<br>Western Cape- 10%<br>Gauteng- 4%. | In the NC, people in rural areas are generally poorer than their urban counterparts. Systems are however put in place to fight rural poverty (Office of the Premier and DRDLR, 2011:86-87). | In the NC, settlements (urban and rural) are scattered over vast distances which makes the provision of basic services difficult (Office of the Premier and DRDLR, 2011:45). | Commercial agricultural production is the dominant land-use activity in the NC. Only 5.5% of poor households (mainly traditional/ rural households) have access to farmland (Office of the Premier and DRDLR, 2011:124). | In the NC, 65.1% of poor households (mainly traditional/ rural households) have had access to piped water and 51.8 had access to flush toilets. Only 20.8% of poor households didn't have access to electricity as it was too expensive (Stats SA, 2008:26-28, 75).<br>Commercial agricultural production is the dominant land-use activity in the NC. Only 5.5% of poor households (mainly traditional/ rural households) have access to farmland (Office of the Premier and DRDLR, 2011:124). | The management of the NC assets (natural resources) creates immense socio-economic development potential and if mismanaged can hinder development within the province's rural areas (Office of the Premier and DRDLR, 2011:34). |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| **South Africa – Provincial**<br><br>**GP** | | The GP Spatial Development Framework (SDF) (2011:134) clearly states that poverty in Gauteng is mainly situated within suburbs and townships close to the outer perimeters of cities. These areas are also poorer than well-situated residential enclaves. | It is evident in the GP Rural Development Plan (RDP) that Social and governmental basic services are mainly located within the urban areas of Gauteng and not the rural areas. Informal settlements can therefore be found in the Urban areas (DRDLR, 2014:42). | GP has a set of 9 rural regions which in some cases span over to neighbouring provinces (DRDLR, 2014: xiii). These rural parts of Gauteng are mainly used for mining and agricultural purposes. (DRDLR, 2014:39). | In GP 77.2% of poor households (mainly traditional/ rural households) had access to piped water and 65.7% had access to flush toilets. 20.9% of poor households didn't have a connection to an electricity supply because it was too expensive (Stats SA, 2008:26-28, 75).<br><br>Service and infrastructure provision of freight and public transport within the rural areas in GP are relatively low (DRDLR, 2014:46). | In GP, the rural economy is strongly linked to agriculture. About 70% of the provincial area is known as a 'green area' which forms a vital part of the GP SDF and future 'green' development (DRDLR, 2014:65). |
| **South Africa – Provincial**<br><br>**NW** | | It is stated within the NW Environmental Implementation Plan (EIP) that poverty is common within the NW province and especially within the rural areas (NW, 2003:63). | According to the Ventersdorp IDP it can be said that the different governmental spheres are not strategically aligned with each other. This causes poor capacity to plan and | Rural communities within the NW province depend on natural resources for their day to day survival. This can include activities such as | In the NW 53.7% poor households (mainly traditional/ rural households) had access to piped water and 27.9% had access to flush toilets. 27.2% of these poor households didn't have access to an electricity supply as it was too expensive (Stats SA, 2008:26-28, 75).<br><br>On behalf of the NW Planning Commission (2013:xvi-xxiiii) the | It is stated within the NW provincial EIP that the province's economy relies heavily on an ecologically sound natural resource base where agriculture, mining and tourism also |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| | | | integrate projects to deliver services to all the different communities (Ventersdorp Local Municipality, 2013:10). | agriculture and mining (NW, 2008:7). | province identified, within its provincial development plan (PDP), public transportation within rural areas as a focus area. This represents one of the main challenges hampering growth in the province. | play fundamental roles (NW, 2008:7). |
| **South Africa – District**<br><br>**Dr Kenneth Kaunda District Municipality (DRKKDM)** | | It is stated by the Department of Rural, Environmental and Agricultural Development (READ) that poverty among young people within the district continues to grow rapidly and must be addressed as soon as possible (READ, 2016:8). Areas with high levels of poverty as well as development potential must | It is reported that 98% of households in the municipality have access to piped water, 75% to refuse removal while 85% of households are connected to a formal sewage system. Approximately 80% of the population live in formal dwellings and more than 80% have access to one or another form of electricity. Approximately 90% | The Dr Kenneth Kaunda district municipality aims to implement an agricultural rural development programme in order to provide food security as well as support farmers and communities located within rural areas (READ, 2016:112). | The improvement of infrastructure can be regarded as a major priority for the municipality's rural development programme (READ, 2016:97).<br><br>The DRKKDM IDP proposed that low accessibility areas, rural areas, should be receiving support with the implementation of proper transport and freight systems (READ, 2016:196). | The municipality places its focus on different rural development initiatives in order to develop more job and business opportunities (READ, 2016:149). |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| | | therefore receive investment which stretches beyond basic service delivery (READ, 2016:101). | of these households have lighting within their houses (READ, 2016:41). | | | |
| **South Africa – Local**<br><br>**Local Municipality of Ventersdorp** | The Ventersdorp local municipal area can be regarded as largely rural, and amounts to 3764.05 square km (Ventersdorp Local Municipality, 2016:32). The rural villages within the Ventersdorp Local Municipal area include:<br><br>Ward 5: Boikhutsong, Goed-gevonden and Welgevonden | The majority of households (92%) within the Ventersdorp municipal area earn an annual income less than R3500 per month. Wards 1, 3, 4 and 5 are the areas with the lowest income rates. These wards mainly comprise rural villages (Ventersdorp Local Municipality, 2016:48 -52). | According to the Ventersdorp municipal IDP (2013:11) there is a backlog with regard to basic services, i.e. electricity, water, sanitation and rapid clearing of sewer blockages. This is one of the characteristics that communities within the local municipality of Ventersdorp are known for. | Land reform programmes have resulted in land being given back to various communities in Ventersdorp. These communities therefore rely on activities such as agriculture to survive. Unfortunately, a number of these communities have struggled to utilise the land given to them | Ventersdorp is characterised by its ageing infrastructure (Ventersdorp Local Municipality, 2013:11).<br><br>Transport linkages are in poor condition, especially within the surrounding rural areas of Ventersdorp. The local municipality does, however, have corridor development plans in place to address the issues of public transport and transport linkages in its urban area and rural areas (Ventersdorp Local Municipality, 2013:34-41). | Agriculture contributes 49% to the total economy of Ventersdorp, followed by manufacturing 20% and community service 14%. Agriculture is dominated by a large scale of commercial farming which includes crops, cereals and beef (Ventersdorp Local Municipality, 2013:15). |

| | Demographics | Poverty | Basic Services | Land | Infrastructure and Transport | Economic Development |
|---|---|---|---|---|---|---|
| | Ward 3: Tsetse, Boikhutso and Ga-Mogopa (Ventersdorp Local Municipality, 2016:52).<br><br>The populations of these wards are as follows:<br><br>Ward 3:<br>7728 males<br>6866 females.<br>Ward 5:<br>6760 males<br>5838 females<br>(Ventersdorp Local Municipality, 2016:30). | | | (Ventersdorp Local Municipality, 2013:16). | | |

**Source: Own construction (2014).**

From the matrix above (Table 2.8), it can be concluded that the rural challenges identified in sub-section 2.5.1 also exist within Brazil, Mexico and in all the governmental spheres of South Africa. Furthermore, aforementioned supports the statements made by the various authors in sub-section 2.5.1, and therefore disposes that factors such as poverty, basic services, land, infrastructure, transport and economic development can be regarded as the main challenges linked to the marginalisation of rural areas. Challenges related to education and healthcare were identified under basic services, however, were not readily available in the international literature that was reviewed. The following section (section 2.6) will evaluate different possibilities to be utilised as mitigation measures. The theory behind mitigation measures will also be discussed.

## 2.6 Potential mitigation measures

In section 2.3 it was presented that a variety of challenges exist within rural areas. It was also emphasised that these challenges are present at international, national, provincial and local levels. The purpose of this section is to investigate solutions to these challenges. Before identifying mitigation measures in relation to these challenges, it is important to firstly discuss the underlying theories.

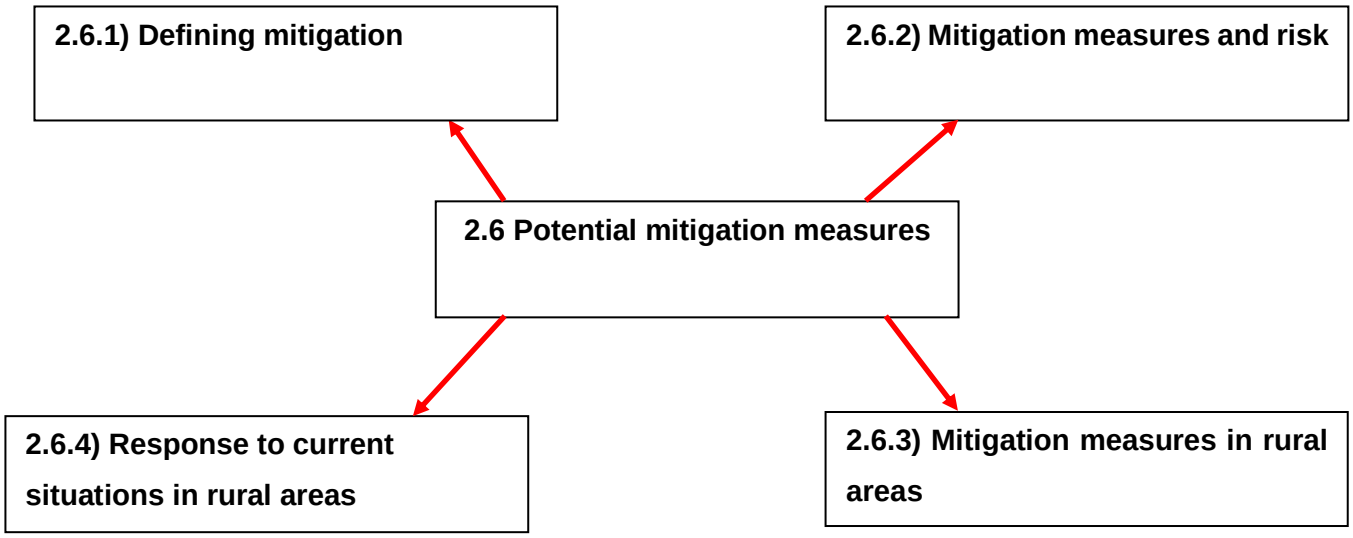


**Figure 2.21: Potential mitigation measures**

**Source: Own construction (2014)**

### 2.6.1 Defining mitigation

A variety of definitions of the term *mitigation* exist. These definitions are in some cases altered to fit a specific purpose; for instance, from an environmental assessment point of view, mitigation is defined as the 'avoidance and reduction of project related impacts that may be connected with previous policies, plans or programmes' (Rajvanshi, 2008:167). Another example of a definition for a specific context is one provided by the emergency health training programme for Africa which focuses on disaster prevention. This definition states that 'mitigation means to reduce the severity of the human and material damage caused by the disaster' (World Health Organisation, 1999:3).

Rundcrantz and Skarback defined mitigation in a relatively general manner. It is stated that mitigation can be viewed as something that 'limits or reduces the degree, extent, magnitude or duration of adverse impacts' (Rundcrantz & Skarback, 2003:204-205). Mitigation, according to the EU council directive 85/337/EC, can be regarded as 'measures envisaged to avoid, reduce and, if possible, remedy significant adverse effects' (EU, 1985). This definition corresponds with the definition proposed by Rundacrantz and Skarback. A more comprehensive definition is provided by Treweek (1999), whereby mitigation can be regarded as 'any deliberate action that is taken to alleviate adverse effects, whether by controlling the sources of impacts or the exposure of receptors to them'.

For this study, it will be sufficient to make use of a more general definition for mitigation. The term will therefore refer to Rundcrantz and Skarback's definition each time it is applied within this research paper, namely something that 'limits or reduces the degree, extent, magnitude or duration of adverse impacts'.

### 2.6.2 Mitigation measures and risk

Cutter *et al*. (2003), emphasise the role of risk when talking of adverse events and mitigation. They described mitigation as 'a bunch of efforts to reduce certain risks or at least lessen their impacts, such as planning or structural improvements in physical infrastructure'.

Therefore, to describe 'mitigation measures' it is firstly important to focus on the term 'risk'. Cutter *et al*. (2003) define risk as 'the likelihood or probability of an event occurring'. According to them, risk includes two domains which can be regarded as the potential source of the risk (e.g. industrial accident) and the impact of the risk itself (e.g. high to low consequences). The second domain is an estimate based on the frequency of occurrence (e.g. 100-year flood).

Various types of risks exist. The Food and Agricultural Organisation (FAO) (2008:2) identifies systematic risk, market risk and credit risk. Examples are provided to explain these risks in the rural context:

- Systematic risk: These risks are interrelated and predictive. For example, rural income is vulnerable to similar risks occurring at the same time. Failure in agriculture can for instance be regarded as a risk which will affect farmer households, rural non-farm economies and production and marketing linkages. Weather, on the other hand, can be regarded as an unsystematic risk because it is not interrelated, but an uncontrollable and in some cases, devastating risk.

- Market risk: Market risk is closely related to the cyclical and seasonal price variation of agricultural products. Forces such as import and export restrictions, exchange controls, and subsidies all influence price variation which contributes to market risk.

- Credit risk: An example of credit risk is the absence of mortgage agreements, which is the case in most rural finance. This increases the risk to the lender.

Verchot *et al*. (2007:902) pointed out that mitigation measures are used to lessen the impact of risks within specific areas. Interestingly, Cutter *et.al.* (2003:87) draw attention to unintended adverse consequences of mitigation measures. They state that the impact of risk can either be reduced through the implementation of good mitigation measures, or it can be amplified by the implementation of bad mitigation measures. Implementing mitigation measures which are unsuccessful in preventing certain risks can have serious consequences on the livelihoods of people.

### 2.6.3 Mitigation measures in rural areas

In this sub-section attention will be directed to information regarding the type of mitigation measures already implemented in order to limit or reduce the adverse impacts of the risks associated with the challenges of rural areas.

#### 2.6.3.1 Poverty, education, and economic growth

Fan and Brzeska (2008) pointed out that mitigation measures play a fundamental role in rural areas. Various countries are characterised by their rural and urban disparities which occurred when planning policies were implemented that favoured the development of urban areas at the expense of the rural areas. According to Fan and Zhang (2004), only recently has it been decided in countries such as China and India that proper mitigation measures should be developed and implemented within rural areas. One of the mitigation measures focuses on targeted public investment in poor rural areas such as Western China and Eastern India. This investment focuses on rural infrastructure, agricultural research and education and has unveiled a large poverty reduction impact which in some cases expands to urban poverty reductions. In addition to this, Shilipi (2008:12-14) stresses that the disparities between rural and urban areas with regards to education can be regarded as a pressing issue which needs to be addressed. This is supported by the National Rural Health Alliance (2013) which advises that greater efforts must be provided to ensure that rural and remote rural areas receive equal levels of education as their urban counterparts. This issue, according to Shilipi (2008:12-14), can be addressed through the implementation of mitigation measures that focus on the development and investment of human capital within rural areas. Rural areas, according to

Fox and Porca (2001:103) would also be well positioned for rapid economic growth if only they had infrastructure that was competitive with the infrastructure available in many urban places. Rural economies can therefore be made more vital by selecting certain mitigation measures, such as infrastructural development, which can be regarded as most efficient for stimulating rural economies.

#### 2.6.3.2 Water and energy

The provision of water, according to the European Commission (2008:5) can be regarded as a global problem with far-reaching social and economic implications. Trends within rural areas will keep the issue of water provision on the agenda for a long time. Three types of mitigation measures are utilised to reduce the risks of water shortages. These mitigation measures are technical, economic and institutional mitigation options (European Commission, 2008:45), and can be described as follows:

- Technical option: This option mainly focuses on the management of water supply and the management of water demand.
- Economic option: Economic options focus on water demand management by economic incentives.
- Institutional option: Institutional options aim to address the different ways in which people can organise themselves in order to cope with water stress.

The options are mainly practised in agricultural, industrial, domestic, natural and recreational sectors (European Commission, 2008:45).

According to the Intergovernmental Panel on Climate Change (IPCC) (2011:41), another issue recognised on a global scale is energy. In the year 2008, 1.4 billion people around the world lacked electricity. Approximately 85% of these people live in rural areas. The traditional and unsustainable use of biomass for cooking purposes was estimated to be 2.7 billion people. Renewable energy promises to be a proper mitigation measure which can be considered to provide rural households with universal access to modern energy services. Various options of renewable energy with regards to the provision of electricity and heat are taken into account. Electricity provision focuses on biomass, solar electricity, geothermal electricity, hydropower, ocean electricity and wind electricity. The provision of heat mainly focuses on biomass heat, solar thermal heat and geothermal heat. It is stated within an article by Tshikhudo (2014) that the South African Department of Rural Development and Land Reform supports the implementation of renewable energy sources. The department purchased and installed solar

energy kits to 100 households within the Kromdraai rural community of the West Rand District, Gauteng.

#### 2.6.3.3 Health and transport

According to the National Rural Health Alliance (2013), it is important to develop various mitigation measures for the issue of health within rural areas. Rural and remote rural areas have older populations, and higher levels of health risk. Despite all the higher levels of need, rural people have less access to professional health services. To prevent the marginalisation of rural communities with regards to their health and healthcare services, it is recommended that the government must give more attention to the development of rural communities. This includes the provision of healthcare infrastructure, healthcare systems, increased investment in health promotion and risk prevention and placing greater emphasis on the needs of rural populations etc. It is also advised by the National Rural Health Alliance (2013) that rural areas must be provided with greater equity in access to transportation. It is stated by Naudé *et al*. (2001) that various challenges within rural areas exist because of the lack of proper transportation infrastructure and services. These challenges must be addressed by transport policies, strategies and related interventions. Such interventions must promote coordinated nodal and linkage development in rural areas which focus on linkage infrastructure and service sectors such as roads and transportation.

#### 2.6.3.4 Land

Challenges with regards to land, as highlighted in Table 2.7, are evident within various countries such as Brazil, Mexico and South Africa. It has been reported by Stats SA (2008:35) that the minority of rural households (13.9%) have access to land that could be used for growing food or raising livestock. In Brazil, this also seems to be an issue seeing that 46% of rural households are landless, unemployed labourers (IFAD, 2011:1). An article by Skwatsha (2014) indicates that the South African Department of Rural Development and Land Reform aims at mitigating this problem by dealing with land tenure issues which form part of the land reform initiative. It is apparent that providing the rural poor with land will contribute towards food security and simultaneously address the pervasive challenges of poverty.

#### 2.6.3.5 Infrastructure

According to the World Bank (1994:1), the future challenges of infrastructure involve the tackling of inefficiency, waste and responding to user demand. Infrastructure investments in Africa and South America are in many cases wasted due to the lack of maintenance. In addition to this, African Monitor (2012:5) states that rural areas all over Africa are

characterised by unreliable infrastructure. From 2008 to 2010, African Monitor, as well as its partners, conducted poverty hearings in which a variety of communities, especially those from rural areas, were invited. These hearings took place in South Africa, Kenya, Liberia, Senegal and Mozambique. Participants identified the lack of rural infrastructure as the main stumbling block that has a negative effect on socio-economic improvement, and also pointed out that it hampers their governments' poverty alleviation efforts (African Monitor, 2012:6). Infrastructure is needed, especially in rural areas, to provide farm productivity and non-farm rural employment. The poor performance in providing and sustaining infrastructure provides a strong reason for doing things less wastefully and more effectively. A mitigation measure for unmaintained infrastructure can therefore be regarded as increasing the quality of infrastructure instead of increasing the quantity of infrastructure (World Bank 1994:1). Under-investment according to Bird *et al*. (2002:15) can be seen as one of the main reasons why infrastructure within rural and remote rural areas tends to be under developed. Mitigating this challenge therefore looks at providing more investment for developing infrastructure within rural areas.

#### 2.6.3.6 Governance

The United Nations Economic Commission for Europe (UNECE, 2007:78) declares that "Policy frameworks and good governance that enable rural people to effectively influence public decisions that affect them are needed". Governance was defined by the World Bank in 1992 as "*the manner in which power is exercised in the management of a country's economic and social resources for development*" (Kaufman et *al*., 2010:2).

In summary, Table 2.9 presents the different mitigation measures utilised within rural areas to address the challenges outlined by the last-mentioned authors.

**Table 2-9: Mitigation measure per challenge**

| Challenge | Mitigation measure |
|---|---|
| **Poverty** | Provision of rural infrastructure, agricultural research, and education. Provision of land to poor rural communities for agricultural purposes. |
| **Economic growth** | Infrastructural development. |
| **Education** | Development and investment of human capital. |
| **Water** | Technical mitigation options, economic mitigation options and institutional mitigation options. |
| **Sanitation** | |
| **Energy** | Renewable energy |
| **Health** | Place greater emphasis on the development of rural communities. |
| **Transport** | Transport policies, strategies and related interventions. |
| **Land** | Provision of land to poor rural communities for agricultural purposes. |
| **Infrastructure** | Increase the quality of infrastructure. Increase infrastructure investment within rural areas and remote rural areas. |
| **Governance** | Policy frameworks and Good Governance that enable public participation. |

Basic services

**Source: Own construction (2016)**

From Table 2.9, it is evident that there are a variety of mitigation measures available that can be implemented within rural areas, and that they are already in place for each of the rural challenges identified in sub-section 2.3.1.

### 2.6.4 Response to current situation in rural areas

Even though various mitigation measures exist to combat the adverse risks that go with the challenges of rural areas; many cases of service delivery protests by unsatisfied rural communities have been recorded. It is stated within an article by Burger (2009) that the main reason for protests in countries such as South Africa is because of the dissatisfaction with the delivery of basic municipal services. These basic services include running water, electricity and toilets. It is especially in informal settlements where one finds dissatisfaction towards the lack of basic services. Statistics provided by Empowerdex have shown that a large service delivery gap exists between urban and rural municipal areas, especially in former homeland communities in Limpopo, Eastern Cape, North West, and KwaZulu Natal (Empowerdex, 2009:4). These areas, according to Managa (2012:2), are more likely to demand better service delivery. Service delivery protests also occur in the rural areas of China. An article posted by The Economist (Anon, 2007) provided information on a protest in the Hunan province where approximately 20 000 protestors and 1500 police and military forces clashed. Approximately 23 000 such incidents were recorded in 2006 despite the recently announced increase in spending on rural healthcare and education, as well as specific policies to expand the rural social insurance and welfare schemes. The protest reported by The Economist is regarded as a demonstration of widespread discontent in the Chinese rural areas, fuelled by general issues regarding poverty, corruption, inequality, increase in travelling costs, increase in healthcare costs, and illegal land demand by local government.

Other issues countries such as Brazil face are protests regarding the distribution of land to rural households. A scenario was unveiled in an article by Boyle (2010) during which the Brazilian landless workers' movement forced itself into the nation's attention as members occupied several government offices in Sao Paulo and Rio de Janeiro. According to an article by Alves (2015) agrarian reform hasn't progressed due to the government's support of current policy which focuses on agribusiness models and capital. Even though the Brazilian landless workers' movement received titles for approximately 350 000 rural households (35 million acres) in more than 2000 settlements, clashes with authorities continue to exist.

It is evident that even though certain steps are taken to mitigate the challenges within rural areas, rural households still feel trapped in a marginalised society. It can therefore be concluded that not all mitigation measures are successful in preventing the adverse risks associated with the challenges of rural areas.

## 2.7 Chapter summary

In this chapter, various pieces of literature have confirmed that the marginalisation of rural areas exists within developing countries such as South Africa, Brazil and Mexico. Additional information also pointed out that countries such as China battle the adverse effects of rural marginalisation. The challenges faced because of the marginalisation of rural areas are also described during Chapter 2. These challenges were identified by consulting various pieces of literature within which evidence-based opinions were raised by different authors. It was also determined that the same challenges can be found within an international, national, provincial, district and local level.

Section 2.4 mainly focused on providing literature background on mitigation. Attention was directed at selecting a proper definition for the term as well as explaining the link between mitigation and risk. In this sub-section, it was made evident that different mitigation measures already exist for each of the challenges identified in sub-section 2.3.1. Afterwards, it was suggested that even though certain mitigation measures may be in place for specific challenges, they do not necessarily provide rural communities with all their relevant needs. In many cases, as exhibited in sub-section 2.4.5, rural communities still feel trapped in a marginalised society.

According to the OECD *et al*. (2013:4), it is essential that organisations utilise sustainable development indicators (SDIs) to measure current human well-being, including its distribution across and within countries. In addition to this, the White Paper on Local Government, 1998 reports that municipalities are already provided with indicators to ensure proper planning for their areas. In a municipal context, these indicators are referred to as key performance indicators (KPIs) and are developed through community participation processes. During these processes, communities prioritise services such as water and sanitation which the municipality must report back on to the communities. These indicators have an evident impact on delivery and it is therefore critical that these indicators focus on outcomes and not only inputs and outputs (RSA, 1998:32- 33). Investigating various sets of indicators may assist in identifying which specific measures or steps are utilised by municipalities to ensure sustainable development in rural areas. Chapter 3 will therefore centre itself between describing the literature behind SDIs and identifying possible indicators that are utilised by organisations to ensure sustainable development.

# CHAPTER 3: SUSTAINABLE DEVELOPMENT INDICATORS

In sub-section 2.4.5 it was confirmed that organisations make use of Sustainable Development Indicators (SDIs) in order to measure human well-being as well as the distribution thereof. In addition to this, municipalities make use of indicators (KPIs) to ensure proper planning and to address the needs of the community. It is therefore evident that further research on SDIs is needed to determine whether indicators that may address the everyday challenges in rural areas exist. Chapter 3 will therefore start off by focussing on the sections identified in Figure 3.1:

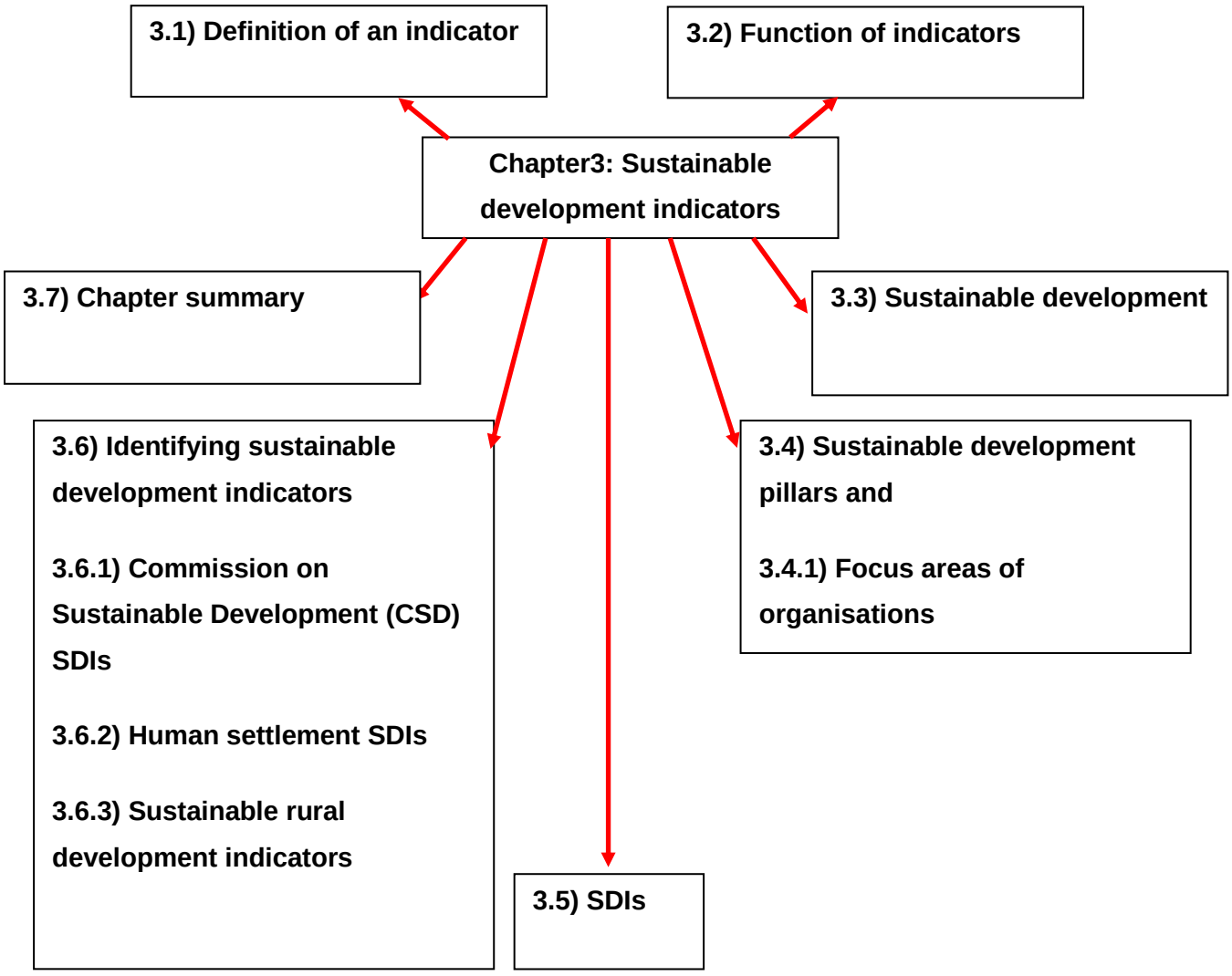


**Figure 3.1: SDIs**

**Source: Own construction (2015).**

### 3.1 Definition of an indicator

To understand what SDIs are it is important to firstly assess the definition of the term ‘indicator’. Various definitions for the term will therefore be discussed before the function of the term is described. These definitions are discussed as follows:

According to the OECD (2013:3) an indicator can be described as a ‘quantitative or qualitative factor or a variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor’.

- According to the definition adopted by the USAID an indicator can be regarded as a variable, of which the purpose is to measure change in a phenomenon or process (Kumar, 1989:4).
- The European Commission (2003:12) describes indicators (within the planning stage of a project) as ‘a description of the project’s objectives in terms of quantity, quality, target group(s), time and space’.

In brief, it is evident that these definitions have two characteristics in common. They describe indicators as information (qualitative or quantitative) being used to measure achievements and to help achieve certain goals. In contrast to the above-mentioned definitions, the word ‘indicator’ is described by Hartmut Bossel within a different context to make the understanding of indicators as uncomplicated as possible. Bossel (2010:25) explained that humans use a variety of indicators to guide their decisions and actions. Indicators can be regarded as qualitative or quantitative measurements of the current condition of something important to humans such as body temperature, heartbeat or blood pressure. Bossel (2010:25) then continued by stating that these indicators are important to humans because they provide information about our health. It is also mentioned that humans want information about their health seeing that it is of vital importance to our existence, and our concern about health represents an interest that orientates most of the decisions humans make.

For the purpose of this research topic, the term ‘indicator’ will make reference to the first definition as highlighted by the OECD, namely ‘a quantitative or qualitative factor or a variable that provides a simple, and reliable, means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor’. This definition seems to be more comprehensive than the others. Despite this, the function of an indicator cannot be understood by considering its definition alone. Section 3.2 will therefore

discuss the function of indicators and their relationship to sustainable development in greater detail.

### 3.2 Functions of indicators

Indicators are normally utilised to inform better decision-making and effective actions by simplifying, clarifying and providing aggregated information to policy makers. Indicators can also assist with the incorporation of physical and social science knowledge into decision-making. Indicators are known to help measure and calibrate progress towards sustainable development goals. Usually, indicators are also utilised by different institutions to provide early warnings in order to prevent economic, social and environmental setbacks. Indicators can in some cases even be used to communicate ideas, thoughts and values (UN, 2007:3). Bates *et al*. (2012:1) support the fact that indicators can be used to measure progress towards certain goals which include Millennium Development Goals. In addition to this, it is stated by Bates *et al*. (2012:1) that indicators must always be made available in order to support the different targets for any goal. Without practical indicators, goals merely remain aspirational and progress cannot be measured.

On behalf of the European Commission, it is stated by Adelle and Pallemaerts (2009:22) that the organisation uses a vast range of indicators in order to support policy development processes and the evaluation thereof. It is also mentioned that indicators can provide important input throughout the policy cycle, from recognising problems, policy formulation and decision-making to monitoring the implementation of the policy. The European Commission's use of indicators can also be regarded as very active, seeing that more indicators are being used, updated and developed. The European Union's success with sustainable development is closely linked with the use of indicators.

Over the last few decades there was a large explosion of methods and indicators to measure sustainable development. Many organisations have adopted sets of SDIs in order to track progress towards a sustainable society. This initiative has helped to put sustainable development on the agenda of national and international institutions (OECD *et al*., 2013:4).

### 3.3 Sustainable development

In order to understand what SDIs are, it is important to review the definition of sustainable development. In 1987, a report by the World Commission on Environment and Development (WECD) (1987), entitled the Brundtland Report, defined sustainable development as *'development that meets the needs of the present without compromising the ability of the*

*future generations to meet their own needs'.* According to an article by the International Institute for Sustainable Development (IISD) (2013), this is considered the most often quoted and generally accepted definition for sustainable development and will therefore be used as the default definition in this research project. The definition of sustainable development, according to O'Riordan (1995:21), can be regarded as ambiguous. This, on the other hand, allows the definition to surpass the tension inherent in its meaning (O'Riordan, 1995:21). Elliot (2013:19) describes this as 'constructive ambiguity' which allows one to utilise the definition to support a wide range of practical initiatives and causes. It can therefore be stated that in order for the definition of 'sustainable development' to meet the needs of this research project, it must take rural areas into account as a factor, seeing that this research project, as made evident during sections 2.2 and 2.3, seeks to address the challenges located in rural areas.

### 3.4 Sustainable development pillars

Sustainable development, according to Elliot (2013:20) comprises three pillars namely the 'Natural' pillar, 'Social' pillar, and the 'Economic' pillar (Figure 3.2).

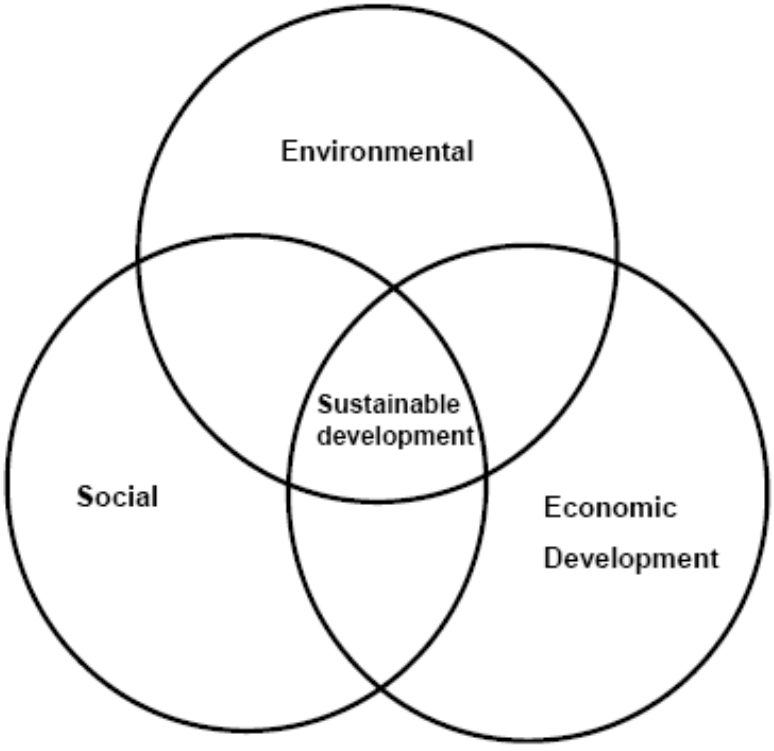


**Figure 3.2: The three pillars of sustainable development**
**Source: Elliot (2013:20)**

Recently there have been some suggestions that a fourth pillar should be added. It is argued by indigenous people that the fourth pillar should be a pillar of cultural diversity. Cultural

diversity can be seen as the root of a moral, spiritual, ethical, and sustainable way of life. This extra pillar will also represent the respect and care for cultural diversity as well as ecological integrity (Elliot, 2013:21). However, this research project will not delve into this matter and will therefore keep its focus on the three-pillar model.

According to the three-pillar model of sustainable development (Fiksel *et al*. 2012:7), the three pillars on which sustainable development rest have overlapping environmental, economic and social domains. In this conceptualisation, sets of SDIs should thus be developed to measure progress towards targets in each of the domains. In addition to aforementioned, it must be noted that another sustainability model, namely the nested circles of sustainability, exists. As depicted below, this model consists of the same elements as the three-pillar model.

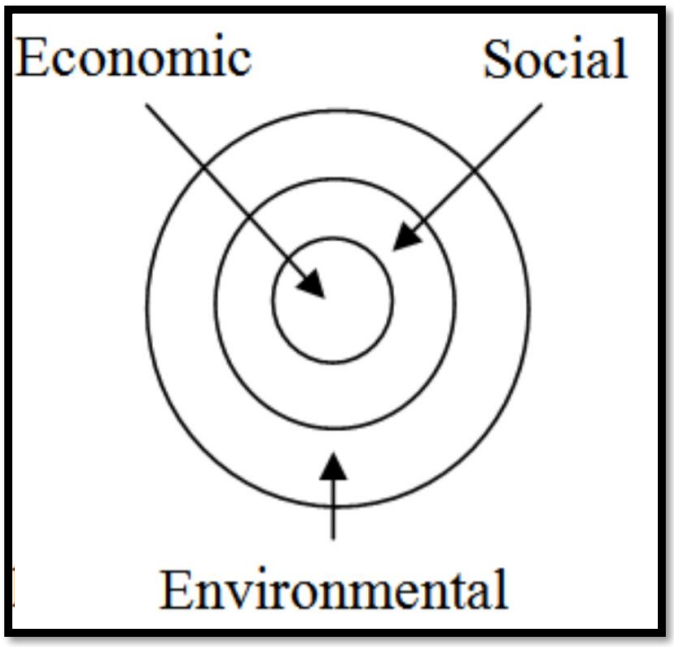


**Figure 3.3: Nested circles of sustainability**
**Source: Adopted from Moir and Carter (2012)**

Similar to the three-pillar model, the nested circles of sustainability are also used by various organisations. However, for the purpose of identifying SDIs for a specific objective, the three-pillar model contains less limitations (Moir and Carter, 2012: 1481-1482). As a result, the following section will discuss the three-pillar model in greater detail.

### 3.4.1 Focus areas of organisations

The values and focus areas of an organisation such as the Sustainable Development Solutions Network (SDSN) are usually highlighted in open working groups. The different SDIs, which are linked to the values and focus areas, are then pointed out and selected (SDSN, 2014:2). This organisation utilises the three-pillar figure during this process (Figure 3.3).

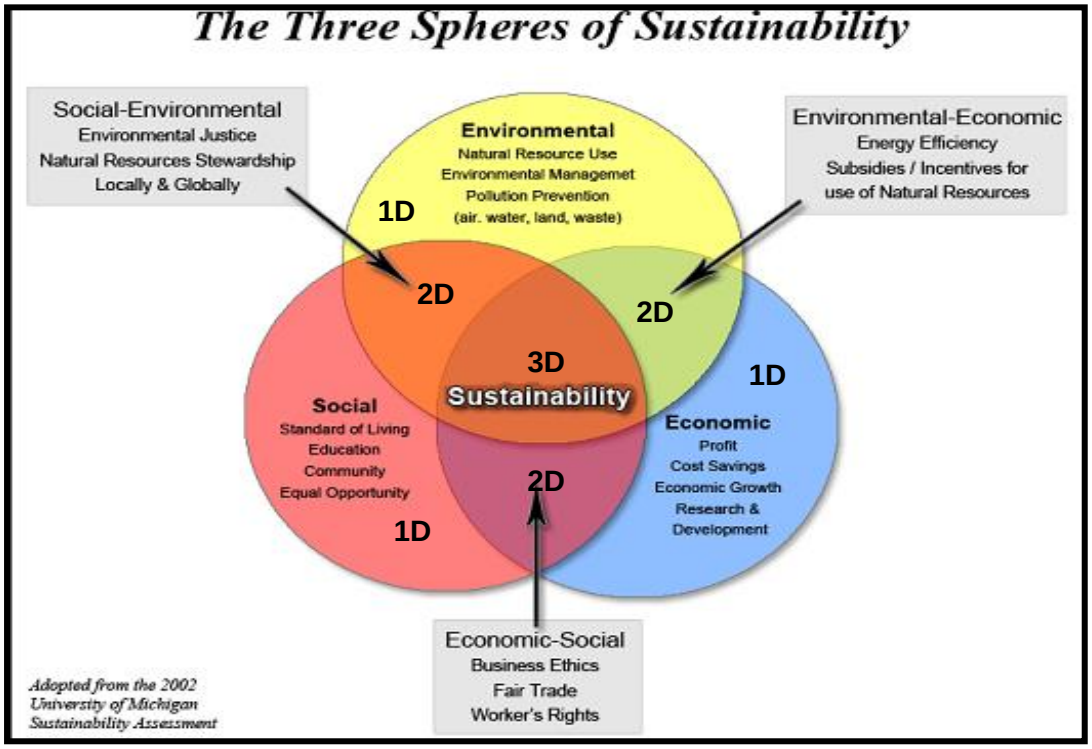


**Figure 3.4: The three pillars of sustainable**

**Source: Adopted from Rodriguez *et al*. (2002)**

The process of selecting indicators is best described within the 1-D (one domain), 2-D (two domain) and 3-D (three domain) process (Fiksel *et al*., 2012:7). It is stated by Fiksel *et al*., (2012:7-8) that each domain (1-D) has its own indicators, for example: water (environmental), population (social) and economic output (economic).

## 3.5 Sustainable Development Indicators (SDIs)

An action plan adopted in 1992, Chapter 40 of Agenda 21, at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil called upon organisations and countries to develop indicators for sustainable development to assist in providing a solid basis for decision-making at all levels. It was generally acknowledged that indicators could play an important role in helping countries make decisions concerning sustainable development (UN, 2007:3-5).

The purpose of an SDI, according to the SDSN (2014:5), can be seen as twofold. The indicator must firstly act as a management tool to assist countries in developing implementation and monitoring strategies for achieving sustainable development goals and monitoring progress. Secondly, the indicator must act as a report card for measuring progress towards achieving a target. SDIs thus also ensure the accountability of different governments and other stakeholders for achieving the sustainable development goals. During a study on the compliance of African countries with environmental sustainability indicators for sustainable development, SDIs were revealed as one of several factors utilised to measure various countries' performance to achieve sustainable development (Nwonwu, 2007:133). For the purpose of this research project, SDIs can therefore be defined as a particular type of indicator used in pursuing the overall goal of sustainable development. As stated by the SDSN (2014:5), an SDI will only be used to measure progress with respect to sustainable developmental targets.

According to the OECD *et al*. (2013:4), SDIs should focus on current human well-being as well as the distribution of human well-being between and within countries. For the purposes of this project, it is thus important to note that SDIs should address the challenges in rural areas as discussed in section 2.3.1 which includes economic development, poverty, infrastructure, transport, and basic services. Various sets of sustainable development indicators will be identified in order to point out whether organisations take certain measures into account to address the challenges in rural areas.

## 3.6 Identifying sustainable development indicators

In this section, attention will be given to indicators used for the general goal of sustainable development. Afterwards, indicators regarding the development of sustainable human settlements (Section 3.6.2) and sustainable rural development will be described. A broad field of indicators will therefore be evaluated which will provide the opportunity, during the empirical research phase, of selecting the most appropriate indicators for addressing rural challenges. As a result, SDIs will assist in assessing if Municipal Performance Management Systems are able to address all the challenges within rural areas.

### 3.6.1 CSD indicators

Organisations such as the Commission on Sustainable Development (CSD), with the involvement of governments, international organisations and various stakeholders, have developed a set of national-level SDIs and are known for setting the pace. Cooperating

organisations have agreed to incorporate the CSD indicators within the relevant capacity building activities to ensure coherence of CSD indicators with other indicator sets such as the Millennium Development Goal indicators, the 2010 Biodiversity indicators Partnership, the Hyogo Framework for Action on Disaster Reduction, the Global Forest Resource Assessment and Sustainable Tourism Indicators (UN, 2007:9). Seeing that the CSD indicators are incorporated and compared to other organisations' indicators, it was found fit to explore these indicators during this sub-section.

The CSD indicators reviewed in October 2007 contain a core set of 50 indicators (UN, 2007:10-14). These so-called core indicators can be seen as part of a larger set of 96 indicators of sustainable development. Using a smaller set such as the core set, keeps the indicator sets manageable, whereas the larger set allows the insertion of additional indicators which enable countries to do a more comprehensive and differentiated assessment of sustainable development. Core indicators must fulfil three important criteria. First, they cover issues that are relevant for sustainable development in most countries. Second, they provide information which is not available from other indicators. Third, they can be calculated by most countries with data that are either readily available or could be made available within reasonable time costs. Indicators that are not part of the core indicator set, are either relevant only for a smaller set of countries, provide complementary information to core indicators or are not easily available for most countries (UN, 2007:9).

**Table 3-1: CSD core indicators for sustainable development**

| Theme | Sub theme | Core indicator |
|---|---|---|
| **Poverty** | 1. Income poverty<br>2. Income inequality<br>3. Sanitation<br>4. Drinking water<br>5. Access to energy<br>6. Living conditions | 1. Proportion of population living below national poverty line<br>2. Ratio of share in national income of highest to lowest quintile<br>3. Proportion of population using an improved sanitation facility<br>4. Proportion of population using an improved water source<br>5. Share of households without electricity or other modern energy services<br>6. Proportion of urban population living in slums |
| **Governance** | 1. Corruption<br>2. Crime | 1. Prevalence of corruption among government officials, measured as percentage of population having paid bribes<br>2. Number of intentional homicides per 100,000 population |
| **Health** | 1. Mortality<br>2. Health care<br>3. Nutritional status<br>4. Health status and risks | 1.1 Under-five mortality rate<br>1.2 Life expectancy at birth<br>2.1 Percentage of population with access to primary health care facilities<br>2.2 Immunisation against infectious childhood diseases<br>3. Nutritional status of children<br>4. Morbidity of major diseases such as HIV/AIDS, malaria, tuberculosis |
| **Education** | 1. Education level<br>2. Literacy | 1.1 Gross intake ratio to last final grade of primary education<br>1.2 Net enrolment rate in primary education<br>1.3 Adult secondary and tertiary schooling attainment level<br>2. Adult literacy rate |
| **Demographics** | 1. Population | 1.1 Population growth rate<br>1.2 Dependency ratio |
| **Natural Hazards** | 1. Vulnerability to natural hazards | 1. Percentage of population living in hazardous areas |
| **Atmosphere** | 1. Climate change<br>2. Ozone layer depletion<br>3. Air quality | 1. Carbon dioxide releases/ emissions<br>2. Consumption of ozone depleting substances<br>3. Ambient concentration of air pollutants in built up/ urban areas. |
| **Land** | 1. Agriculture<br>2. Forests | 1. Arable and permanent agricultural areas<br>2. Proportion of land covered by forests. |
| **Oceans, Seas and coasts** | 1. Coastal zone<br>2. Fisheries<br>3. Marine environment | 1. Proportion of the total population living in coastal areas<br>2. Proportion of fish stocks within safe biological limits<br>3. The proportion of marine areas that are protected |

| Theme | Sub theme | Core indicator |
|---|---|---|
| | | |
| **Freshwater** | 1. Water quantity<br>2. Water quality | 1. The proportion of total water resources used<br>1.2 The intensity of the use of water by economic activities<br>2. Presence of faecal coliforms in freshwater |
| **Biodiversity** | 1. Ecosystem<br>2. Species | 1. Proportion of terrestrial area protected<br>2. The change in threat status of species |
| **Economic Development** | 1. Macro-economic performance<br>2. Sustainable public finance<br>3. Employment<br>4. Information and communication technologies<br>5. Tourism | 1.1 Gross domestic product (GDP) per capita<br>1.2 Investment share in GDP<br>2. Debt to GNI ratio<br>3.1 Employment-population ratio<br>3.2 Labour productivity and unit labour costs<br>3.3 Share of women in wage employment in the non-agricultural sector<br>4. The number of internet users per 100 population<br>5. The contribution tourism has to the GDP |
| **Global economic partnership** | 1. Trade<br>2. External financing | 1. The shortfall of the current account as a percentage of the GDP<br>2. Net Official Development Assistance given or received as a percentage of GNI |
| **Consumption and production patters** | 1. Material consumption<br>2. Energy use<br>3. Waste generation and management<br>4. Transportation | 1. Material intensity of the economy<br>2.1 Annual energy consumption measured in total and by main user category<br>2.2 The intensity of energy use, total and by economic activity<br>3.1 Generation of dangerous/ hazardous waste<br>3.2 The treatment and disposal of waste<br>4. Modal split of passenger transportation |

**Source: United Nations (2007:10-14)**

From the set of indicators displayed above in Table 3.1, it is evident that the focus is on a broad range of factors to ensure sustainable development. Factors from each one of the three pillars (spheres), namely, natural, economic and social, have been included, for instance: health (social pillar), natural hazards (natural pillar) and economic development (economic pillar). It is however, important to note that the above set of indicators is used to achieve the broad goal of sustainable development. This goal can be made even more defined by focussing on sustainable development within human settlements. These indicators will be highlighted within the next section.

### 3.6.2 Sustainable human settlement indicators

Determinants such as SDIs, specifically linked to human settlements, are used by activities and organisations such as the Habitat Agenda, the United Nations Conference on Human Settlements (UNCHS) Indicators Programme, as well as other indicator programmes such as the CSD indicators, Cities Environment Reporting on the Internet (CEROI) initiative and particularly the South African CEROI partners and the Draft Environmental Indicators for South Africa. These activities and organisations make use of 'quality of life' determinants drawn from the UN Habitat Agenda definition of sustainable human settlements (CSIR, 2002:27). This definition defines a sustainable human settlement as a society which provides '...all people, in particular those belonging to vulnerable and disadvantaged groups, with equal opportunities for a healthy, safe and productive life in harmony with nature and their cultural heritage and spiritual and cultural values; and which ensures economic and social development and environmental protection, thereby contributing to the achievement of national sustainable development goals'. Utilising sustainable human settlement indicators directed at 'quality of life' will ensure that the indicators are in line with the last-mentioned definition and will also guarantee that people living in these human settlements, whether it is rural or urban, receive an equal opportunity for a healthy and productive life (UN, 2003:13). These indicators are displayed in Table 3.2.

The South African Department of Housing has a strong connection with the UN Habitat Agenda seeing that the Department has taken responsibility of interpreting the principles of the Habitat Agenda into a local context (CSIR, 2002:26). The Habitat Agenda is furthermore used as a framework for the Department's reporting to the United Nations on Human Settlements. The following indicators presented in Table 3.2 are therefore used as a benchmark against which sustainable human settlements in South Africa are measured (CSIR, 2002:26).

**Table 3-2: Sustainable human settlement indicators based upon the UN Habitat Agenda**

| Issue | Determi-nant | Indicators |
|---|---|---|
| **Health** | Sanitation | 1. Percentage of people with access to a defined minimum standard of sanitation.<br>2. Percentage of people affected by sanitation related diseases.<br>3. Percentage of people who have received training on hygiene practices |
| | Clean Water | 1. Percentage of people with access to clean drinking water in the form of a public tap, piped water in dwelling or on site.<br>2. Percentage of people affected by waterborne diseases.<br>3. Reliability of services regarding water provision.<br>4. Percentage awareness regarding proper hygiene practice. |
| | Clean air | 1. Level of indoor air pollution.<br>2. Percentage of population affected by air pollution.<br>3. Percentage of people affected by respiratory disease<br>4. The affordability of clean energy sources. |
| | Absence of disease vectors | 1. Percentage of people with proper waste removal.<br>2. Proximity of waste removal sites to human habitation.<br>3. Municipal vector management programmes.<br>4. Percentage of people affected by diseases caused by inadequate waste management. |
| | Access to basic health care | 1. Number of healthcare facilities per capita.<br>2. Average distance from healthcare facilities. |
| **Safety** | Reduced threat regarding natural disasters | 1. Area of settlements within distance from possible disaster areas (dolomitic rock, steep slopes, flood plains, etc.)<br>2. Losses to natural disaster (human and economic orientated).<br>3. Availability of disaster management systems. |
| | A safe living environment | 1. Crime rate (number, type, location)<br>2. Levels of fear of crime.<br>3. Community safety programmes. |
| | Reduced threat regarding man-made disasters. | 1. Percentage of households making use of hazardous energy sources.<br>2. Percentage of people living in informal settlements.<br>3. Distance of hazardous industries from residential areas.<br>4. Space available in hazardous waste disposal facilities.<br>5. Monitoring of industrial effluent. |
| **Shelter** | Affordable and safe/ proper housing | 1. Number of people living within one dwelling.<br>2. Percentage of population living in informal settlements.<br>3. Floor area per person.<br>4. Price of houses to income ratio.<br>5. Level of services provided to houses and area.<br>6. Cost of services as a percentage of household income.<br>7. Quality of housing provided.<br>8. Security of tenure. |

| Issue | Determi-nant | Indicators |
|---|---|---|
| | Housing for special needs | 1. Number of orphanages per 1000 population.<br>2. Number of hospices per 1000 population.<br>3. Number of shelters per 1000 population<br>4. Number of elderly care facilities per 1000 population. |
| **Produc-tive life** | Access to means of living | 1. Percentage of people who are unemployed.<br>2. Percentage of population living in poverty (household subsistence level).<br>3. Spatial distribution of employment opportunities.<br>4. Provision for informal sector and rural subsistence. |
| | Access to education | 1. Number of schools available per 1000 people.<br>2. Spatial distribution of educational facilities.<br>3. Range of educational facilities available. |
| | Access to economic resources | 1. Financing support regarding housing.<br>2. Housing subsides allocated as percentage of need.<br>3. Right to own and inherit property. |
| | Mobility | 1. Availability and affordability of public transport.<br>2. Spatial distribution of transport routes and access nodes.<br>3. Regulations on disability access enforced.<br>4. Cars per 1000 population. |
| **Self determi-nation** | Connectivity | 1. Number of households with access to telephones.<br>2. Internet service providers per capita.<br>3. Number of community media services (e.g. radio stations and newspapers). |
| | Access to information | 1. Availability of access to municipal information.<br>2. Location of municipal offices.<br>3. Number of libraries per 1000 people. |
| | Public participation and democracy | 1. Level of participation in democratic system.<br>2. Participatory approach to decision-making and development.<br>3. Participation of people with disabilities in all spheres of human settlements. |
| **Quality of built environ-ment** | Natural heritage and tradition | 1. Percentage of open green area per capita.<br>2. Number of protected natural heritage sites. |
| | Urban decay | 1. Percentage derelict areas in urban areas.<br>2. Urban greening initiatives.<br>3. Maintenance of public open spaces.<br>4. Maintenance of infrastructure. |
| | Supporting community | 1. Number of entertainment facilities and sport grounds per 1000<br>2. Maintenance and accessibility of cultural heritage sites.<br>3. Number of cultural facilities. |

**Source: CSIR (2002:27-28)**

Table 3.2 lists indicators for sustainable human settlement. When comparing these indicators to the three pillars (spheres) of sustainable development it is evident that the main focus of the Department of Human Settlements lies with all three pillars (spheres). It is, however, important to note that none of the above indicators act individually. All the indicators work together in order to achieve one main goal. A single indicator therefore does not have to include a characteristic from each of the three pillars (spheres). It is only needed for the whole set of indicators to include characteristics from the three pillars (spheres).

### 3.6.3 Sustainable rural development indicators

In this sub-section, sustainable development indicators specifically for rural areas are identified. Ultimately two sources are used, each providing its own set of indicators. One of these sets, as highlighted by Niggemann (2009:ii), provides 20 indicators to measure sustainable development in rural municipalities in the form of core and sub-indicators. They are also based on a set of four pillars, namely, environment, economy, society and social equity. This set of indicators according to Niggemann (2009:ii), was applied to two different Swedish municipalities with the aim to assist with the development of its rural areas. Table 3.3 points out the 20 sustainable rural development indicators as developed by Niggemann.

**Table 3-3: Sustainable development indicators developed by Niggemann (2009)**

| | **Strands** | | | |
|---|---|---|---|---|
| | **A. Environment** | **B. Economy** | **C. Society** | **D. Socio Equity** |
| **Indicators** | 1.Population density | 1. Employment<br>• Diversity of the economy<br>• Joblessness (unemployment) | 1. Structure of the population | 1. Gender equity<br>• Differences in income between genders<br>• Leading positions per gender |
| | 2.Land Use | 2.Educational level | 2.Population Development | 2.Quality of life |
| | 3.Protection of natural environment<br>• Nature Protection Areas<br>• Biodiversity | 3.Cost of Living | 3.Health<br>• Rate of sick-leave taken<br>• Life expectancy | 3. Access to and availability of facilities |
| | 4.Awareness of environment<br>• Utilisation of fertiliser | 4.Economic Vitality<br>• Comparison in new businesses and bankruptcies | 4.Culture<br>• Municipal Expenditures<br>• Events related to cultural activities | 4.The quality of transport provided to the public |

| | Strands | | | |
|---|---|---|---|---|
| | **A. Environment** | **B. Economy** | **C. Society** | **D. Socio Equity** |
| | • Sustainable use and saving of resources<br>• Separation of waste | • Habits of commuting | | |
| | 5. Consumption of water and energy<br>• Consumption of energy<br>• Consumption of water | 5.Mobility<br>• Ownership of private vehicles<br>• Availability and access to internet | 5.Crime rate | 5.Level of participation in community: Voter turnout |

**Source: Niggemann (2009:30)**

The second set of indicators, as stated by the United Nations Economic Commission for Europe (UNECE) *et al*. (2007:113), was developed by the World Bank specifically for developing countries (see Table 3.4). These countries, according to the UNECE *et al*. (2007:287), include Brazil, India, Vietnam, South Africa, Ghana etc. The core indicators in this set, including their underlying sub indicators, are selected from a variety of themes, namely, basic socio-economic data, social well-being, natural resource management and biodiversity, enabling environment for rural development, and broad based economic growth for rural poverty reduction.

**Table 3-4: Sustainable development indicators developed by the World Bank**

| Theme | Subtheme | Indicator |
|---|---|---|
| **Basic Socio-economic data** | | • GDP growth per annum (%) |
| | | • Rural population (millions) |
| | | • Rural population / population of a specific rural area (% of total) |
| | | • Rural population density (people/ sq. km) |
| | | • Life expectancy in rural areas (years) |
| | | • GNI per capita (rural areas) |
| **Enabling environment for Rural Development** | **Policies and institutions** | • Subsidies for agricultural activities (% of total) |
| | | • Tariffs related to agriculture (%) |
| | | • Financial devolution (% of budget transferred to local municipalities) |
| | | • Index for food prices (1995 = 100) |
| | | • Independence of local courts |
| | | • Land Gini-coefficient |
| | | • Elections for local government |

| Theme | Subtheme | Indicator |
|---|---|---|
| | | • Number of farmers' organisations |
| | **Markets** | • Exportation of agricultural raw materials (as % of total product exports) |
| | | • Importation of food (as % of total merchandise imports) |
| | | • Employment of women in agricultural activities (as % of female labour force) |
| | | • Agricultural household net disposable income (as a % of all household net disposable income) |
| | | • Net disposable income per agricultural household member compared to that of members of all households |
| | | • Rural domestic savings (gross value) |
| | | • Percentage of rural households with access to formal credit services |
| | | • Number of market outlets for agricultural input produce |
| | | • Employed labour force in rural areas |
| | **Infrastructure** | • Roads in rural areas (% of rural population with access to proper roads) |
| | | • Rural population with access to electricity (%) |
| | | • Rural population with access to communication technologies (%). This includes radios, telephones, newspapers and computers with internet. |
| **Broad based Economic growth for Rural Poverty reduction** | **Poverty** | • Per capita income of rural areas |
| | | • Poverty gap ratio in rural areas |
| | | • Proportion of rural population that earns below $1 a day |
| | | • Headcount ratio of rural poverty (% of rural population below the poverty line) |
| | | • Rural per capita nutritional provision (expressed as calories per day) |
| | | • Infants in rural areas with a low birth weight (expressed as the % of births) |
| | | • Rural child malnutrition (% of children under five who are underdeveloped) |
| | **Agriculture** | • Agricultural gross value added (expressed as the % of the total GDP) |
| | | • Agricultural gross value added (expressed as the average annual growth) |
| | | • Productivity of agricultural activities (gross value added per worker) |
| | | • Number of farm households |
| | | • Index for food production as well as the index per capita |
| | | • Irrigated land (expressed as the % of cropland) |
| | | • Cropland/ arable land (%) |
| | | • Cereal yield (kilograms per hectare) |
| | | • Cereal yield (average annual growth) |
| | **Non-farm** | • Rural gross fixed capital formation (expressed as the % of the GDP) |
| | | • Share of the rural labour forced employed in non-farming activities |
| | | • Share of rural women employed in the non-agricultural sector (% of total employment) |
| | | • Growth in GDP for non-agricultural activities |
| | | • Number of rural businesses |
| | | • Number of non-agricultural jobs created annually |
| **Natural Resource Management** | | • Forests (expressed as the % of the total land area) |
| | | • Protected rural areas (expressed as the % of the total land area) |
| | | • Annual deforestation (% change) |
| | | • Ratio of rural protected area to maintain biological diversity to rural surface area |

| Theme | Subtheme | Indicator |
|---|---|---|
| **and Biodiversity** | | • Annual freshwater withdrawal in rural areas (as % of the total resources) |
| | | • Agricultural freshwater withdrawal (as % of the total freshwater withdrawal) |
| | | • Release of untreated organic water pollutants (kg. per day) |
| **Social Well-being** | **Education** | • Illiteracy rate in rural areas (expressed as % of total population) |
| | | • Literacy rate in rural areas (expressed as a % of ages between 15-24) |
| | | • Rural literate ratio between females and males (% of ages between 15-24) |
| | | • Primary education enrolment net ratio in rural areas (% of relevant age group) |
| | | • Ratio between rural girls and boys regarding primary, secondary, and tertiary educational (%) |
| | | • Proportion of rural pupils who reach grade 5 (% of grade 1 students) |
| | | • Primary education completion rate in rural areas (% of relevant age group) |
| | **Health** | • Prevalence of HIV/AIDS (% of rural adults, age 15-49) |
| | | • HIV prevalence among rural women who are pregnant (ages 15 to 24) |
| | | • Condom use rate |
| | | • Percentage of rural population (15- to 24-years olds) with adequate knowledge of HIV/AIDS |
| | | • Per capita caloric use |
| | | • Maternal mortality ratio in rural areas (per 1,000 live births) |
| | | • Infant mortality rate in rural areas (per 1,000 live births) |
| | | • Proportion of rural births attended to by skilled health staff (%) |
| | | • Rural population with access to enhanced sanitation (%) |
| | | • Rural population with access to an improved water source (%) |
| | | • Rural population with access to health services |
| | | • Per capita caloric use |
| | | • Under-five death rate (rural, per 1,000) |
| | | • Immunisation rate for measles (% of rural children under 12 months) |
| | | • Prevalence of child malnutrition (% of rural children under five) |

**Source: Adapted from the UNECE *et al*. (2007:469- 481).**

The themes and sub-themes provided by Niggemann (2009: ii) and the World Bank (UNECE *et al*., 2007:469-481) address the same issues but cannot necessarily be regarded as the same indicators. These indicators provide a unique manner in which the different issues are measured. It is also evident that both these indicator sets take all three pillars of sustainable development, as discussed in section 3.4, into account. For this reason, it is evident that these two sets of sustainable rural development indicators measure issues related to the environment, economy, and society.

## 3.7 Chapter summary

In this chapter, the role of indicators as well as their main functions were discussed. It was mentioned that some organisations create their own definitions for the term 'sustainable development' in order to meet a specific goal. These organisations also create their own indicators to meet their specific needs and objectives. The sustainability of these indicators is measured by means of a three pillar (diagrammatically depicted by spheres) process. Subsequently, the chapter highlighted various sets of SDIs. This included sustainability indicators for national development (CSD indicators), human settlement and rural development. Similarly, the Minister of the Department of Co-operative Government and Traditional Affairs (COGTA) prescribed national key indicators to municipalities which are intended to address the different challenges in communities providing services (Van der Waldt, 2012:223). Mention was also made of Ulundi Local Municipality (2006:17-18) which has dubbed these indicators as KPIs to determine whether a municipality is delivering on its developmental mandate. According to the Local Government Municipal Systems Act, 1998 the national government must work in collaboration with municipalities, provincial government and other agencies in order to develop a national PMS which utilises indicators. Furthermore, these indicators need to be cascaded down to municipalities and piloted. However, municipalities must have the authority to develop their own additional or supplemental sets of indicators (RSA, 1998:33).

For this reason, it is important to further investigate the field of indicators. There is a need to determine whether an organisational performance management system (OPMS), as utilised in local government, does indeed make use of indicators. The focus of the following chapter will therefore be on a literature discussion of a PMS and its underlying indicators.

# CHAPTER 4: PERFORMANCE MANAGEMENT SYSTEMS

The Department of Development Local Government and Housing (DDLGH) specified that an OPMS utilises indicators for a series of functions, one of which allows a municipality to determine whether it is delivering on its developmental mandate (DDLGH, 2009:56). In order to clarify what an OMPS is, and to explain its underlying indicators, it is important to discuss the theory behind a PMS. This chapter is divided into the sections summarised in Figure 4.1:

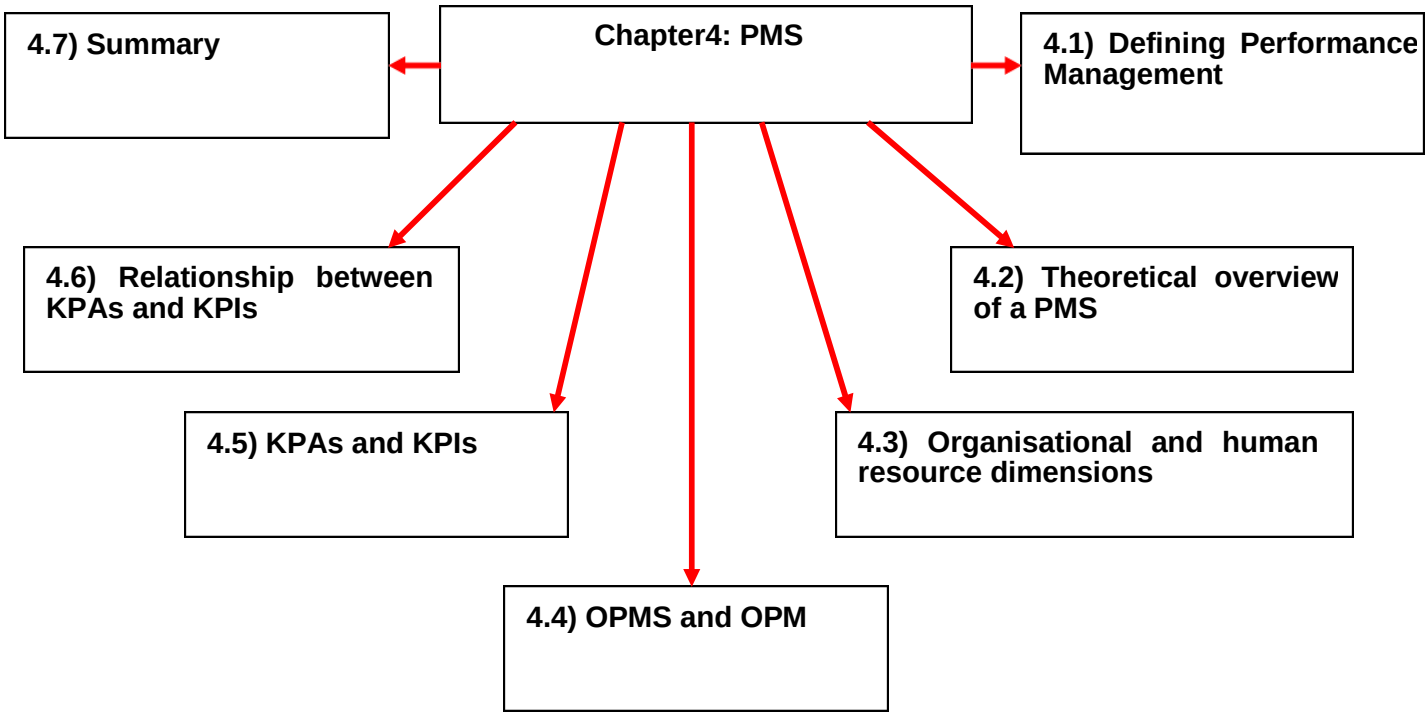


**Figure 4.1: PMS**

**Source: Own construction (2015)**

## 4.1 Defining Performance Management (PM)

In order to understand what a PMS is, it is important to focus on a key related definition that refers to 'performance management'. This will assist in gaining a better understanding of the concept of a PMS.

### 4.1.1 PM definition

For the purposes of this study, PM will make reference to a municipal context.

It is stated by Van der Waldt *et al*. (2007:111) that a broad description, in a municipal context, for PM 'can be regarded as an umbrella term for total management of municipal performance'. In the same way, it is outlined by Kanyane and Mabelane (2009:60) that PM may be defined as 'an ongoing process that determines the planning, managing, reviewing, rewarding and development of performance'. In addition to this, Van der Waldt (2004:39) highlighted that PM, in its widest definition, refers to 'all those processes and systems designed to manage and develop performance at the level of the public service, specific organisations, components, teams and individuals'. PM, according to the Okhahlamba Local Municipality (2012:4), can be regarded as a powerful tool that assists municipalities with the development of an integrated viewpoint on development in their area. Similarly, it is stated by the Ethekwini Municipality (2008:3) that PM can be defined as 'a process which measures the implementation of the organisation's strategy. It is also a management tool to plan, monitor, measure and review performance of indicators to ensure efficiency, effectiveness and impact of service delivery by the municipality'.

The term is, however, defined in greater detail by the Ulundi Local Municipality and the National Performance Management Advisory Commission (NPMAC). The Ulundi Local Municipality (2006:5) describes PM as a tool which assists municipalities 'to make immediate appropriate changes in the delivery and management of resources, identify and overcome major systematic blockages and guide future planning and development objectives and resource use'. It is then also advised that in order to achieve this, it is required that the PMS is pro-actively developed in conjunction with the annual review of policies. The NPMAC (2010:3) defines PM as follows: 'Performance management in the public sector is an ongoing, systematic approach to improving results through evidence-based decision making, continuous organisational learning, and a focus on accountability for performance'. PM according to the NPMAC (2010:3) can also be seen as integrated into all the features of an organisation's management and policy- making processes, altering an organisation's activities so they are more focused on attaining better results for the public.

The definition for PM as outlined above by the Ethikwini Municipality will be used as the standard definition for PM during this research project. It provides adequate reference to indicators and service delivery, thereby linking itself to the purpose of this study. According to Ethikwini Municipality (2008:3), PM is: 'A process which measures the implementation of the organisation's strategy. It is also a management tool to plan, monitor, measure and review performance of indicators to ensure efficiency, effectiveness and impact of service delivery by the municipality' (Ethikwini Municipality, 2008:3).

## 4.2 Theoretical overview of a PMS

A PMS, according to Kanyane and Mabelane (2009:60), may be regarded as an integrated system that measures the performance of an organisation and its personnel. It also sets out to develop a link between an organisation's mission and strategic direction and the required employee performance informed by skills capacity. On the other hand, an effective PMS according to the NPMAC (2010:3) ensures that activities, programmes, goals and resources are aligned with the organisation's priorities and objectives. Alignment must be vertical and horizontal. The term *vertical* describes a top-to-bottom alignment of the organisational structure and also from organisational to individual goals. Horizontal describes alignment across organisational units and across governments serving the same population.

The PM Framework of the Drakenstein Local Municipality (2008:1) defines a PMS as a 'framework that describes how a municipality's processes of performance planning, monitoring, measuring, reviewing, reporting and improvement will be conducted, organised or managed'. Motingoe (2011:53) supports the last-mentioned definition and reported that according to the PM Framework of the George Municipality (2008:3) a PMS can be regarded as a 'framework which describes how PM will be addressed and implemented in the municipality'. The definition of the Drakenstein Local Municipality will therefore be used as the default definition for this term.

### 4.2.1 Link between PM and a PMS

The last two mentioned definitions clearly indicate that a PMS can be regarded as a framework that describes how PM will be used within municipalities. Furthermore, it is important to keep in mind that a PMS must be developed in such a way that it overlaps and calibrates synergy with PM (Cape Winelands District Municipality, 2006:9). PM also makes use of other important tools such as KPIs, public feedback mechanisms, performance audit mechanisms etc. (Okhahlamba, 2012:5). PM systematically uses these tools in order to facilitate learning and improvement while focusing on results (NPMAC, 2010:3). As a result, the relationship between

PM and a PMS, including the different mechanisms used by PM, can be illustrated as follows in Figure 4.2:

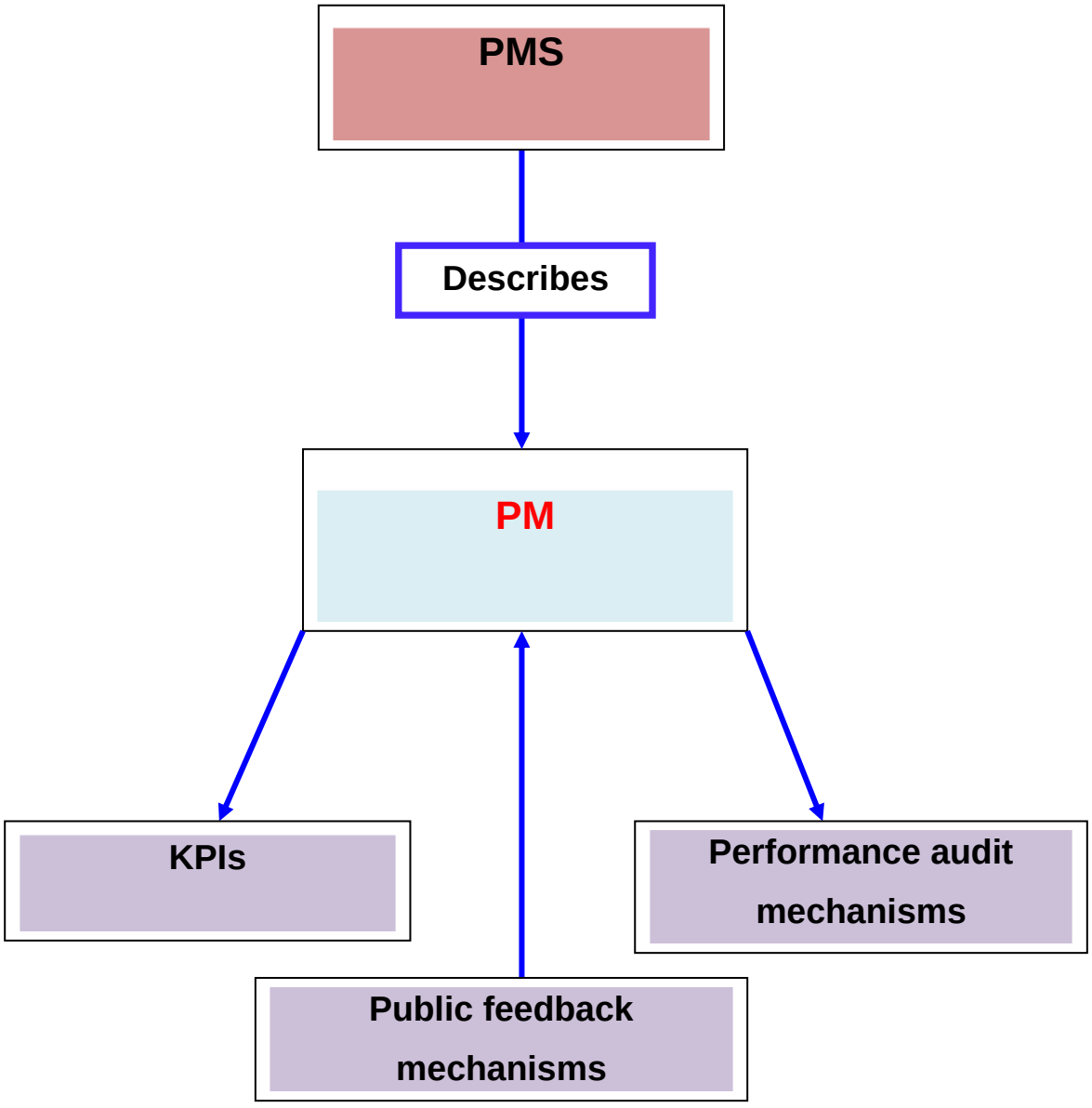


**Figure 4.2: Relationship between PM and a PMS**
**Source: Own construction (2015)**

As demonstrated in Figure 4.2, a PMS can be regarded as a framework that gives effect to PM. It indicates that PM exists out of different mechanisms that are used to manage and develop performance at a public service level while providing guidance for future planning. The manner in which a PMS utilises these mechanisms in order to achieve optimal efficiency will be described in the following sub-section.

### 4.2.2 Elements of a PMS

Various pieces of South African legislation support the implementation of PMS's within local municipalities. Chapter 6 of the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000), requires of local municipalities to develop a PMS that is commensurate with its resources; best suited to its circumstances; and in line with the priorities, objectives, indicators and targets contained in its IDP. A PMS must therefore ensure efficiency in order to achieve certain goals and rendering services (Boland & Fowler, 2000:426-427). In order to illustrate how a PMS achieves efficiency, it is important to understand the different elements of a PMS as described in Figure 4.3.

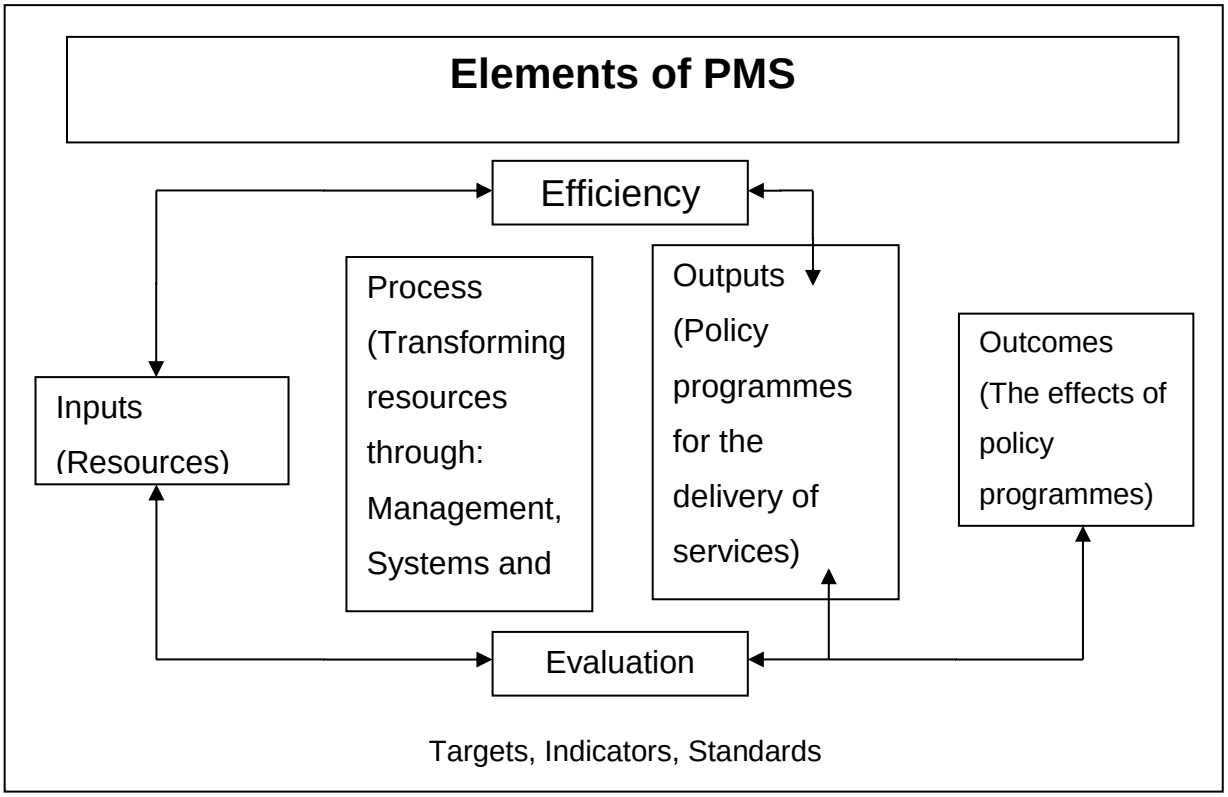


**Figure 4.3: Elements for efficiency**
**Source: Motingoe (2011:55); Van der Waldt (2009:2)**

Figure 4.3 illustrates the machinery of translating inputs to outputs in order to gain optimal efficiency. This indicates that a PMS is proportionate with its resources and in line with its objectives, priorities and indicators contained in the municipality's policies.

### 4.3 Organisational and human resource dimensions

During the process of defining PM and a PMS in sub-sections 4.1.1 and 4.1.2, it became apparent that two different factors are at play. These two factors came across as organisational and personal performance measurements offering two different dimensions of PM. These dimensions, according to Boland and Fowler (2000:418), can be regarded as 'organisational' and 'human resource' dimensions. Likewise, Van der Waldt (2012:219) states that PM does not only focus on individual employees, but also on systems, programmes, processes and the organisation as a whole. OPM focuses on an institutional perspective where the inputs (resources), processing (systems, policies and procedures), outputs (service and products), and outcomes (result) of public organisations/ institutions are of main concern. OPM therefore refers to any integrated approach to improve institutional/ organisational performance to achieve certain goals and thereafter promote the institutions or organisation's mission and values (Van der Waldt, 2012:219).

The Okhahlamba Local Municipality (2012:35) supports the statement of two dimensions by describing the link between organisational performance and employee (human resource) performance while making reference to an individual performance management policy.

PMSs, just like PM, can also be categorised into two dimensions. Municipalities such as the Ulundi, Okhahlamba and the Drakenstein Local Municipalities continuously make reference to an organisational performance management system (OPMS) (Drakenstein Local Municipality, 2008:22; Okhahlamba Local Municipality, 2012:7; Ulundi Local Municipality, 2006:18).

## 4.4 OPMS and OPM

### 4.4.1 OPMS priorities and principles

The priorities of a municipality's OPMS are strongly linked to the IDP of the municipality. The IDP highlights sets of delivery objectives (Cape Winelands District Municipality, 2006:12). The IDP is a strategic planning instrument that guides development planning in a municipal area thus setting delivery objectives (Midvaal, 2013:v). These priorities can be seen as the issues that the municipality pronounces to focus on in order to address the needs of the community. These priorities are usually viewed as KPAs and can be regarded as infrastructure and services, social and economic development, financial management etc. (Cape Winelands District Municipality, 2006:12). Similarly, a municipality's OPMS highlights a variety of basic principles which its OPM must fulfil. These principles contribute to the delivery of objectives as prioritised by the municipality and community. The City of Cape Town and the Ethekwini Municipality described the following principles.

**Table 4-1: OPMS principles**

| **City of Cape Town OPMS principles** (City of Cape Town, 2011:5-6) | **Ethekwini OPMS principles** (Ethekwini Municipality, 2008:15) |
|---|---|
| • Promote a culture of performance excellence;<br>• Be transparent;<br>• Provide an effective performance planning review system;<br>• Provide early warning signs in the case of underperformance;<br>• Easily communicate performance results;<br>• Ensure appropriate community involvement;<br>• Clarify roles and responsibilities | • Have KPIs with regard to the municipality's development priorities and objectives which are set out within the IDP and national KPA's;<br>• Have quarterly or annual measurable targets;<br>• Reveal the baseline information;<br>• Highlight certain comments on how to improve performance;<br>• Monitor performance;<br>• Be willing to improve performance;<br>• Do regular reporting |

**Source: Own construction (2017)**

As stated in the Municipal Systems Act, 2000 (Act No. 32 of 2000), Section 38, it is important that the principles of an OPMS must be in line with the developmental objectives of that specific municipality's IDP. It is evident that these principles differ from one municipality to

another seeing that the development objectives may also differ. On the other hand, further investigation has indicated that the core elements of an OPMS stay the same within numerous municipalities.

### 4.4.2 OPMS core elements

The core elements of an OPMS can be described differently within different PMS frameworks. The most basic description of the different elements of an OPMS is given by the Ethekwini Municipality (2008:20- 21).

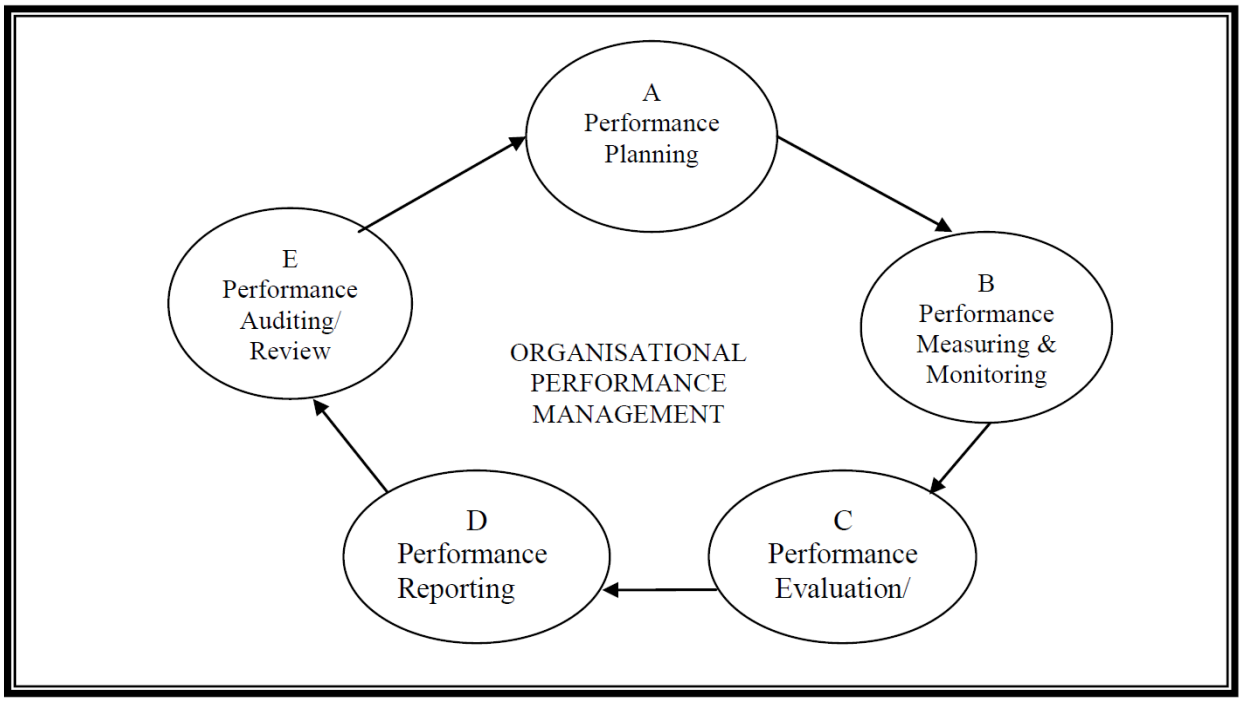


**Figure 4.4: Performance management cycle**
**Source: Ethekwini municipality (2008:21)**

The core elements of an OPMS, as exhibited in Figure 4.4, include performance planning, performance measuring and monitoring, performance evaluation, performance reporting and performance auditing/ reviewing. Each of the core elements comprises of a variety of components. These components can be described as the steps taken by the OPM process in order to achieve a municipality's developmental objectives. The different components as highlighted by the City of Cape Town (2011:7) are displayed within the following figure:

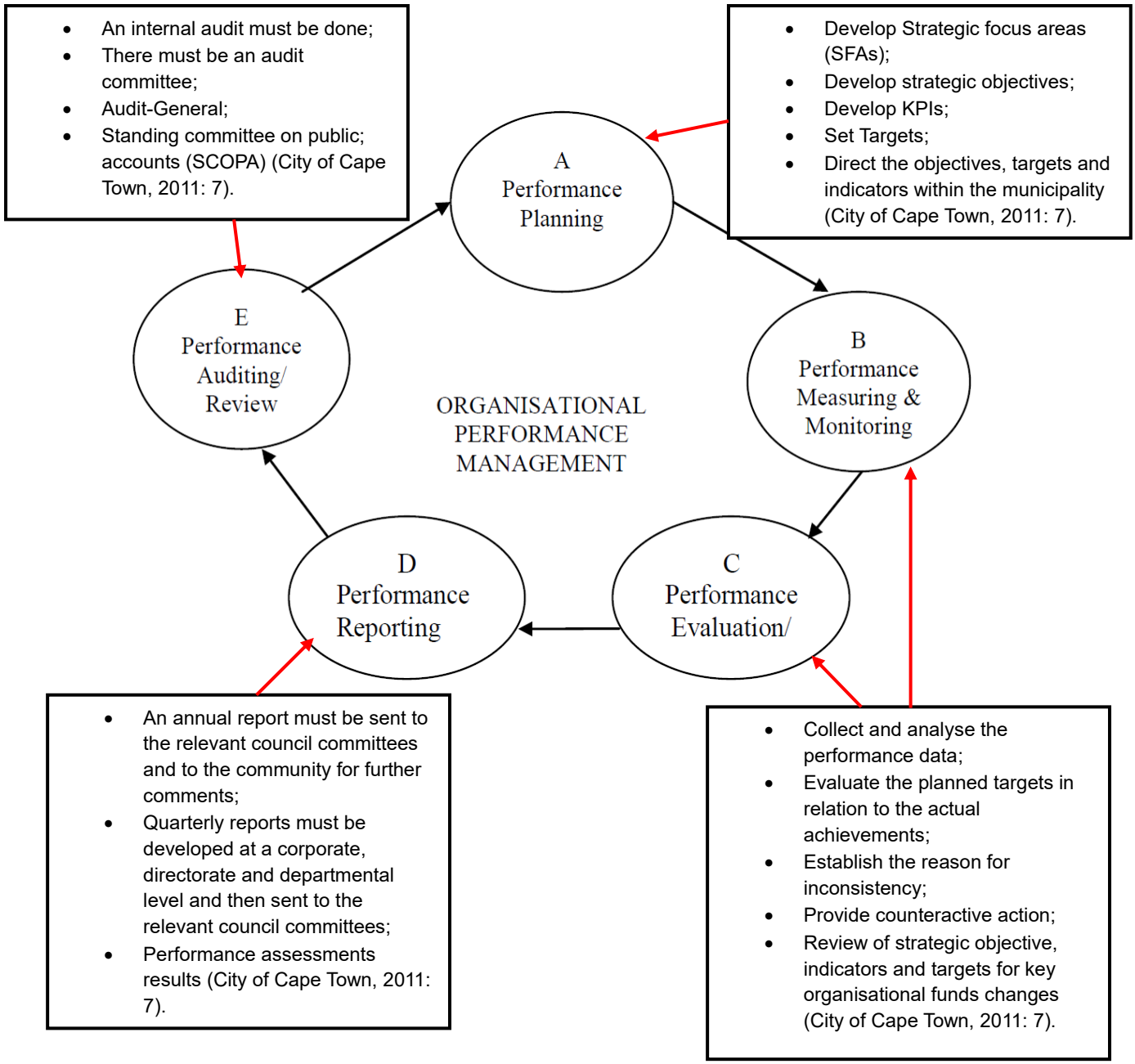


**Figure 4.5: Components of the core elements**

**Source: Adapted from Ethekwini Municipality (2008:21) and City of Cape Town (2011:7)**

Figure 4.5 illustrates that the core elements of an OPMS, as utilised by the OPM process, make use of a variety of components in order to assist the municipality to achieve its developmental goals as set out in its IDP and as highlighted by the community.

The link between an OPMS, an OPM and the different core elements with its components can also be graphically illustrated as follows in Figure 4.6:

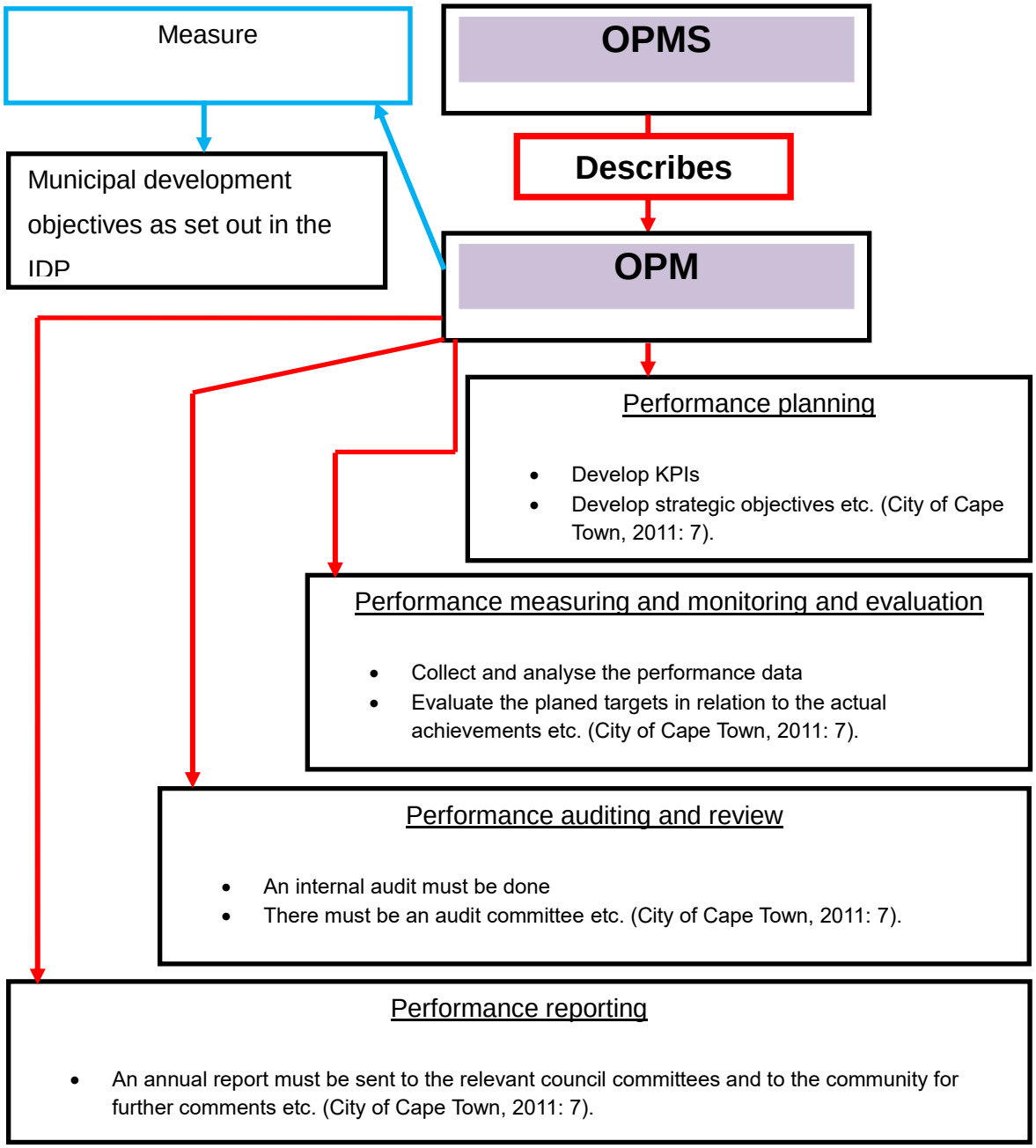


**Figure 4.6: Link between OPMS, OPM and the core elements**

**Source: Own construction (2015).**

Figure 4.6 displays the relationship between an OPMS and OPM. It also illustrates the relationship between the different core elements and their respective components within the OPM process. According to Figures 4.5 and 4.6, it is evident that the core elements of an OPMS include KPIs. However, it is important to note that setting KPAs is the first step of the performance management process. Only after the establishment of KPAs, will it be decided by the municipality or organisation which development objectives, KPIs and performance targets will be implemented (DDLGH, 2009:54). For the purpose of this project, it is important to discuss KPIs and KPAs within the following section.

## 4.5 KPAs and KPIs

### 4.5.1 KPAs

As stated in sub-section 4.4.1, it is important to note that according to the Cape Winelands District Municipality (2006:12), KPAs may be regarded as the priorities that the municipality pronounces to focus on in order to address the needs of the community. Similarly, the Midvaal Local Municipality defines a KPA as 'the performance area in which the municipality must perform to achieve its mission'. However, for the term KPA, this research project will make reference to the definition adopted by the Cape Winelands District Municipality.

It is outlined by the DDLGH (2009:54) that the development priorities of the municipality must be clustered around the KPAs which were determined at a national level (NKPAs). These NKPAs are therefore regarded as national development priorities. It is also evident in the Tlokwe Local Municipality (2010:59), that a municipality's KPAs must have a strong link with the NKPAs. Above all, it is outlined within the IDP of the Midvaal Municipality (2013:vii) that these can be regarded as 'the key area of focus determined at a national level and is mandatory to all municipalities across South Africa'. The last-mentioned definition will be set as the general definition for NKPA during this research project. The Department of Cooperative Government and Traditional Affairs (COGTA) identified five NKPAs which can be regarded as the following:

- Municipal Transformation and Institutional Development;
- Basic Service Delivery;
- Local Economic Development (LED);
- Municipal Financial Viability and Management; and
- Good Governance and Public Participation (Midvaal Municipality, 2013:11).

These NKPAs allow COGTA to determine how each municipality in South Africa is performing compared to its targeted goals and the measures to recover lost performance. COGTA is also able to suggest counteractive measures for those municipalities that have underperformed. (Midvaal Municipality, 2013:11). On the contrary, it is stated by the Ulundi Local Municipality (2006:18) that even though NKPAs are identified, a municipality still has the authority to identify its own KPAs which address the unique developmental needs within its area. These different and unique developmental needs can be merged with the above mentioned NKPAs.

### 4.5.2 KPIs

For every KPA, a KPI is developed in relation to each of the developmental goals highlighted in the IDP of a specific municipality (Tlokwe Local Municipality, 2009-2010:60). According to the Matatiele Municipality (2012:19), KPIs may be regarded as 'management tools, which assist in making performance based decisions regarding strategies and activities'. It is also outlined by the Matatiele Municipality (2012:19) that KPIs define how performance will be measured along a scale or dimension. Similarly, it is stated by the Midvaal (2013:vi) Local Municipality that a KPI 'defines how performance will be measured along a scale or dimension (e.g. number of houses, km of road, percentage increase, etc.) to achieve KPAs'.

A KPI according to the Drakenstein Municipality (2008:24) describes the main aspects that need to be achieved which thereby also give KPIs the ability to measure the progress made in achieving the objectives. Similar to this, it is stated by the Matatiele Municipality (2012:19) that KPIs define how performance will be measured, thereby orientating staff towards achieving the set objectives as highlighted by the KPAs. KPIs must therefore specify the deliverables to be achieved and the manner by which it will be measured. These KPIs will also be used by a municipality as a communication tool between the staff, administration and council (Drakenstein Municipality, 2008:24). The Overstrand Municipality (2008:17) clearly states that KPIs include typical performance indicators which can be regarded as baseline, input, output and outcome indicators. These KPIs can more clearly be described as follows.

**Baseline**

These are indicators used to measure certain conditions before a project is implemented (Drakenstein Municipality, 2008:24).

**Input**

These indicators determine the costs a municipality must take into account in order to purchase the essentials for producing desired outputs in relation to the economy. This refers to the resources that will be required for a municipality to achieve a certain goal or service (Drakenstein Municipality, 2008:25).

**Output**

These indicators measure whether the desired outcomes are reached through the activities of the local government (Drakenstein Municipality, 2008:25). According to the DDLGH (DDLGH, 2009:57) it is possible for an output indicator to be defined as 'products' produced by the dispensation of inputs, which therefore can be regarded as the end point of an activity. Furthermore, it is stated that outputs should only be utilised for specific functions for which the municipality is responsible.

**Outcomes**

These indicators are used in order to measure the impact of the products or delivered services of the specific products in terms of the accomplishment of the overall objectives. Furthermore, these indicators are strategically the most important to determine and have strong links with the output indicators seeing that they can identify whether the specific output indicators were successful in achieving the desired outcome (Drakenstein Municipality, 2008:25).

#### 4.5.2.1 KPI principles

The principles of KPIs are discussed by a variety of authors as follows:

It is stated by Van Dooren *et al*. (2010:60) that proper KPIs must firstly be 'sensitive to change'. An example of this principle is that measures depending on a yes/no answer for customer satisfaction are likely to fail in registering the difference between someone being just satisfied or very satisfied. Secondly, these indicators must be 'precisely defined', which will ensure an unambiguous understanding of the indicator among experts in an organisation. Thirdly, it is important that KPIs should be 'understandable for users'. A fourth prerequisite is that all indicators are 'documented'. Documentation is important to ensure that the measurement processes can be established. As a fifth requirement, it is stated that indicators need to be 'relevant'. These indicators must therefore reflect essential dimensions of the concept that is in the process of being measured. In order to ensure the relevance of indicators during the decision-making process, it is important that they are 'timely'. Next, it is required that the data collection and reporting process is 'feasible'. Finally, it is important for KPIs to 'comply with coordinated data processes and definitions'.

The principles related to KPIs as discussed by the HM Treasury (2001:17) in the UK include the following: first and foremost, KPIs must be 'relevant' to what the organisation aims to accomplish. It is also of upmost importance that these indicators are able to 'avoid perverse incentives' and do not encourage unwanted or wasteful behaviour. KPIs must also be 'attributable' which means that the activity being measured must be capable of being

influenced by certain activities which can be credited to the organisation. It must be specified where accountability lies. A clear definition for each indicator must be established, which will ensure that data will be collected consistently. A KPI must therefore be 'well-defined'. As a fifth requirement, it is stated that a KPI must be 'timely'. This ensures the production of data on a regular basis, which assists with the tracking of progress within a short and acceptable time period. A KPI must be 'reliable' which ensures that it is accurate enough for its intended use. This includes its responsiveness to change. The seventh requirement of a KPI includes that it must be 'comparable'. It must either be comparable with past periods, or the same type of programmes elsewhere. Finally, it is required that an indicator must be 'verifiable', with supporting documentation behind it. This allows the processes which produce the indicator to be authenticated (Treasury, 2001:17).

The Drakenstein Municipality (2008:24) succinctly states that all its indicators must be measurable, simple, precise, relevant, adequate and objective.

The United Way of America (1999:21) stated that the Santa Cruz County utilises specific criteria in order to review common indicators used within organisations. These KPIs are assessed within criteria which include factors such as 'understandability, responsiveness, relevance with regards to policies, representativeness, comparability, availability and timeliness, validity, stability and reliability'.

Evaluating different author's viewpoints regarding the principles of KPIs brought to light various repetitions. It transpired that the majority of authors would agree that KPIs must be well-documented and verifiable, relevant, timely, defined precisely, understandable and comparable.

#### 4.5.2.2 NKPIs

When a municipality decides to develop its own unique set of KPIs, it is important that the municipality take the relevant national key performance indicators (NKPIs) into account (DDLGH, 2009:58-60). According to the Midvaal Local Municipality (2013: vii), an NKPI can be regarded as 'key indicators determined at national level and is mandatory for all municipalities in South Africa to regularly report on'. In the same way, section 43 of the Municipal Systems Act, 2000 (Act No. 32 of 2000) states that general KPIs may be established on a national level for the use of local municipalities. These NKPIs must, however, be appropriate for local governmental use and can also be reviewed and adjusted by national government when necessary. Local municipalities also have the authority to identify and implement additional KPIs but the list must however, include the general KPIs prescribed by

national level. These NKPIs, according to the Matatiele Municipality (2012:20), are the following:

- ‘The percentage of households with access to basic levels of water, sanitation, electrical and solid waste removal;
- The percentage of households earning less than R1 100 per month with access to free basic services;
- The percentage of a municipality’s capital budget actually spent on capital projects identified for a particular financial year in terms of the municipality’s IDP;
- The number of jobs created through municipality’s local economic development initiatives including capital projects;
- The number of people from employment equity target groups employed in the three highest levels of management in compliance with a municipality’s approved employment equity plan;
- The percentage of a municipality’s budget actually spent on implementing its workplace skills plan; and
- Financial viability’.

Section 10 of the Municipal Planning and Performance Management Regulations, 2001, states that all municipalities must report on these NKPIs by the end of each financial year. The key motives for municipalities to incorporate these specific NKPIs can be viewed as the following:

- It guides municipalities to focus on national priorities and goals;
- It ensures municipal accountability;
- It provides uniformity in the system by ensuring that there is a unity of measures in performance evaluation across all municipalities;
- It provides a foundation for performance comparison across all municipalities;
- It provides a manner in which the impact of municipalities on national transformation, service delivery programmes as well as future development could be measured (DDLGH, 2009:58).

After a municipality has implemented the various NKPAs, NKPIs and identified a suitable set of KPIs, it is important to move on to the next step which is to specify the level of performance the organisation wishes to achieve. This involves pointing out relevant performance targets (National Treasury, 2007:9). Performance targets must be set for each KPI and must comply with the SMART (Specific, Measurable, Attainable, Realistic and Time related) principle

(Ulundi local municipality, 2008:20). However, discussing the ‘performance targets’ as well as its ‘SMART’ principles is not included in the scope of this study and will therefore not be outlined. The following sub-section provides an example of the relationship between KPAs and KPIs.

### 4.6 Relationship between KPAs and KPIs

In sub-sections 4.4.1 and 4.4.2 it was presented that national KPAs and KPIs are prescribed by the Municipal Systems Act, 2000 (Act No. 32 of 2000) to municipalities in South Africa. In addition to this, it was also pointed out in section 4.4.2 that for each KPA a KPI is developed in relation to each of the developmental goals listed in the IDP of a municipality (Tlokwe Local Municipality, 2010:60). However, the linkage between KPAs and KPIs was never clarified. The DDLGH (2009:55-57) provides a clear example of the linkage between these two factors and can be illustrated as follows:

1. For illustration purposes, a single KPA is selected, namely ‘Service delivery and infrastructure development’ (DDLGH, 2009:55).
2. The development objective of this specific KPA can vary, but must be related to ‘Service delivery and infrastructure development’. An example of such a development objective may be: ‘To improve the public transport system’. (DDLGH, 2009:55).
3. A suitable KPI, that must be related to the development objective, is decided, for example: ‘The number of commuters utilising municipal transport facilities’. It is important to note that this specific KPI represents one way of measuring the extent to which the public transport system is being improved. Other KPIs could also be utilised, for example: ‘The number of buses completing their journey on time’. These indicators may be described in either quantitative or qualitative terms (DDLGH, 2009:56). Note the similarity between these indicators and those identified in Chapter 3.
4. After the establishment of a specific KPI, its underlying baseline, input, output and outcome indicators must be aligned to the development objectives it describes (DDLGH, 2009:57).

The relationship between KPAs and KPIs is therefore evident. It is apparent that each KPI announced by a municipality gives effect to a specific KPA. As highlighted in step three, it is important to keep in mind that each KPA may have various underlying KPIs.

## 4.7 Chapter summary

In this chapter, the theory behind a PMS was discussed. It was found that a PMS can be regarded as a framework that describes how PM will be utilised within municipalities (Cape Winelands District Municipality, 2006:9). It also became apparent that a PMS can be described in two different manners known as organisational and human resource dimension (Boland & Fowler, 2000:418). For the purposes of this research project, attention was directed at discussing the theory behind an OPMS as well as OPM. Further research in this field outlined the core elements as well as the components of each element within an OPMS. It was apparent during this stage of the research project that an OPMS utilises indicators in the form of KPIs. Various sources confirmed and emphasised the importance of indicators such as KPIs within an OPMS. Further research regarding the theory behind KPIs has unveiled that these indicators do not act alone and have a strong link with KPAs, development objectives and performance targets (DDLGH, 2009:55-57). It is therefore evident that indicators play a fundamental role within an OPMS. According to section 4.6, it is unmistakable that the OPMS utilises indicators such as those highlighted in Chapter 3. These indicators according to the Drakenstein Municipality (2008:24) reveal the main aspects that need to be achieved within a municipality. These indicators therefore, also have the ability to measure the progress made in achieving the municipal objectives. During this chapter, it was also confirmed that OPMSs as well as its underlying KPAs and KPIs are supported by certain legislations. The following chapter will therefore emphasise whether legislation and policy directives make adequate provision for KPAs and KPIs.

# CHAPTER 5: POLICY AND LEGISLATIVE FRAMEWORK

At a local level of government, PM is established through the legislative requirements on the PM process for local Government (Oudtshoorn Municipality; 2011:4). Reference can also be made to the Municipal Systems Act (MSA) that requires local governments to adopt PMSs (DPLG, 2001:8). It is clear that legislation in the South African public sector refers to PM as well as PMSs. Legislation includes the Public Service Act, 103 of 1994; Public Service Regulations 2001; the Constitution of the Republic of South Africa Act, 108 of 1996; the Local Government: Municipal Systems Act, 32 of 2000, etc. According to the Oudtshoorn Municipality, it is important to keep in mind that municipal policies such as PM frameworks are used to ensure that the organisational performance process is compliant with legislation (Oudtshoorn Municipality, 2011:4). This chapter therefore aims at exploring the field of municipal policies as well as various laws in order to determine whether factors such as PMSs, KPAs and KPIs, and the implementation thereof, are being taken into account. Attention will also be directed at uncovering whether the different laws highlighted in this chapter provide support to the development and implementation of SDIs within municipalities. It is important to note that PMSs, as described in Chapter 4 of this research project, can either refer to OPMSs or employee PMSs. This chapter will direct its attention towards OPMSs. The laws and policies that were identified to illustrate the support given to OPMSs, KPAs, and KPIs in local government are displayed in Figure 5.1.

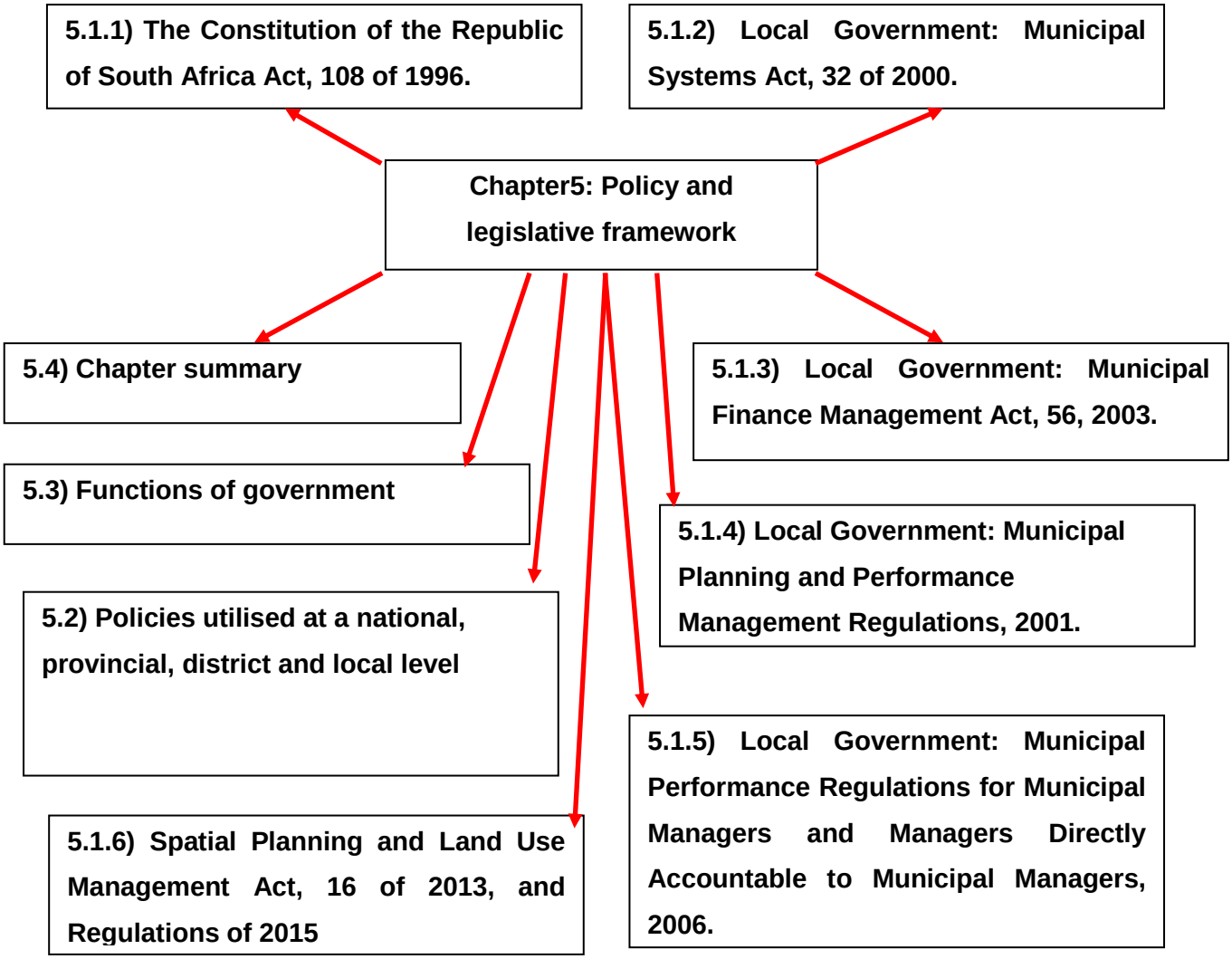


**Figure 5.1: Policy and legislative framework**

**Source: Own construction (2016)**

## 5.1 Legislation

### 5.1.1 The Constitution of the Republic of South Africa Act, 108 of 1996.

Section 152 of the Constitution (1996), which deals with the objectives of local municipalities, paves the way for OPM with the requirement for an accountable government for local communities. This accountable government as stated within Section 195 (1) (e) of the Constitution (1996) must be able to contribute to the needs of the community. An accountable government must therefore be able to ensure the distribution of services to communities; promote social and economic development; promote a safe and healthy environment; and encourage the involvement of communities and community organisations in the matters of local government. An OPMS can help achieve the above-mentioned requirements, seeing that it may be regarded as an instrument which allows one to monitor the execution of plans, ensures that resources are used efficiently and that clients will receive the agreed quantity and quality of services (Motingoe, 2011:47).

The Constitution (1996) does not make direct reference to KPAs, KPIs or SDIs but does, however, suggest the development of such indicators in section 24 (a) and (b). It is stated in this section that each person has the right to a safe and harmless environment which is protected by means of legislative or other measures that will secure ecologically sustainable development. This includes the utilisation of natural resources while promoting economic and social development. Section 152 of the Constitution (1996) then develops the concept of an accountable local government with regards to sustainable development. It is thus evident that the idea of developing SDIs in local government is therefore supported, even though direct reference to indicators cannot be extracted from the Act.

### 5.1.2 Local Government: Municipal Systems Act, 32 of 2000.

Section 38(a) and (b) of the MSA (2000) requires local municipalities to develop a PMS that is commensurate with its resources, best suited to its circumstances and in line with the priorities, objectives, indicators and targets contained in its IDP. It is furthermore stated within section 40 of the MSA (2000) that a municipality must establish mechanisms to monitor and review its PMS. Section 41 of the MSA (2000) discusses mechanisms such as performance indicators under the ‘Core components’ of the Act. A variety of factors such as the annual reports on PM, public participation, general KPIs, Audit of performance measurements etc. is included within the MSA (2000). These factors all support the development and implementation of OPMSs within local municipalities. It is thus evident that the MSA (2000) provides substantial support for the implementation of OPMSs within local governments. The MSA (2000) does not make direct reference to SDIs, but Section 78 states that ‘When a

municipality has in terms of section 77 decided on a mechanism to provide a municipal service in the municipality or a part of the municipality, or to review any existing mechanism- (b) it may take into account any developing trends in the sustainable provision of municipal services generally'.

### 5.1.3 Local Government: Municipal Finance Management Act, 56, 2003.

It is stated within Section 166 of the Municipal Finance Management Act (MFMA) (2003) that each municipality must have an audit committee to advise the municipal council, political office-bearers, accounting officer and management staff of the municipality or board of directors on matters relating to PM. This indicates that the Act clearly acknowledges the importance of PM in local municipalities.

The MFMA (56 of 2003) emphasises that municipalities must make use of a 'service delivery budget implementation plan' to implement the municipality's annual budget which utilises performance indicators for each quarter. Section 53 (3) of the MFMA (2003) makes it apparent that the importance of public notice and participation during the identification process of performance indicators, as well as service delivery targets, are also taken into account. The Act does not discuss SDIs, but does refer to performance indicators that (according to the Act) are seamlessly linked to service delivery targets. The Act does not elaborate on KPAs or development priorities.

### 5.1.4 Local Government: Municipal Planning and Performance Management Regulations, 2001

Section 7 (1) of the Municipal Planning and Performance Management Regulations (MPPMR) (2001) clearly states that a PMS consists of a framework that defines how the municipality's cycle of performance planning, measurement, monitoring, review, reporting and improvement will be directed and managed. A PMS according to the Regulations must also determine the roles and responsibilities of the different role-players. Section 7 (2) of the MPPMR (2001) highlights that when a municipality develops its PMS (OPMS), it must ensure that the system points out how the OPMS and employee PMS relate to each other.

Section 8 of the MPPMR (2001) makes adequate reference to performance indicators and clearly states that a PMS must be adopted before or at the same time as the implementation of the KPI as well as the targets in accordance with the municipality's IDP. These KPIs, according to Section 9 of the MPPMR (2001), can either refer to input, output or outcome indicators and must give effect to each of the development priorities. The Act does not make

reference to SDIs but does however utilise performance indicators in order to meet the development priorities of municipalities.

### 5.1.5 Local Government: Municipal Performance Regulations for Municipal Managers and Managers Directly Accountable to Municipal Managers, 2006

It is stated in Section 26 (1) of these Regulations that with regard to a PMS, it is important for the employee to agree to participate in the PMS which the employer has adopted for the municipality. Even though the Regulations mainly focus on employee PMSs, Section 26 (1) states that a PMS must be adopted for the municipality to which the employees are bound to comply. This adopted PMS can therefore be regarded as an OPMS.

In Section 25 (2) the Regulations insist that the employer in consultation with the employee must set KPIs that are linked to the IDP, Service Delivery and Budget Implementation Plan (SDBIP) and the budget of the municipality. The Regulations do not make any reference to SDIs; however, adequate reference is made to KPAs.

For the purpose of this research project it is important to note that the SDBIP can be regarded as an expression of the objectives, as set out in the IDP, of the municipality in quantifiable outcomes that will be implemented by the administration for twelve months at a time (Ventersdorp Local Municipality, 3:2015).

### 5.1.6 Spatial Planning and Land Use Management Act, 16 of 2013 and Regulations, 2015

The Spatial Planning and Land Use Management Act (SPLUMA) (16 of 2013) focuses on providing change to the manner in which municipalities develop and implement SDFs, land use schemes and municipal planning tribunals as well as the land use application process. Chapters 2 -5 of the SPLUM Regulations give effect to these last-mentioned factors. In terms of Section 2 (2) of SPLUMA (2013), no other legislation which is not repealed by the Act may prescribe an equivalent mechanism on land use, spatial planning, land use management and land development in any manner inconsistent with the Act. It is not evident whether the Act or Regulations provide any support to the implementation of OPMSs, KPAs, KPIs or SDIs within local government.

In summary, it is evident that various forms of legislation such as the Municipal Systems Act and Municipal Planning and Performance Management Regulations support the implementation of PMSs, KPAs and KPIs within municipalities. However, it is also apparent that not all laws make provision for these factors, for example, the Spatial Planning and Land Use Management Act and its Regulations.

It is stated by the Ministry for Provincial Affairs and Constitutional Development (1998:6) that legislation enacts the directions contained in policies such as the White Paper on Local Government. In concurrence with this, it is stated by the Local Municipality of Ventersdorp (2015:12) that legislation and policies must be aligned with each other. It was therefore found to be imperative to do further exploration on different policies in order to identify whether they also provide information or support to the implementation of KPAs and KPIs.

## 5.2 Policies utilised at a national, provincial, district and local level

Table 5.1 indicates whether KPIs and KPAs are either identified or referred to within the various policies used at a national, provincial, district and local level (i.e. all spheres of government). A detailed description of the policy framework can be seen in Annexure A.

Additional information related to development priorities and objectives is also highlighted seeing that both these factors are clustered around KPAs, therefore creating a strong link between them (Matatiele Municipality, 2012:18). In another example of this, it is stated by the Tlokwe Local Municipality (2013:70) that NKPAs form an important part of the municipal council's development priorities for its elected term. Information regarding development priorities and opportunities are therefore identified additionally.

**Table 5-1: Application of KPAs and KPIs within policies adopted at national, provincial, district and local governmental levels**

| Tier of Government | National or regional polices | Referred to in document | | Identified/ Used in document | |
|---|---|---|---|---|---|
| | | KPAs | KPIs | KPAs | KPIs |
| National government<br>South Africa | National Spatial Development Perspective (NSDP) | No | Yes | No | Yes |
| | National Development Plan (NDP) | Yes | No | Yes | No |
| | Performance management guide for municipalities, 2001 | Yes | Yes | No | Yes |
| | Breaking New Ground (BNG) | No | Yes | No | No |
| | Rural Development Strategy (RDS) | No | Yes | No | No |
| | White paper on local government, 1998. | No | Yes | No | No |
| Provincial government<br>North West Province | North West Provincial Spatial Development Framework (SDF) | No | No | No | No |
| | North West Provincial development plan (PDP) | Yes | Yes | No | Yes |
| | Municipal Organisational Performance Management Guide (North West Province) | Yes | Yes | Yes | Yes |
| | Performance management made simple. A Guide to developing and implementing a PMS (Kwazulu-Natal). | Yes | Yes | Yes | Yes |
| | North West Provincial growth development strategy (PGDS) | No | No | No | No |
| District government<br>Dr Kenneth Kaunda District Municipality | Spatial Development Framework (SDF) | No | No | No | No |
| | Integrated Development Plan (IDP) | Yes | Yes | Yes | Yes |
| | Performance Management System (PMS) Policy review (2010/2011) | Yes | Yes | No | No |
| | Service Delivery and Budget implementation plan (SDBIP) | Yes | Yes | Yes | Yes |
| Local Municipality Ventersdorp | Spatial Development Framework (SDF) | No | Yes | No | No |
| | Integrated Development Plan (IDP) - Department of provincial and local government (DPLG). | Yes | Yes | Yes | Yes |
| | Service Delivery and Budget implementation plan (SDBIP) | Yes | Yes | Yes | Yes |
| | Local Economic Development | Yes | Yes | Yes | No |

**Source: Own construction (2016)**

According to Table 5.1 it is apparent that various policies exist at national, provincial, district and local levels. A number of these policies provide adequate information and guidance for the implementation of KPAs and KPIs. The policies include the SDBIP, IDP, Performance Management Made Simple, Municipal Organisational Performance Management Guide, and the Performance Management Guide for Municipalities 2001. Not all policies described in Table 5.1 make provision for KPAs and KPIs. Some policies place their focus on discussing development priorities and objectives rather than making reference to KPAs. Weighing up the information provided by the different policies at the different levels of government, it cannot be concluded that one level of government provides more information or guidance on the

implementation of KPAs and KPIs than the others, seeing that each government level provides one or more policies that supply sufficient information. However, it can be concluded that the information provided by the SDBIP and IDP at local government level, goes into greater detail and addresses specific issues that are relevant to that specific municipal area.

### 5.3 Functions of national, provincial and municipalities spheres of government

According to Schoeman (2015:48) the role of government in South Africa is based on the functions allocated to the different spheres (National, Provincial and Local) in terms of legislation, policies (Table 5.1) and Constitutional Court rulings as outlined in section 5.2. Furthermore Schoeman (2015:48) states that provision for the alignment and integration within government and its functions are contained in the Constitution. These functions are described in Table 5.2. It must be noted that only the functions and activities that are expected to influence the case study area have been highlighted here.

**Table 5-2: Functions of national, provincial, and municipal spheres of government**

| Function/ activity | National | Provincial | Local |
|---|---|---|---|
| Schedule 4 and 5 of the Constitution of the Republic of South Africa, no108 of 1996 | | | |
| Schedule 4: Functional areas of concurrent national and provincial legislative competence (Part A) | | | |
| Agriculture | X | X | |
| Animal control and disease | X | X | |
| Consumer protection | X | X | |
| Cultural matters | X | X | |
| Disaster management | X | X | |
| Education at all levels, excluding tertiary education | X | X | |
| Environment | X | X | |
| Health services | X | X | |
| Housing | X | X | |
| Nature conversation, excluding national parks, national botanical gardens and marine resources | X | X | |
| Pollution control | X | X | |
| Population development | X | X | |
| Public transport | X | X | |
| Trade | X | X | |
| Traditional leadership | X | X | |
| Urban and rural development | X | X | |
| Welfare services | X | X | |

| Function/ activity | National | Provincial | Local |
|---|---|---|---|
| Schedule 4: Functional areas of concurrent national and provincial legislative competence (Part B), read with section 156 (1) | | | |
| Air pollution | | X | X |
| Child-care facilities | | X | X |
| Electricity and gas reticulation | | X | X |
| Municipal planning | | | X |
| Municipal health services | | X | X |
| Municipal public transport | | X | X |
| Storm-water management in built-up areas | | X | X |
| Water and sanitation services | | X | X |
| Schedule 5: Functional areas of exclusive provincial legislative competence (Part A) | | | |
| Ambulance services | | X | |
| Libraries other than national libraries | | X | |
| Schedule 5: Functional areas of exclusive local legislative competence (Part B), read with section 156 (1) | | | |
| Cemeteries, funeral parlours and crematoria | | | X |
| Fencing and fences | | | X |
| Local facilities | | | X |
| Local sports facilities | | | X |
| Municipal parks and recreation | | | X |
| Municipal roads | | | X |
| Refuse removal, refuse dumps and solid waste disposal | | | X |
| Street lighting | | | X |

**Source: Adapted from Schoeman (2015:49)**

Section 156 (1) of the Constitution states that “a municipality has the executive authority in respect of and has the right to administer (a) the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5; and any other matter assigned to it by national or provincial legislation”. The municipal functions and activities, as identified in above table, are therefore the result of what is stated in section 156 (1) of the Constitution. Furthermore, it is affirmed in Section 83 (1) of the Municipal Structures Act that the functions and powers of section 156 of the Constitution are assigned to municipalities. These functions and powers, according to section 83 (2), must be divided between a district municipality and its underlying local municipalities. It is therefore evident that the functions for a municipality, as described in the table above, are also the functions of the district municipality. Despite this, section 84 (1) provides a list of functions that remain with district municipalities and, as highlighted in section

84 (2), *not* with the local municipalities (Municipal Structures Act, 1998). These functions are listed in Table 5.3:

**Table 5-3: Functions and activities of district municipalities**

| **Section 84 (1) of the Municipal Structures Act 117 of 1998** | |
|---|---|
| (a) | Integrated development planning for the district and a framework for integrated development plans for the underlying municipalities |
| (b) | Supply of drinkable water systems |
| (c) | The supply of bulk electricity |
| (d) | Disposal systems of domestic waste-water and sewage |
| (e) | Sites for solid waste disposal |
| (f) | Roads that form part of the transport system for the area of the district municipality as a whole |
| (g) | Passenger transport service regulation |
| (h) | Municipal airport that serve the area of the district municipality as a whole |
| (i) | Health services |
| (j) | Firefighting services that serve the entire district municipal area |
| (k) | The control, conduct and establishment of abattoirs and fresh produce markets that serve a major proportion of the districts underlying municipalities etc. |
| (l) | The establishment, conduct and control of fresh produce markets and abattoirs serving the area of a major proportion of the municipalities in the district. |
| (m) | Promotion of local tourism for the area of the district municipality. |
| (n) | Municipal public works relating to any of the above functions or any other functions assigned to the district municipality. |
| (o) | The receipt, allocation and, if applicable, the distribution of grants made to the district municipality. |
| (p) | The imposition and collection of taxes, levies and duties as related to the above functions or as may be assigned to the district municipality in terms of national legislation. |

**Source: Adapted from Municipal Structures Act (1998)**

Although these functions represent the responsibilities of district municipalities, section 84 (3) clearly states that the Minister (and only the Minister), in communication with the local government and by providing notice in the Government Gazette, has the authority to authorise a local municipality to perform a function mentioned in section 84 (1) (b), (c), (d) or (i) in its area.

## 5.4 Chapter summary

In consideration of the discussion above, it can be concluded that government takes KPAs and KPIs into consideration throughout various legislative instruments and policies. Furthermore, it is emphasised that these instruments and policies are based on the functions allocated to the different spheres of government. KPAs and KPIs must be aligned to the functions of the municipality in order to fulfil its developmental role (DDLGH, 2009:iii).

# CHAPTER 6: CASE STUDY OF A RURAL SETTLEMENT WITHIN THE VENTERSDORP MUNICIPAL BOUNDARY

During this research project, it became clear that various challenges exist within rural areas (see Chapter 2). In sub-section 2.6.4 it was confirmed that even though different mitigation measures are in place to address these challenges, rural communities continue to feel trapped in a marginalised society where their basic needs aren't met, thus leading to violent protests. Chapter 3 concluded that various organisations utilise a diverse set of SDIs to promote and measure sustainable development. It was also shown in Chapter 4 that local governments utilise the same type of indicators in the form of KPAs and KPIs within an OPMS to address a diverse set of challenges located within the entire municipal space. The aim of this research project, during the empirical research phase, thus focuses on identifying whether the utilisation of KPAs and KPIs within its OPMS by Ventersdorp Local Municipality is effective in addressing the challenges of the case study area known as Boikhutsong. In order to do so, the empirical research phase is based on qualitative research.

Firstly, ethnography is used as part of the qualitative element of this study's mixed methods approach. According to Pinel (2014:170), ethnographic research is based on a researcher's observation. In this study, observation assists in achieving a comprehensive overview of the study area, followed by semi-structured interviews with key informants.

## 6.1 Background of study area

During Section 6.1, the background to the case study area will be explored. Boikhutsong is regarded as one of the Ventersdorp Municipality's constitutive villages (Ventersdorp, 2010:39). This section will therefore focus on the geographical area and demographics of the entire Ventersdorp Local Municipality and then on Boikhutsong alone. Figure 6.1 provides a preview of Section 6.1.

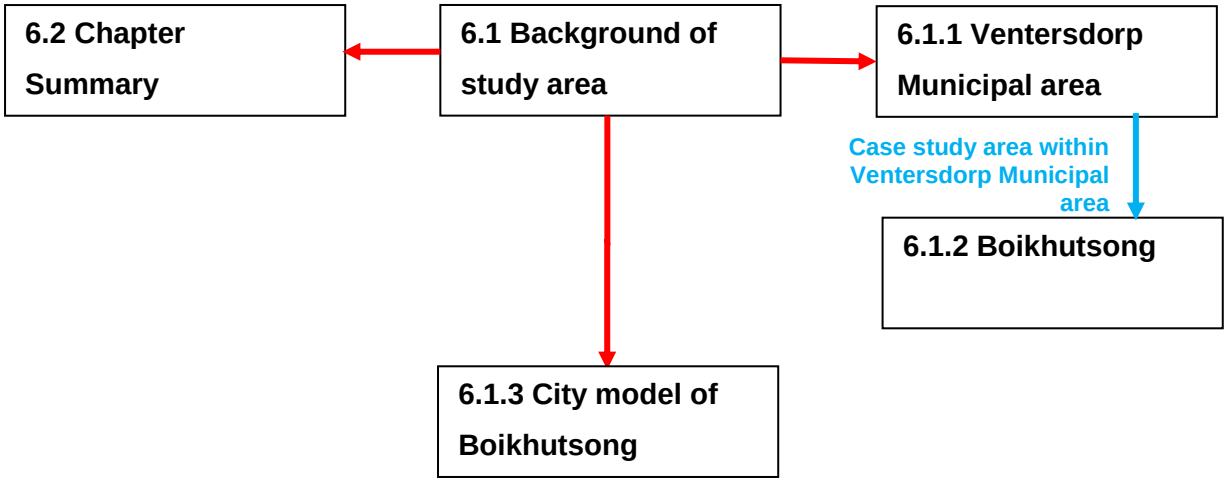


**Figure 6.1: Background of study area**
**Source: Own construction (2016)**

### 6.1.1 Ventersdorp Municipal area

According to Stats SA (2011) the Ventersdorp Local Municipality is located in the eastern part of the North West Province, South Africa. It is regarded as one of four local municipalities of the DRKKDM. Ventersdorp Local Municipality is situated 70km from the Matlosana/Klerksdorp Local Municipality, 130km from Mafikeng and 140km from Johannesburg. The Ventersdorp Local Municipality is accessed through the N14 corridor which connects it to Mafikeng and Johannesburg. According to the Ventersdorp Local Municipality (2010:9), the municipal area covers a space of 376 108.674 ha of land which consists of a vast commercial farming area and the urban area of Ventersdorp, Toevlug and Tshing. The municipality is divided into six wards and also has six villages namely Goedgevonden, Welgevonden, Tsetse, Ga-Magopa, Boikhutso and Boikhutsong. Figure 6.2 illustrates the geographical location of the Ventersdorp Local Municipality within South Africa and within the DRKKDM.

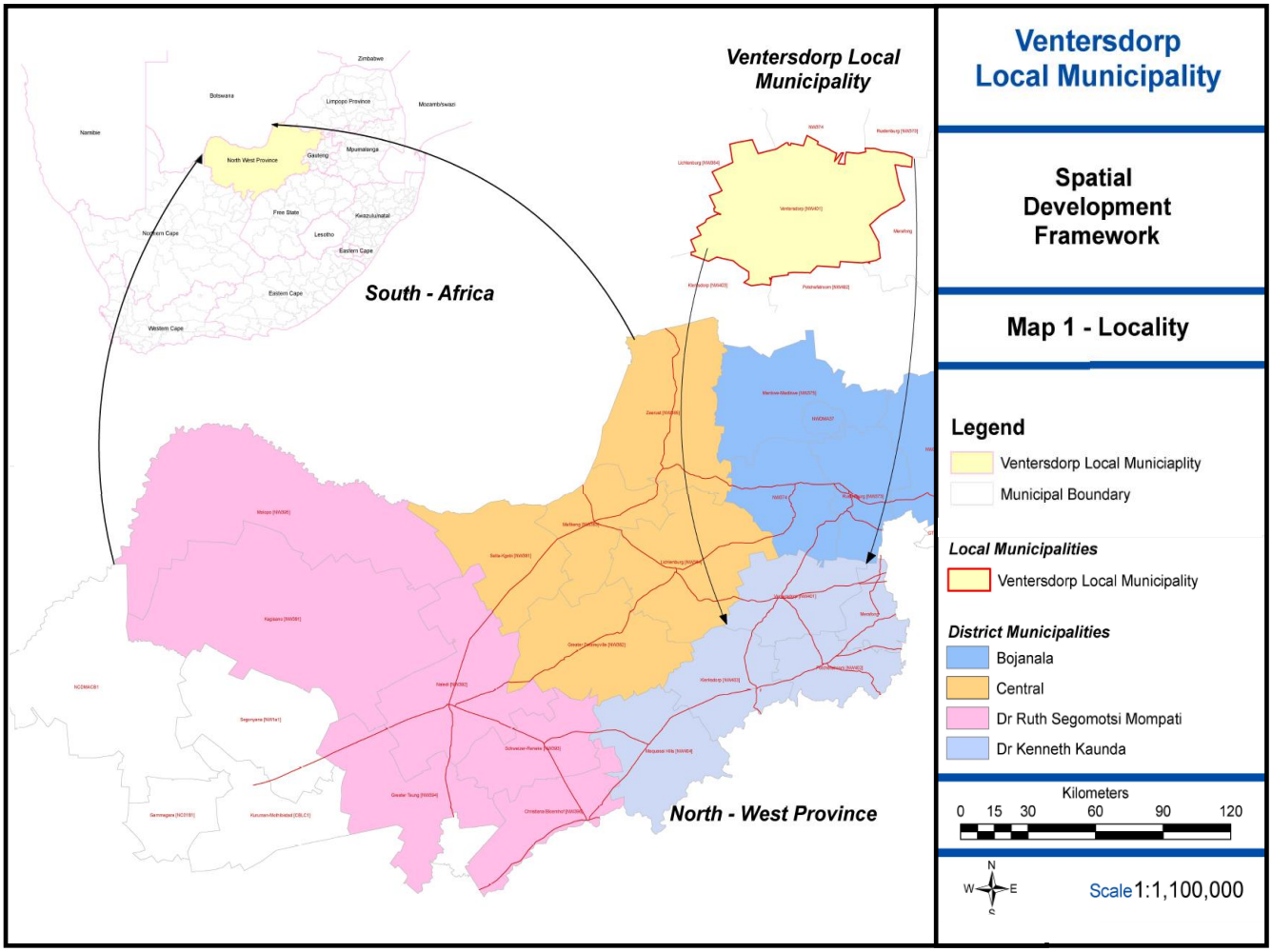


**Figure 6.2: Location of the Ventersdorp Municipality**
**Source: Ventersdorp (2010:9)**

Figure 6.2 displays that the Ventersdorp Municipality is located in the northern part of the DRKKDM which is situated in the North West Province.

According to the 2011 census of Stats SA, the entire municipal area consists of a population of approximately 56 702 people, of which 52% are male and 48% are female. This population size translates into 14 562 households, of which the average household size for the municipality is 3.9 persons per household. It is stated within the Ventersdorp Municipal SDF (2010: 28) that the area's population growth is 2.7% per annum which is much higher than the national growth rate of 1.44 %. The municipality housed 48 675 people in the year 2008, which means that the population grew by approximately 8 027 or 16.5% to reach 56 702 as reported in the 2011 census. It must be noted that in August 2016, the local municipalities of Ventersdorp and Tlokwe (Potchefstroom) merged to form the new JB Marks Local

Municipality. This will have an effect on data related to the size of the municipal area, and in future surveys the population of the Ventersdorp and Tlokwe municipalities will be combined.

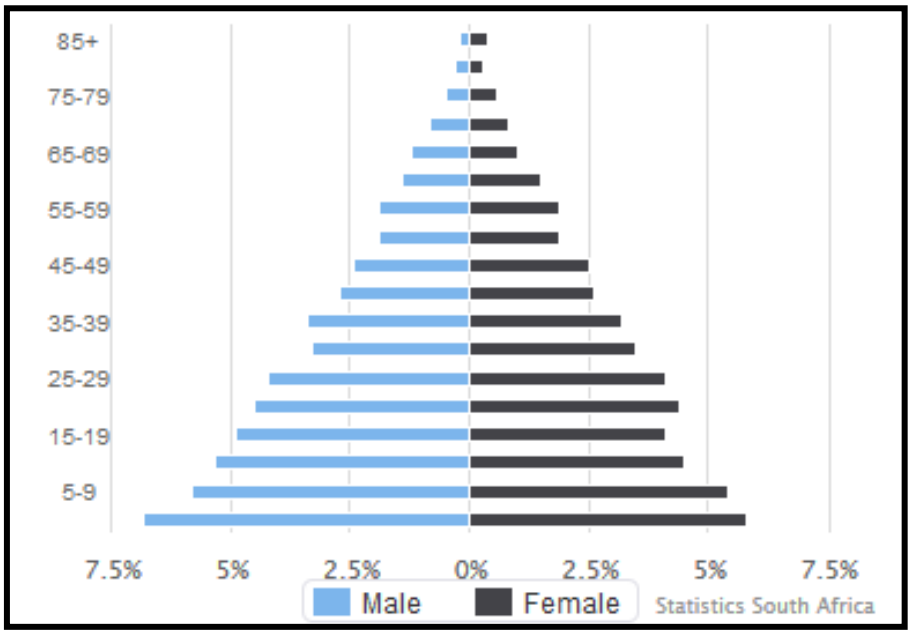


**Figure 6.3: Sex and age distribution of the Ventersdorp Municipality**
**Source: Stats SA Census (2011)**

According to the 2011 census results, as illustrated in Figure 6.3, 33.6% of the population of the Ventersdorp Municipality are less than 15 years and 6.1% are over 65 years. The remaining 60.2% are aged between 15 and 64 years. This, according to the Ventersdorp SDF (2010:29), indicates that the majority of Ventersdorp population is of working age and supports the remaining 39.7% of the population.

### 6.1.2 Boikhutsong

#### 6.1.2.1 Historic background

According to Stats SA Census (2011), the land on which Boikhutsong is situated was previously known as Bruidegomskraal and can be located 20km north and west from Ventersdorp (urban area) in the district known at the time as the Southern District Municipality (renamed to Dr Kenneth Kaunda on 30 June 2008). During 2008, the DRKKDM formally proclaimed Boikhutsong. Beneficiaries of South Africa's land restitution programme started settling in Boikhutsong and the surrounding villages after the Department of Rural Development and Land Reform acquired the land since the 1994 elections (Van der Walt, 2008). Currently the land is privately owned by the community and managed by the Community Property Association (CPA) (Ventersdorp, 2010:46).

Boikhutsong, Goedgevonden and Welgevonden fall under ward 5 of the Ventersdorp Municipality. The following figure (Figure 6.4) illustrates the location of Boikhutsong in relation to its neighbouring villages.

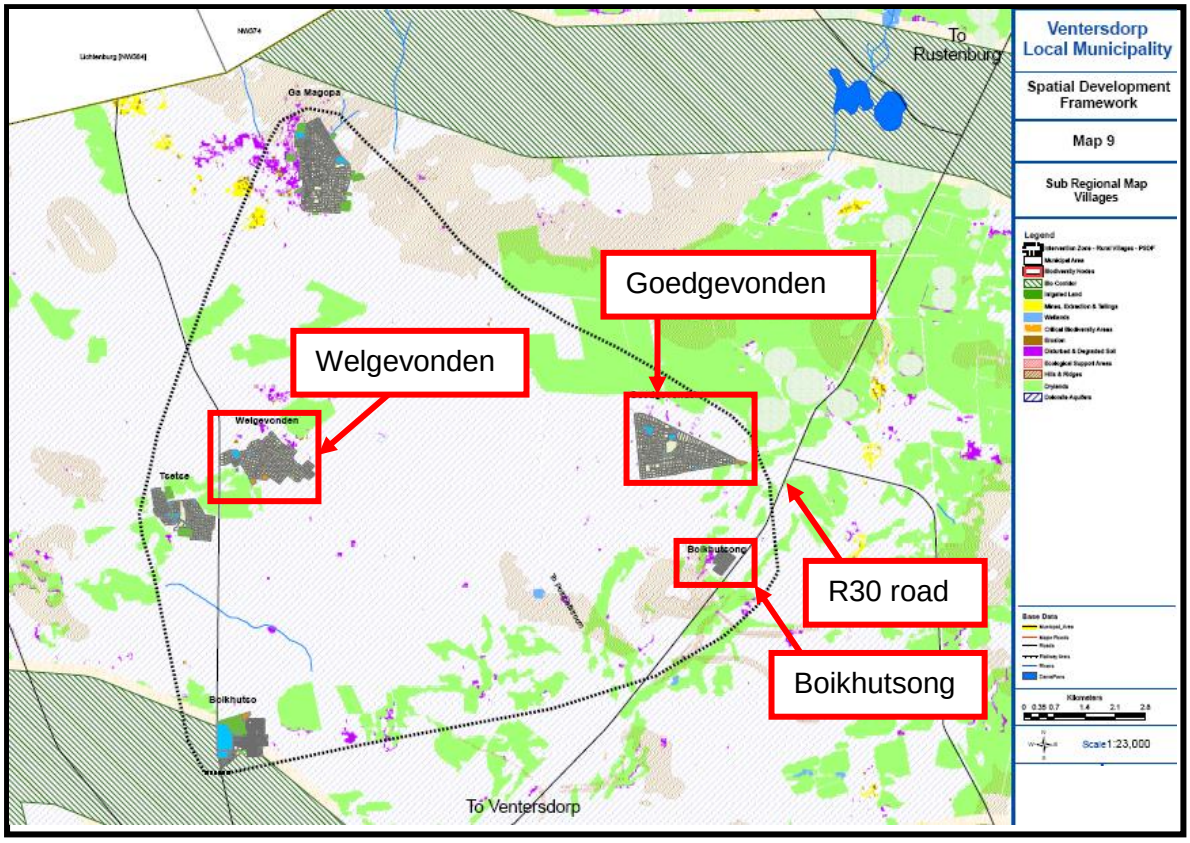


**Figure 6.4: Boikhutsong and its neighbouring villages**
**Source: Adapted from Ventersdorp (2014:43)**

Figure 6.4 illustrates that Boikhutsong is located next to the R30 road in close proximity to various other villages. Since the land on which Boikhutsong is situated is currently managed by the CPA, the ownership of stands within the village is based on commercial ownership and not individual ownership (Ventersdorp, 2010:104). Villages such as Boikhutsong can be seen as splinter groups that were established after the separation from other settlements which led to rural sprawl in the municipal space (Ventersdorp, 2014:44).

According to Van der Walt (2008) the Southern District Municipality established the Refilwe Agricultural Support Centre in 2003 to assist farming activity in these communities. However, by 2008 the support was stopped, as evidenced by the Financial Statements of Dr Kenneth Kaunda District Municipality (2008), in that grants to Refilwe Agricultural Support Centre amounted to R511,045 in 2007, but Rnil in 2008.

Other financial support came in the form of land acquisition subsidies and settlement grants from the Department of Agriculture. They also erected agricultural storage sheds in some villages. However, Van der Walt (2008) pointed out that the support was temporary and based upon the assumption that farming activities would be self-sustainable.

Van der Walt stated that the following challenges hampered self-sustainability in the villages (2008:7-10):

- A high unemployment rate, estimated at 70% by the Southern District Municipality in 2004.
- Despite access to agricultural land, most farming activities were for subsistence only, with few agricultural entrepreneurs and little economic benefit to the population from agriculture. For example, only 955 hectares of 5000 hectares available in the six villages were cultivated during the first agricultural season after 1994 (1995/96). In subsequent years faming declined and almost came to a halt. Only 340 hectares were cultivated in the 2005/6 season. In Boikhutsong in particular, no crops were cultivated in the 2005/6 season despite the availability of 856 hectares of farming land (Van der Walt, 2008:9).
- Little trade or entrepreneurial activity in the village.
- Dispersed and informal settlement, leading to complications and higher cost to the local municipality for providing water and sanitation.
- Housing was informal and semi-formal in nature, leading to low quality of life.

Van der Walt (2008:7) cited these challenges as typical of land reform in the agricultural sector after 1994. Although 32% of respondents in the survey (Van der Walt, 2008:7) indicated that they had previously been farm workers, they did not necessarily become farmers once resettled.

Van der Walt (2007:12-13) assumed that the respondents needed further training and support, and the study established a cooperative to assist the villagers as the Refilwe Agricultural Support was phased out. The cooperative project was financed by the Southern District Municipality. Workshops were held to determine needs and commitment from the communities and basic business training was provided to members and directors of the cooperative. A mentoring stage was also proposed, but this was never implemented due to a lack of funds.

A review of the cooperative two years after implementation revealed that it did not achieve sustainable development. The respondents in the survey expressed several misgivings about the project (Van der Walt, 2008:16), and the author concluded that both internal and external

problems existed. Poor management within the cooperative as well as a lack of funding from outside appeared to be the main problems. Van der Walt concluded that mentoring was crucial to build trust between the members, and ongoing financial support until the cooperative was solvent and able to obtain loan finance.

#### 6.1.2.2 Current status

According to the Ventersdorp Municipal SDF (2014:46), Boikhutsong (see Figure 6.5) consists of land that is approximately 856.67 ha which according to the 2011 census of Stats SA, houses a population of 2 292 people, of which 50.7% are male and 49.3% are female. This translates into a population density of 1875 persons/ km2. The village has 528 households which accommodates an average household size of 4.3 people. The population growth rate was not available from the 2011 census of Stats SA.


**Figure 6.5: Boikhutsong**
**Source: Own construction (2016).**

The following figure illustrates the population pyramid of Boikhutsong:

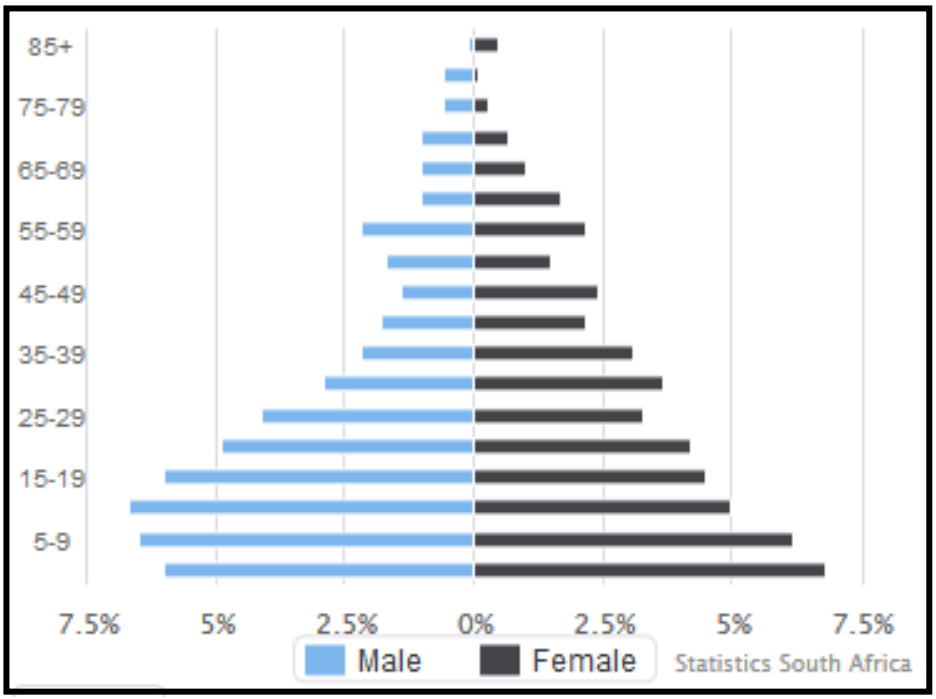


**Figure 6.6: Sex and age distribution of Boikhutsong (population pyramid)**
**Source: Stats SA Census (2011)**

Referring to Figure 6.6, it is evident that the majority of the population in Boikhutsong are between the ages of 15 and 64 years. It is this part of the population which is currently of working age and which supports the younger and older generations. The population pyramid for Boikhutsong clearly illustrates that young people (especially between the ages of 0 and 20) comprise a higher percentage of the population than older people. The pyramid also indicates that the population percentage declines from the age of 20 years until the age of 50 years. This shows that people of working age seek opportunities elsewhere therefore resulting in aforementioned decline.

### 6.1.3 City model of Boikhutsong

To determine the city model of case study area, the geographical characteristics of Boikhutsong and each model as outlined in section 2.2 needs to be taken into consideration. According to the literature, Boikhutsong consists of the following characteristics:

- Boikhutsong is a dispersed settlement located in the rural areas of the Ventersdorp Municipality (Van der Walt, 2008:7-10).
- Reliant on services from municipality (Van der Walt, 2008:7-10).
- High unemployment rate (Van der Walt, 2008:7-10).

- Little entrepreneurial and trade activity (Van der Walt, 2008:7-10).
- Boikhutsong consists of approximately 856.67 ha and accommodates a population of 2292 (Ventersdorp Municipal SDF, 2014:46),
- Due to the close proximity of the houses and the size of land belonging to Boikhutsong (856.67ha), plenty space is available for agricultural purposes (Ventersdorp Municipal SDF, 2014:53)
- The Ventersdorp municipal SDF (2010:53) states that the Boikhutsong and its neighbouring villages are characterised by its emerging farmers being active in the surrounding rural spaces.

Figure 6.7 is a graphical illustration of characteristics described above:

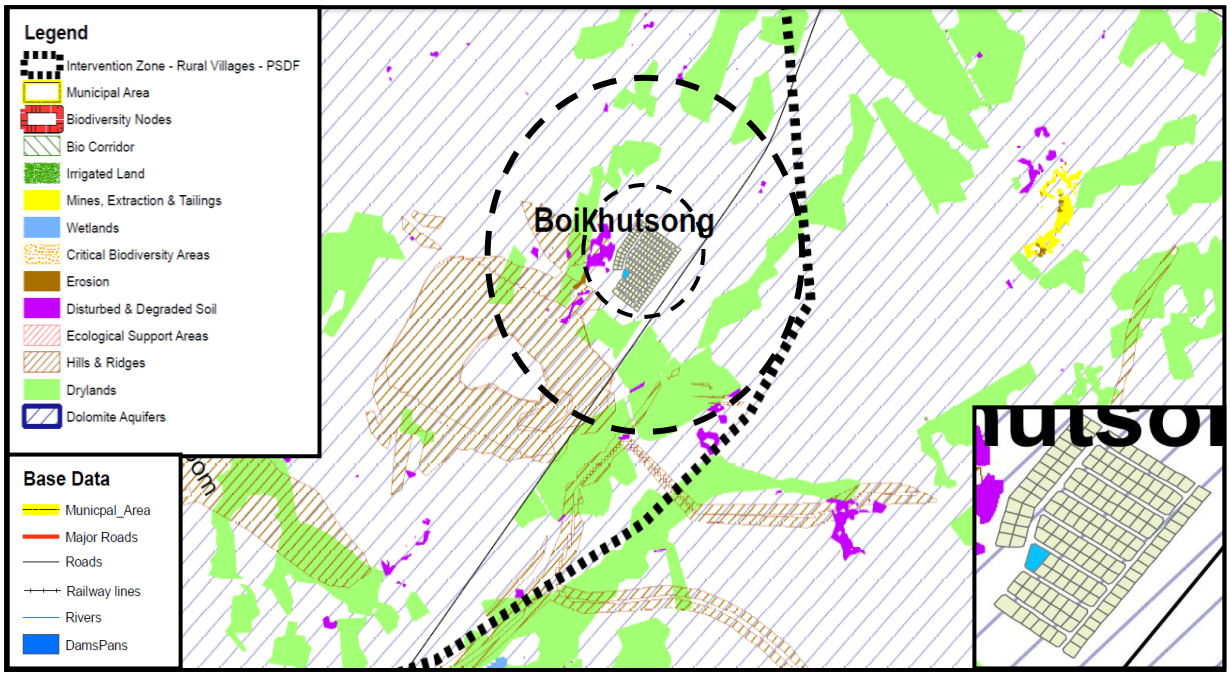


**Figure 6.7 Internal portions of Boikhutsong**
**Source: Adapted from Ventersdorp (2014:43)**

Figure 6.7 illustrates that Boikhutsong is dispersed from the Ventersdorp urban centre. It indicates that the space surrounding Boikhutsong is predominantly drylands fit for agricultural purposes. Furthermore, the figure reveals that Boikhutsong consists of a built-up centre in which the houses/properties are located fairly close to each other, thus leaving plenty of space for agricultural activities.

Taking into consideration the last-mentioned features of Boikhutsong, it is apparent that the theories of Philbrick and Friedmann should be taken into account.

#### 6.1.3.1 Philbrick's second order functional organisation

Philbrick describes the components of a second order functional organisation, in sub-section 2.2.2.2 of this study, as consisting of small commercial, residential establishments and farm land. The commercial and residential establishments will be the focal point of the region and farm lands surrounding it (on the periphery) (Philbrick, 1957:312). Additionally, Philbrick mentions that a second order functional organisation will consist of one-step bi-polar interconnections with other functional organisations that are located further away. Due to the distance from Boikhutsong to other functional areas such as Ventersdorp, and its built-up area surrounded by farm land, it is apparent that Boikhutsong's characteristics correlate to last mentioned features of a second order functional organisation.

#### 6.1.3.2 Friedmann's core and periphery model of regional development

The characteristics of Boikhutsong can best be aligned with Stage 2 of Friedmann's core and periphery model of regional development as outlined in sub-section 2.2.3 of this study. During this stage of Friedman's model, it is stated that development will occur in one centre while its periphery remains underdeveloped. Due to the backwash effect being present in this stage, it can also be stated that development decreases due to labour and goods migrating to another centre (Gaile, 1979). Similarly, Boikhutsong is located on the periphery of the Ventersdorp urban area. In contrast to Ventersdorp, Boikhutsong is characterised by its little entrepreneurial and trade activity. Because of this, economic development in the area is severely affected. Boikhutsong is thus reliant on services from the District and Local authority (Van der Walt, 2008).

Figure 6.8 below illustrates the geographical similarity between Stage 2 of Friedmann's model and the location of Boikhutsong in relation to the Ventersdorp urban area.

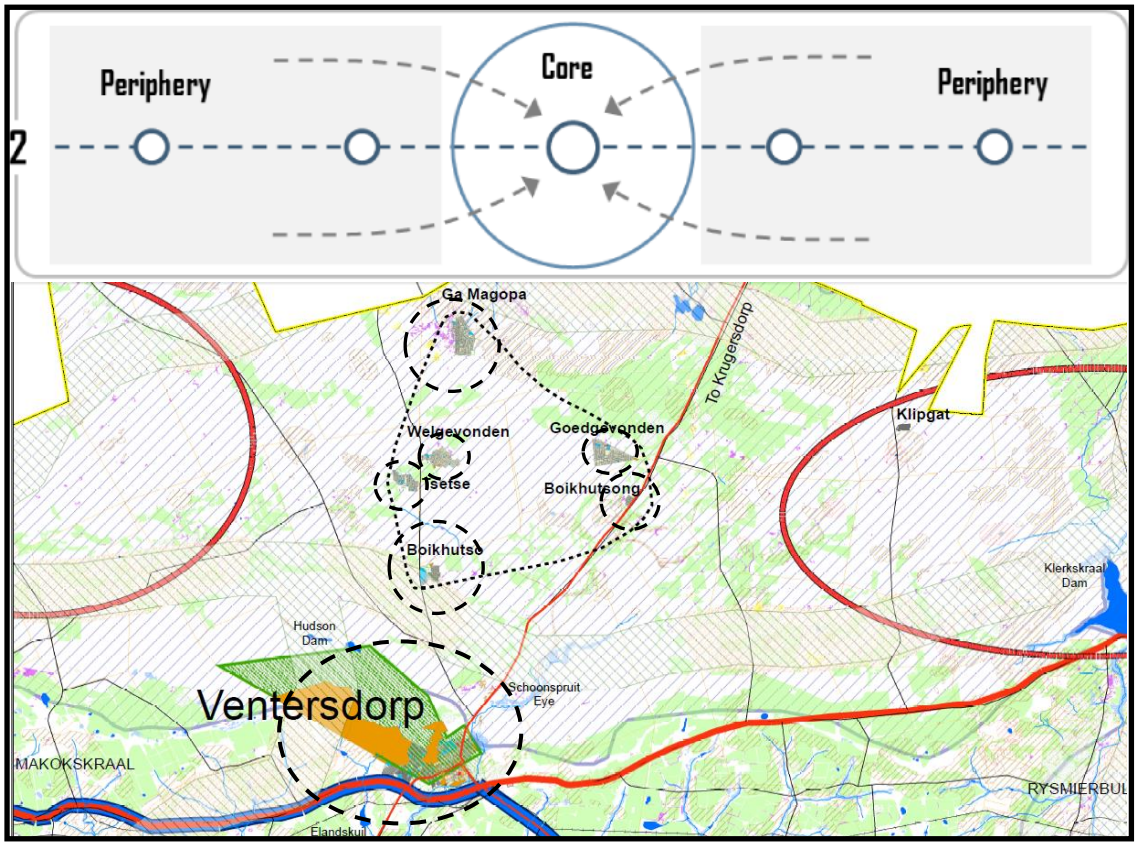


**Figure 6.8 Ventersdorp and Boikhutsong, Friedman's model**
**Source: Adapted from Friedmann (1966) and Ventersdorp (2010: 82)**

The similarity between Stage 2 of Friedmann's model and the geographical location of Boikhutsong and Ventersdorp is demonstrated in Figure 6.8. It is evident that Boikhutsong can be located outside the periphery of the Ventersdorp urban core.

## 6.2 Chapter summary

In this chapter, the geographical locations of the Ventersdorp Municipality and Boikhutsong were illustrated. Further attention was directed to the population sizes of the Ventersdorp Municipality and Boikhutsong. The information on the different population sizes also portrayed the extent of the current work force of the area. Various other details with regards to the historical background of Boikhutsong were discussed in this chapter. As a result, the various characteristics of Boikhutsong could be identified. These characteristics assisted in verifying the city models Boikhutsong relates to.

# CHAPTER 7: SURVEY OF CHALLENGES IN CASE STUDY AREA

During this chapter, the challenges in the case study area will be discussed. A survey was conducted by means of semi-structured interviews with municipal officials. Figure 7.1 illustrates the structure of Chapter 7.

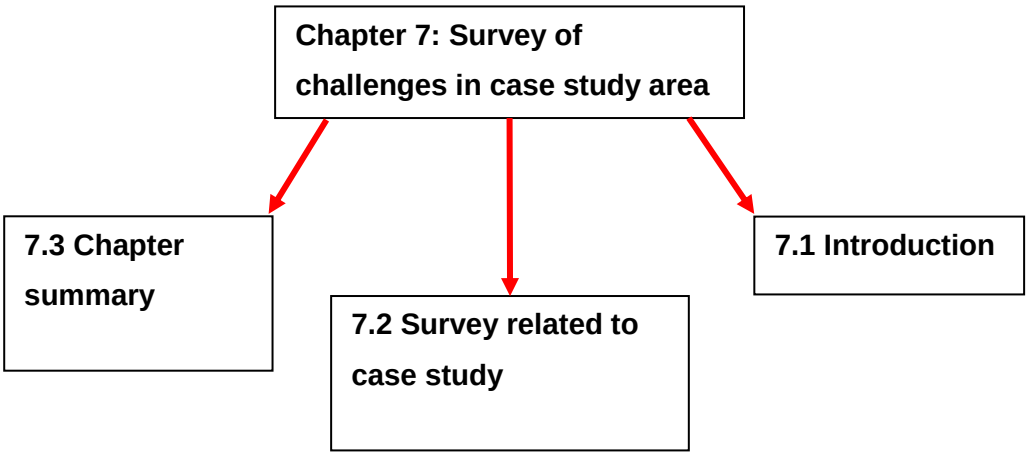


**Figure 7.1: Survey and data analysis**
**Source: Own construction (2016)**

## 7.1 Introduction

This empirical research phase was based on semi-structured interviews with the municipal officials at local, district and provincial level. According to Niggeman (2009:16), interviews can be used as primary or additional sources of information for a case study. Niggeman (2009:16) cites Yin (2003) who proposes that interviews are an essential way of gathering data for case studies, on condition that the data are corroborated with other sources. Yin (2017:219) explains that substantiation of interviews is necessary because there are usually problems with bias, poor recall or inaccurate articulation in interviews. In this research project, results of the interviews are substantiated with the literature, other data sources and quantitative analysis (see Chapter 8).

After evaluating the various functions of government and the mandate they hold towards sustainable development in areas such as Boikhutsong, as outlined in chapter 5, it was decided to identify interviewees associated with local, district and provincial government. As a result, interviews were conducted with the Ventersdorp Municipal Manager, Ward Councillor for Ward 5, Town and Regional Planner, PMS Manager, IDP Manager, Provincial Town Planner and District PMS Manager. Initially, it was planned to also interview the consultants who developed the various policies for the Ventersdorp Municipality, but it became apparent

that all policies were developed in-house by the Town and Regional Planner, PMS and IDP Manager. Various participants pointed out that the Mayor's Office Manager should also be included. After the interviews were finalised with the local municipal officials, attention was directed at officials working at a district and provincial level.

The purpose of the interview questionnaires was to gather information from the various participants with regards to whether the Ventersdorp Local Municipality utilises an OPMS which makes use of KPAs and KPIs to ensure sustainable development within Boikhutsong. Additionally, it was important to gather information regarding the current challenges in Boikhutsong.

A maximum of seven questions were prepared which included a series of sub-questions. Each sub-question merely represents how the discussion was directed to ensure constructive and relevant feedback from each participant. The sub-questions did not place a restriction on the information to be provided by participants. The questions and answers provided by the participants are illustrated in a series of tables below. The sub-questions are depicted in bullet point format in the tables.

The interviews were recorded and transcribed, which according to Smith et al. (1995: 18) allows for a much fuller record than taking notes. After conducting the interviews and transcribing them, the next step was to code the transcriptions. According to Smith *et al.* (1995: 37), "coding is the process of defining what the data are all about". During this project, deductive coding was utilised which allowed the analysis with codes already in mind based on the literature review and case study (Smith *et al*., 1995: 37). However, it was essential to provide room for data to emerge from the participants. This, according to Smith *et al*. (1995:37) is an accepted qualitative method of coding.

### 7.2 Survey related to case study

Summaries of the semi-structured interviews are provided in Tables 7.1 to 7.8. It is important to note that each participant was asked the same questions. As a result, it provided the opportunity to compare each answer as provided by the different participants. A short discussion regarding the answers provided follows below each table. The survey questionnaires are available as Annexures B and C.

Throughout tables 7.1 to 7.8, recurring themes identified in analysis of the responses are indicated in the first column of each table, and are colour-coded. Colour-coding assists in comparison of answers provided by each respondent. Each answer is provided with a unique colour. As a result, a similar answer will have a corresponding colour.

**Table 7-1: Question 1 (municipal officials)**

| Question 1 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **Challenges**<br>• Water<br>• Electricity<br>• Education<br>• Health<br>• Sanitation<br>• Infrastructure<br>• Transport<br>• Land<br>• Economic development<br>• Unemployment (poverty) | Dolomite.<br>Housing stands as well as proper housing<br>Electricity | Dolomite<br>Water<br>Electricity<br>Education and educational facilities,<br>Student transport,<br>Housing<br>Unemployment<br>Transport | Electricity<br>Internal roads, a bigger reservoir<br>Water<br>Educational facilities<br>Clinic<br>Houses | Electricity<br>Houses<br>Water<br>Unemployment<br>Land isn't used for agricultural purposes. | Water<br>Education facilities<br>Scholar transport<br>Clinic<br>Houses, high mast lights and storm water drainage<br>Electricity.<br>The land isn't used for agricultural purposes. | Electricity |
| **The way these challenges are addressed**<br>Development that addresses the different challenges: | Additional houses were provided<br>A dolomite study was conducted in the area. | Provided roads, water, electricity and additional houses. | Provided a bulk electricity line and bulk water line, | The municipality provided basic services within Boikhutsong. | The municipality did provide Boikhutsong with basic services. VIP toilets outside of every RDP house. | Challenges are also addressed by providing the community with services. |
| **Policies used to address these challenges**<br>• IDP<br>• SDBIP<br>• Budget plan<br>• SDF<br>• Other | Housing Sector Plan<br>IDP | IDP<br>SDBIP<br>Public participation. | IDP<br>Budget plan<br>SDBIP | Chapter 7 of the constitution | IDP<br>SDBIP | IDP,<br>Budget meetings<br>Ward committee meetings |
| **Prioritisation of the challenges** | 1.Housing… water, electricity sanitation<br>2. Clinic (there is a mobile clinic provided to the community)<br>3. Transport<br>4. Road | 1. Housing<br>2. Electricity<br>3. Water<br>4. Employment<br>5. Library<br>6. Schools<br>7. Roads | 1. Water<br>2. Sanitation<br>3. Houses<br>4. Electricity<br>5. Clinic<br>6. School<br>7. Roads. | 1. Primary school<br>2. Water<br>3. Electricity<br>4. Clinic<br>5. Housing<br>6. Sanitation<br>7. Agriculture (job opportunities)<br>8. Roads (internal streets). | 1. Housing<br>2. Water<br>3. Schools<br>4. Clinic<br>5. Storm water drainage<br>6. Roads<br>7. High mast lights<br>8. Electricity<br>9. Offices for job opportunities<br>**10. Police** | 1. Water<br>2. Sanitation<br>3. Scholar transport<br>4. Clinic<br>5. Job opportunities<br>6. Schools (primary)<br>7. Housing<br>8. Electricity |

**Source: Own construction (2016).**

From question 1, it emerged that the majority of participants (at least three) agreed that housing, electricity, water, issues related to land and education may be regarded as challenges within Boikhutsong. In the final part of the question, when respondents were asked to prioritise the challenges, most of them mentioned additional challenges to the ones they identified earlier, possibly due to having more time to consider their answers. All the challenges identified by each participant were ranked on a scale of 1 to 10, whereby 1 was regarded by them as the most pressing challenge to be addressed and 10 the least pressing challenge to be addressed. Most participants identified fewer than 10 challenges. According to them, the challenges are addressed by means of development, including the construction of houses, basic services, as well as bulk electricity and water lines.

The relative priorities of the needs identified in this local survey are depicted in Table 7.1.1, and the prioritisation of challenges identified in the 2016 National Community Survey (Stats SA, 2016) is presented in Table 7.1.2.

**Table 7.1.1: Prioritisation of challenges in the survey of municipal officials**

| Challenge | Relative priority |
|---|---|
| Water | 0.1800 |
| Housing | 0.1576 |
| Electricity | 0.1260 |
| Clinic | 0.1069 |
| Schools | 0.1063 |
| Sanitation | 0.0993 |
| Roads | 0.0656 |
| Employment (Job opportunities) | 0.0619 |
| Transport | 0.0426 |
| Library | 0.0204 |
| Storm water drainage | 0.0182 |
| High mast lights | 0.0121 |
| Police | 0.0030 |
| Total | 1.0000 |

**Source: Own construction (2017)**

**Table 7.1.1: Prioritisation of challenges in the National Survey**

| Challenge | Relative Priority |
|---|---|
| Lack of safe and reliable water supply | 0.2067 |
| Lack of/Inadequate employment opportunities | 0.1237 |
| Cost of electricity | 0.1031 |
| Inadequate roads | 0.0827 |
| Inadequate housing | 0.0808 |
| None | 0.0648 |
| Cost of water | 0.0605 |
| Violence and crime | 0.0584 |
| Lack of reliable electricity supply | 0.0563 |
| Inadequate sanitation/sewerage/toilet services | 0.0332 |
| Drug abuse | 0.0258 |
| Corruption | 0.0190 |
| Inadequate refuse/waste removal | 0.0175 |
| Inadequate street lights | 0.0140 |
| Other | 0.0136 |
| Gangsterism | 0.0094 |
| Lack of/inadequate healthcare services | 0.0083 |
| Alcohol abuse | 0.0071 |
| Lack of/inadequate educational facilities | 0.0062 |
| Lack of/inadequate parks and recreational area | 0.0043 |
| Lack of/inadequate public transport | 0.0040 |
| Unspecified | 0.0002 |
| Total | **1.0000** |

**Source: Own construction (2017)**

It is evident from Tables 7.1.1 and 7.1.2, 'Water' was identified both in the local survey and national survey as the main challenge. Other basic services such as electricity and sanitation were also given very high priorities in both, together with housing. These parallels provide some assurance regarding the reliability of the data in the survey conducted in this case study.

In Table 7.1.3 below, a comparison is also made between the challenges for Boikhutsong identified by the municipal officials and the challenges for rural areas identified in the literature:

**Table 7.1.3: Concurrence of challenges identified by the survey and the literature**

| Challenge | Identified in Survey? | Identified in Literature? |
|---|---|---|
| **Challenges identified in Survey (see Table 7.1.1)** | | |
| Water | Yes | Yes |
| Housing | Yes | Yes |
| Electricity | Yes | Yes |
| Clinic | Yes | Yes |
| Schools | Yes | Yes |
| Sanitation | Yes | Yes |
| Roads | Yes | Yes |
| Employment (Job opportunities) | Yes | Yes |
| Transport | Yes | Included in Transport |
| Library | Yes | Included in Infrastructure |
| Storm water drainage | Yes | Included in Infrastructure |
| High mast lights | Yes | Included in Infrastructure |
| Police | Yes | Included in Governance |
| **Challenges identified in the literature (see Table 2.7)** | | |
| Poverty | Implied by 'Unemployment' | Yes |
| Basic Services | Yes | Yes |
| Education | Implied by "Schools" | Yes |
| Healthcare | Implied by 'Clinics' | Yes |
| Land | No | Yes |
| Infrastructure | Yes | Yes |
| Economic Development | Implied by 'Unemployment' | Yes |
| Transport | Yes | Yes |
| Governance & Public Participation | Implied by 'Policing' | Yes |

**Source: Own construction (2016)**

As illustrated in Table 7.1.3, the challenges identified in the survey and the literature correspond, except for 'Land' that was identified in the literature as a challenge but not in the survey in this research project. The reason for this could possibly be linked to information in the case study in Chapter 6, where it was found by Van der Walt (2008:9) that farming activity in Boikhutsong came to a halt around 2005. If there is no farming activity, there may not be need for land.

**Table 7-2: Question 2 (municipal officials)**

| Question 2 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **General knowledge on the municipality's OPMS**<br>• IDP<br>• SDBIP<br>• Budget Plan<br>• SDF<br>• Other<br>• **OPMS**<br>• **KPAs**<br>• **KPIs**<br>• **SDIs** | OPMS<br>MSA.<br>SDBIP | OPMS<br>SDBIP<br>IDP.<br>KPAs<br>KPIs. | PMS<br>Public participation<br>IDP<br>Budget.<br>SDBIP | Does not bear much knowledge on OPMS. | Does not bear much knowledge on OPMS. | OPMS |
| **Implementation of KPAs and KPIs** | KPAs<br>KPIs | KPAs<br>KPIs<br>NKPIs | OPMS<br>KPAs<br>KPIs | KPAs. | KPAs<br>KPIs | OPMS<br>KPIs<br>KPAs |
| **Implementation of SDIs** | KPIs are aligned to SDIs. | KPIs are aligned to SDIs | Could not provide any comments. | Could not provide any comments. | Could not provide any comments. | Could not provide any comments. |
| **Implementation of KPAs and KPIs within Policies** | KPIs<br>SDIs<br>IDP.<br>SDBIP<br>OPMS | IDP<br>SDBIP<br>Budget plan | KPAs<br>KPIs<br>IDP<br>SDBIP | IDP<br>SDBIP | Indicators are addressed within the IDP, SDBIP | These KPAs and KPIs are included within the constitution, MSA (Chapter 6), IDP, SDBIP. |

**Source: Own construction (2016)**

It is evident that the Ventersdorp Municipality utilises policies such as the IDP and SDBIP to address the challenges in Boikhutsong, as illustrated in Table 7.2 above. The majority of participants were aware of the OPMS and what it entails. The participants also confirmed that to their knowledge, an OPMS utilises KPAs, KPIs, as do the SDBIP and IDP. Supporting legislation was also highlighted. Two participants made it clear that KPAs and KPIs are aligned

to SDIs. Many participants have stated that KPAs and KPIs are included within the IDP and SDBIP. It was also mentioned that these policies and the Budget Plan are interlinked and that they cannot function separately.

**Table 7-3: Question 3 (municipal officials)**

| Question 3 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **Are there KPIs in place to address the challenges in Boikhutsong?** | Yes | Yes | Yes | Yes | Yes | Yes |

**Source: Own construction (2016).**

Respondents to question 3 were in agreement that the Municipality of Ventersdorp have KPIs in place in order to address the challenges in Boikhutsong. These KPAs and KPIs focused on the provision of a bulk electricity and water line for Boikhutsong. It was also pointed out that a different project will be implemented in each financial year.

**Table 7-4: Question 4 (municipal officials)**

| Question 4 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **Is it important to implement additional KPIs, specifically focused on the development of Boikhutsong?** | Not at this moment. | Yes | Yes | Yes | Yes | No |
| **Types of KPIs?** | | Water, employment | Development of roads and sanitation. | Maintenance of current infrastructure | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | opportunities and schools. | | | | |
| **Question 4** | **Town and Regional planner** | **IDP Manager** | **PMS Manager** | **Mayor's Office Manager** | **Councillor (Ward 5)** | **Municipal Manager** |
| **In which policies?** | | SDBIP. | IDP<br><br>SDBIP | SDBIP and IDP | | |

**Source: Own construction (2016)**

During question 4, half of the participants said that it was important to implement additional KPIs focused on the development of Boikhutsong. These participants prioritised KPIs for road development, sanitation, water provision, employment opportunities, provision of schools and the maintenance of infrastructure. It was stated that these KPIs should be highlighted in the SDBIP and IDP. Other participants did not find it important to implement additional KPIs.

**Table 7-5: Question 5 (municipal officials)**

| Question 5 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **Do you believe that the Ventersdorp Local Municipality will achieve all its development objectives within this financial year (1 July 2015-30 June 2016)?** | No | Yes | No | No, | No, | No, |

**Source: Own construction (2016)**

In response to question 5, most participants did not believe that the Ventersdorp Municipality would achieve its developmental objectives for the 2015-2016 financial year. Throughout the entire interview with each participant, it became apparent that the Ventersdorp Municipality suffers financially and has been placed under administration. The financial challenge can be

regarded as one of the main causes for the municipality's under-achievement with regards to its developmental objectives.

**Table 7-6: Question 6 (municipal officials)**

| Question 6 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager | Councillor (Ward 5) | Municipal Manager |
|---|---|---|---|---|---|---|
| **When will the Ventersdorp Local Municipality merge with the Tlokwe Local Municipality and how will this affect the current OPMS?** | 3rd August 2016, there will be only 1 IDP, 1 Budget Plan and 1 SDBIP for the entire area. | 3rd August 2016. The two municipalities' IDPs, Budget Plans and SDBIPs will be merged. | 3rd August 2016 the IDPs, Budget plans and SDBIPs will be merged. | 3rd August 2016. | 3rd August 2016 | 3rd August 2016. The IDPs, Budget Plans, and other policies, will be merged. |
| **How will it affect the KPAs and KPIs?** | The KPIs and KPAs will remain the same. | Bigger budget which will assist with achieving all the KPIs. | The KPAs and KPIs will remain the same. | Will provide a bigger budget which will assist with achieving all the KPIs. | KPIs will be addressed quicker. | The current KPAs and KPIs utilised by the municipality will stay the same. |
| **How will it affect development within Boikhutsong?** | Tlokwe does not have any experience in managing villages. | It will have a positive impact. | It will have a positive impact. | It will have a positive impact. | It will have a positive impact. | It will have a positive impact. |

**Source: Own construction (2016)**

It was stated, in response to question 6, that the merger between the Ventersdorp and Tlokwe Municipalities will take place after the 2016 local government election which is on 3 August 2016. It was also pointed out that the IDP and SDBIP of both municipalities, as utilised by the OPMS, will be merged. The majority of participants agreed that the KPAs and KPIs of the

Ventersdorp Municipality would remain the same after the amalgamation. However, Ventersdorp Municipality utilises five KPAs whereas the Tlokwe Municipality uses six KPAs. It is therefore important that middle ground be found with regards to the KPAs as identified in the OPMS. The majority of participants believed that the merge between the municipalities will have a positive impact on the development of Boikhutsong. The Town and Regional planner however, stated that the Tlokwe Municipality does not have sufficient experience in managing villages and also struggles with the development of an SDBIP. On the other hand, the Municipal Manager clearly stated that the merger would not have a negative impact on Boikhutsong, but also stated that the needs and challenges within Boikhutsong have already been prioritised.

**Table 7-7: Question 7 (municipal officials)**

| Question 7 | Town and Regional planner | IDP Manager | PMS Manager | Mayor's Office Manager |
|---|---|---|---|---|
| **If you were the Municipal Manager, what would you have done differently?** | Would not be able to change much | Speed up development in Boikhutsong.<br><br>Implement more KPIs that focus on development and dolomite. | Wouldn't be able to change anything because of the financial issues Ventersdorp Local Municipality is currently facing. | The municipality did not spend all its finances. All the money provided to the municipality for the development of villages must be spent. |

**Source: Own construction (2016)**

It is important to note that question 7 was directed and relevant to four participants and not the Municipal Manager or Councillor. During the discussion regarding question 7, the Town and Regional Planner as well as the PMS Manager, stated that they wouldn't be able to bring much change to the current situation in Boikhutsong seeing that the municipality faced financial challenges. The IDP Manager, on the other hand, wanted development in Boikhutsong to take place much faster, seeing that it is located in a prime location. The challenge of dolomite must, however, be taken into account. The Manager of the Mayor's Office stated that the municipality did not spend all its previous funds as provided by treasury. Spending these finances on the development of Boikhutsong as well as other villages, would be the main concern as Municipal Manager.

It was originally planned to pose the same seven questions (in Table 7.1 to 7.7) to the officials at provincial and district level. However, during initial discussions before the actual interviews

commenced, it was pointed out that these persons did not have knowledge of Boikhutsong or the current situation within the Ventersdorp Municipality with regards to its OPMS. The questions directed at these participants were therefore altered as deemed necessary to elicit useful information for the purposes of the study.

**Table 7-8: Questionnaire for Provincial and district officials**

| Question | Town Planner, Province | PMS manager, district |
|---|---|---|
| **What are the challenges that the people of Boikhutsong face?**<br><br>• Water<br>• Electricity<br>• Education<br>• Health<br>• Sanitation<br>• Infrastructure<br>• Transport<br>• Land<br>• Economic development<br>• Job opportunities and unemployment (poverty) | Is not aware of any challenges within the villages in the Ventersdorp Local Municipality. | Do not have much knowledge on the current challenges within the villages of Ventersdorp |
| **In which way are these challenges being addressed?**<br><br>• Utilisation of policies<br>• Subsidies | The department of local government and human settlements provide subsidies for housing schemes. This includes subsidies for roads, water and sewerage. This is part of the MIG and PIG. | Support the local municipalities financially. Support is provided to SMMEs (Small Medium Business Enterprises). The District Municipality provide grants to small scale farmers and villages, as stated in the SDBIP. It also provides support to LED projects. |
| **Have any of the local government's (Ventersdorp Municipality) responsibilities been taken over by the district or province?** | Schools and clinics are the responsibilities of the Department of Education and Health. The district is supposed to provide the bulk services. | It is the responsibility of local government to address these challenges regarding water and electricity provision. |
| **Are policies utilised to address these challenges?** | Villages, townships and small dorpies (VTSD) - implemented by province through the premier's office, Provincial Infrastructure Grant (PIG). | VTSD<br><br>IDP<br><br>SDBIP. |

| Question | Town Planner, Province | PMS manager, district |
|---|---|---|
| **How should the challenges be prioritised?** | Town Planner could not comment on the question. Aforementioned is a result of the little knowledge on Boikhutsong. | The communities in villages do not always acquire the services provided from the district and therefore engage in strikes. |
| **Question 2** | | |
| **What general knowledge do you have on the municipality's OPMS?** | It includes strategic objectives, KPAs and KPIs. | There are 2 types of PMSs. These are the OPMS and employee PMS. The OPMS makes use of KPAs and KPIs. The OPMS also makes use of an IDP and SDBIP which includes KPAs and KPIs. For each KPA there will be a number of KPIs which indicate what was achieved and what wasn't. |
| **Do you provide support regarding the implementation of KPAs and KPIs within local government?** | Yes, | Yes. |
| **Are KPAs and KPIs aligned with SDIs** | Wasn't answered clearly. | Yes, KPAs and KPIs are aligned with SDIs. |
| **Are KPAs and KPIs addressed in any provincial or district policies?** | Yes, 3 KPIs are highlighted in the municipal infrastructure programme. | Yes, The IDP and SDBIP. |
| **Question 3** | | |
| **Does the province or district utilise KPAs and KPIs to address the challenges found within the Ventersdorp Municipality's villages?** | Yes, | Yes, |
| **Question 4** | | |

| Question | Town Planner, Province | PMS manager, district |
|---|---|---|
| **Does the province or district recommend any general KPAs and KPIs to the Ventersdorp Municipality to address these challenges?** | Do not know. The Premier's office focuses on villages. | No, local municipalities as well as district municipalities receive their KPAs and KPIs from the S46 of the MSA. |

**Source: Own construction (2016).**

It was found that provincial government as well as the district municipality had little knowledge of Boikhutsong and that all challenges within this village must be stated within the Ventersdorp Municipality's IDP. Many projects that are focused on addressing the challenges in villages are subsidised by the provincial department and district municipality. Projects related to the development of housing, clinics, schools, roads water and sewerage are monitored by the provincial and district municipalities. These projects are included within the PIG, MIG and VTSD programmes. It was also confirmed that both the provincial government and district municipality utilise an OPMS and its underlying KPAs and KPIs to assist local government with service delivery.

### 7.3 Chapter summary

During Section 7.2 brief discussions with regards to the answers provided for each survey question were outlined. Participants agreed and disagreed on a number of questions. However, the challenges they raised were similar to those identified from the literature for rural areas (see Chapter 2).

The information provided by participants working at a provincial and district level has indicated that support regarding the funding for service delivery is provided to the Ventersdorp Local Municipality. The province and the district utilise various KPAs and KPIs for the support of local government. However, it was noticeable that the participants, at provincial and district level, did not have any knowledge on the current situation in Boikhutsong.

# CHAPTER 8: ANALYSIS OF EFFECTIVENESS OF PERFORMANCE MANAGEMENT SYSTEMS

The serious challenges faced by the people of Boikhutsong are highlighted in Chapter 6 and Chapter 7. Vivid pictures of the poor living conditions are exhibited in Chapter 6, while the surveys in Chapter 7 confirmed and prioritised the challenges. This chapter provides an analysis of how well the Ventersdorp local municipality manages these problems.

Ventersdorp Local Municipal officials confirmed (see Chapter 7) that they utilise a Performance Management System (PMS) with Key Performance Areas (KPAs) and Key Performance indicators (KPIs) to address sustainable development challenges in Boikhutsong. In this chapter, the effectiveness of the Ventersdorp Local Municipality's PMS is measured against that for other municipalities in the district, province and country. Additionally, its performance with regards to sustainable development in Boikhutsong is compared to a neighbouring village (Goedgevonden) and the ward that these two villages fall within (Ward 5). More generally, this chapter considers the effectiveness of Performance Management Systems of local municipalities in achieving sustainable development. The assessment is made for six levels, namely the villages of Boikhutsong and Goedgevonden, Ward 5, Ventersdorp Local Municipality, Dr Kenneth Kaunda District Municipality, North West Province and South Africa. A graphical depiction of the governmental structure is depicted in Figure 8.1.

The Analytical Hierarchy Process (AHP) was used in this assessment. The AHP is deemed a suitable methodology for this study as it prioritises elements for analysis by assigning weights to them (Saaty, 1990:9). In this assessment, sustainable development indicators are weighted and prioritised to account for their relative importance within the context of the study.

Not all the sustainable development indicators identified in the literature (see Chapter 3) are relevant to the case study area. Some that are relevant are not available for measurement. Of those that are relevant and available, some may be of higher importance than others and need to be assigned more weight in the statistical analysis. The AHP is an objective tool that enables this prioritisation. The simplicity it provides to decision making and forecasting procedures has led to its widespread use across the world for various domains such as business, governance and research. This is because the AHP assists decision-makers in organising problems in ways that are simple to analyse (Bhushan & Rai, 2004:15).

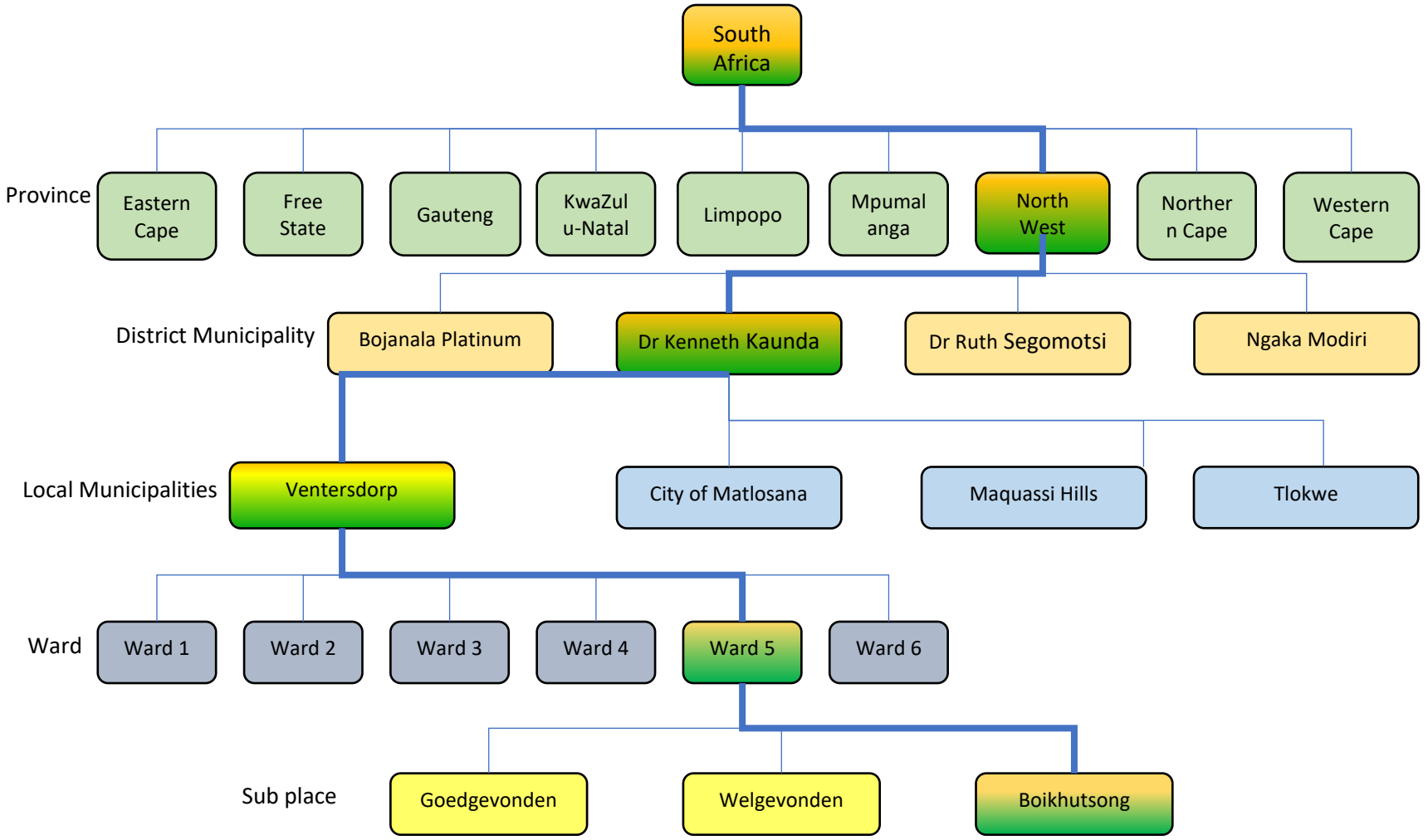


**Figure 8.1: Government structure over Ward 5 and Boikhutsong**

**Source: Own Construction (2017)**

## 8.1 Understanding the Analytical Hierarchy Process

The AHP is a structured but flexible methodology for analysis in which factors are organised in a hierarchical framework and ranked (Saaty, 1990:9). According to Saaty (1990:9), the ranking procedure is the most creative task, because important decision-making factors need to be identified. Once these factors are selected, they are arranged in a hierarchical structure, breaking down the overall goal into criteria (Themes) and sub-criteria (Indicators). The AHP procedure has four major activities that will be explained with reference to this study:

1. Identification of the problem and the required knowledge, in other words the objective of the analysis and root of the hierarchy. For this study, it is Sustainable Development of Rural Settlements.
2. Determination of the hierarchical structure, using criteria and sub-criteria. For this study, it entails themes and indicators for Sustainable Development, as indicated in Figure 8.2

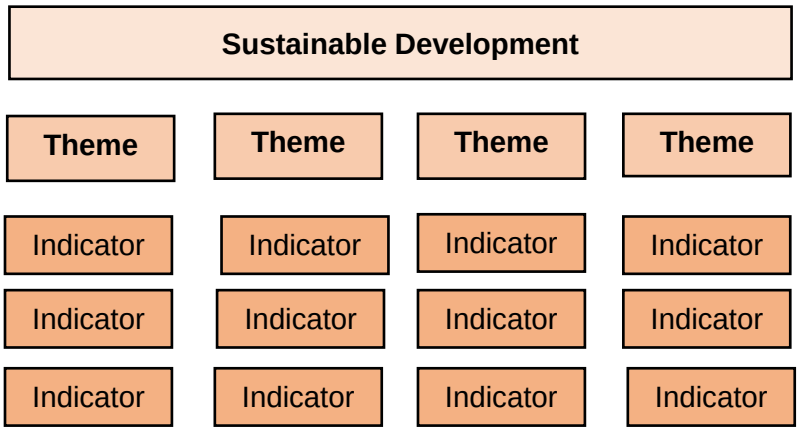


**Figure 8.2: Format for pairwise comparison**
**Own Construction. Based on Bhushan and Rai (2004:16)**

3. Construction of pairwise comparison matrices in which elements of the hierarchical structure are compared with each other in respect to their contribution to higher order elements. In this study, themes are compared to each other with respect to their contribution to Sustainable Development, and indicators are compared with each other in respect to their contribution to the themes.
4. Construction of a complete priority rating. (Saaty, 2008: 83).

## 8.2 Identifying themes and indicators for the development of rural settlements

Sustainable Development indicators are investigated in Chapter 3. The themes and indicators for the sustainable development of rural settlements that are used in this analysis originate from Indicator sets developed by the United Nations Commission on Sustainable Development (2007), the South African Department of Housing's National Spatial Development Perspective South Africa (2006), the World Bank (2007) and indicators as identified by Niggemann (2009, ii). The following table (Table 8.1) illustrates all these themes and indicators for sustainable development of rural settlements. These indicators are linked to the challenges for rural settlements that are identified in Chapter 2, namely Poverty, Basic Services (Water, Energy, Sanitation, Education, Healthcare), Land, Infrastructure, Economic Development, Transport and Good Governance (See Table 2.7). Throughout this research project, it is argued that these challenges must be overcome in order to reach the main objective of sustainable development.

Each Indicator in Table 8.1 is assessed for its relevance to the case study area (Boikhutsong), given the characteristics and background information obtained about Boikhutsong in Chapter 6. For example, the indicators on the theme of oceans, seas and coasts are not meaningful because the case study area is landlocked. Because the purpose of the analysis in this chapter is to assess the effectiveness of the Ventersdorp Local Municipality's PMS, each sustainable development Indicator is also considered for its relevance to the functions of Local Municipalities as described in Chapter 5 (Policies and Legislative Framework), set out in Table 5.2. If a Local Municipality is not legally responsible for the function that is being measured by the Indicator, that Indicator is considered not relevant in Table 8.1.

In summary, Table 8.1 displays a comprehensive list of sustainable development indicators sourced from the literature, with an indication against each whether it is a useful measure for the Local Municipality's Performance Management System with regards to sustainable development of the case study area. Those indicators that are relevant and have data that are fully available, are marked in green. The indicators marked in yellow have related data that are fully available. Indicators marked in red are those that are relevant, but for which data could not be found during this study. Indicators that do not have a colour assigned to them are not relevant to the case study area or the functions of a local municipality, and therefore will not be utilised in this study. The link to rural sustainable development challenges in Table 2.7 is presented in the last column of Table 8.1. These challenges will form the themes in the hierarchical structure displayed in Figure 8.1.

**Table 8-1: Sustainable Development indicators, sifted for relevance and availability**

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| **Commission on Sustainable Development (CSD) indicators for sustainable development**<br><br>**See Table 3.1** | Proportion of population living under the national poverty line. | Yes | No | n/a | **Poverty** |
| | Ratio of the share in the national income of highest to lowest quintile. | Yes | No | n/a | |
| | Proportion of population utilising an upgraded sanitation facility. | Yes | Yes | Yes | **Infrastructure** |
| | Proportion of population utilising an upgraded water source. | Yes | Yes | Yes | |
| | The number of households without electricity or any other modern energy services, | Yes | Yes | Yes | |
| | Proportion of urban population living in slums. | No | No | n/a | |
| | Prevalence of corruption among government officials (% of population having paid bribes) | Yes | Yes | Related | **Good Governance** |
| | Number of intentional homicides per 100,000 population. | Yes | No | n/a | |
| | Under-five mortality rate. | Yes | No | n/a | **Healthcare** |
| | Life expectancy after birth. | Yes | No | n/a | |
| | Percentage of population with access to basic health care facilities. | Yes | Yes | No | |
| | Immunisation rate against infectious childhood diseases. | Yes | No | n/a | |
| | Nutritional status of children. | Yes | No | n/a | |
| | Morbidity of major disease such as HIV/AIDS and malaria. | Yes | No | n/a | |
| | Gross intake ratio to final grade of primary education. | Yes | No | n/a | **Education** |
| | Net enrolment rate in primary education. | Yes | No | n/a | |
| | Adult secondary and tertiary schooling attainment level. | Yes | No | n/a | |
| | Adult literacy rate. | Yes | No | n/a | |
| | Population growth rate. | Yes | No | n/a | (Demographics) |
| | Dependency ratio. | Yes | No | n/a | |
| | Percentage of population living in hazardous areas | Yes | No | n/a | (Natural hazards and atmosphere) |
| | Carbon dioxide emissions | Yes | No | n/a | |
| | Consumption of ozone depleting substances | Yes | No | n/a | |
| | Ambient concentration of air pollutants in built up areas | No | No | n/a | |
| | Arable and permanent agricultural land. | Yes | No | n/a | **Land use** |
| | Proportion of land covered by forests. | No | No | n/a | |

[1] Themes not identified in Table 2.7 are shown here in brackets.

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| | Proportion of the total population living in coastal areas. | No | No | n/a | **(Oceans, seas and coasts)** |
| | Proportion of fish stocks within safe biological limits. | No | No | n/a | |
| | Proportion of marine areas that are protected. | No | No | n/a | |
| | The proportion of total water resources used. | Yes | No | n/a | **(Freshwater)** |
| | The intensity of the use of water by economic activities. | Yes | No | n/a | |
| | Proportion of terrestrial area protected. | Yes | No | n/a | |
| | The change in threat status of species. | Yes | No | n/a | |
| | Presence of faecal coliforms in freshwater. | Yes | No | n/a | |
| | Gross Domestic Product (GDP) per capita. | No | No | n/a | **Economic Development** |
| | Investment share in GDP. | No | No | n/a | |
| | Debt to GNI ratio. | No | No | n/a | |
| | Percentage of population employed. | Yes | No | n/a | |
| | Labour productivity and unit labour costs | Yes | No | n/a | |
| | Share of women in wage employment in the non-agricultural sector. | Yes | No | n/a | |
| | Internet users per 100 population. | Yes | No | n/a | |
| | Contribution of tourism to the GDP. | No | No | n/a | |
| | Current account deficit as a percentage of the GDP. | No | No | n/a | |
| | Net Official Development Assistance as percentage of GNI. | No | No | n/a | |
| | Material intensity of the economy. | No | No | n/a | |
| | Annual energy consumption measured in total and by main user category. | Yes | No | n/a | |
| | Intensity of energy use, total and by economic activity. | Yes | No | n/a | |
| | Generation of dangerous hazardous waste | Yes | No | n/a | (**Hazard mgt)** |
| | Treatment and disposal of waste | Yes | Yes | Related | **Infrastructure** |
| | Modal split of passenger transportation | Yes | No | n/a | **Transport** |
| **South African Department of Housing** | Percentage of people with access to a defined minimum standard of sanitation. | Yes | Yes | Yes | **Basic Services** |
| | Percentage of people affected by sanitation related diseases | Yes | No | n/a | |
| | Percentage of people who have received training on hygiene practices | Yes | No | n/a | |
| | Percentage of people with access to clean drinking water | Yes | Yes | Yes | |
| | Percentage of people affected by waterborne diseases | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| **Sustainable Human Settlement indicators (Based upon United Nations Habitat Agenda)** | Reliability of services regarding water provision | Yes | Yes | No | |
| | Percentage awareness regarding proper hygiene practice | Yes | No | n/a | |
| | Level of indoor air pollution | Yes | No | n/a | Atmosphere |
| | Percentage of population affected by air pollution | Yes | No | n/a | |
| | Percentage of people affected by respiratory disease | Yes | No | n/a | |
| | Affordability of clean energy sources | Yes | No | n/a | |
| | Percentage of people with proper waste removal | Yes | Yes | Yes | **Basic Services** |
| | Proximity of waste removal sites to human habitation | Yes | Yes | No | |
| | Municipal vector management programmes | Yes | Yes | No | |
| | Percentage of people affected by diseases caused by inadequate waste management | Yes | Yes | No | |
| **See Table 3.2** | Number of healthcare facilities per capita | Yes | No | n/a | **Infrastructure. Healthcare** |
| | Average distance from healthcare facilities | Yes | No | n/a | |
| | Area of settlements within distance from possible disaster areas (e.g. dolomitic rock) | Yes | No | n/a | **(Disaster management)** |
| | Losses to natural disaster (human and economic losses) | Yes | No | n/a | |
| | Availability of disaster management systems | Yes | No | n/a | |
| | Crime rate (number, type and location) | Yes | No | n/a | **Good Governance** |
| | Levels of fear of crime | Yes | No | n/a | |
| | Community safety programmes | Yes | No | n/a | |
| | Percentage of households making use of hazardous energy sources | Yes | Yes | **No** | **(Disaster management)** |
| | Percentage of people living in informal settlements | Yes | No | n/a | |
| | Distance of hazardous industries from residential areas | Yes | No | n/a | |
| | Space available in hazardous waste disposal facilities | No | No | n/a | |
| | Monitoring of industrial effluent | No | No | n/a | |
| | Number of people living within one dwelling | Yes | No | n/a | **Infrastructure** |
| | Percentage of population living in informal settlements | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| | Floor area per person | Yes | No | n/a | |
| | House prices to income ratio | Yes | No | n/a | **(Economic Dev.)** |
| | Level of services provided to houses and area | Yes | Yes | Related | **Basic Services** |
| | Cost of services as a percentage of household income | Yes | No | n/a | |
| | Quality of housing provided | Yes | No | n/a | **Infrastructure** |
| | Security of tenure | Yes | No | n/a | |
| | Number of orphanages per 1000 population | Yes | No | n/a | |
| | Number of hospices per 1000 population | Yes | No | n/a | |
| | Number of shelters per 1000 population | Yes | No | n/a | |
| | Number of elderly care facilities per 1000 population | Yes | No | n/a | |
| | Percentage of people who are unemployed | Yes | No | n/a | **Poverty** |
| | Percentage of population living in poverty | Yes | No | n/a | |
| | Spatial distribution of employment opportunities | Yes | No | n/a | |
| | Provision for informal sector and rural subsistence | Yes | No | n/a | |
| | Number of schools available per 1000 people | Yes | No | n/a | **Education, Infrastructure** |
| | Spatial distribution of educational facilities | Yes | No | n/a | |
| | Range of educational facilities available | Yes | No | n/a | |
| | Financing support regarding housing | Yes | No | n/a | **Economic Development** |
| | Housing subsidies allocated as percentage of need | Yes | No | n/a | |
| | Right to own and inherit property | Yes | No | n/a | |
| | Availability and affordability of public transport | Yes | Yes | Related | **Transport** |
| | Spatial distribution of transport routes and access nodes | Yes | No | n/a | |
| | Regulations on disability access enforced | Yes | Yes | No | |
| | Cars per 1000 population | Yes | No | n/a | |
| | Number of households with access to telephones | Yes | No | n/a | **Infrastructure** |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| | Internet service providers per capita | Yes | No | n/a | |
| | Number of community media services | Yes | No | n/a | |
| | Access to municipal information | Yes | Yes | No | **(Access to information)** |
| | Location of municipal offices | Yes | Yes | No | |
| | Number of libraries per 1000 people | Yes | Yes | No | |
| | Level of participation in democratic system | Yes | Yes | No | **Good Governance** |
| | Participatory approach to decision-making and development | Yes | Yes | Related | |
| | Participation of people with disabilities in all spheres of human settlements | Yes | Yes | No | |
| | Percentage of open green areas per capita | Yes | Yes | No | **(Natural heritage)** |
| | Number of protected natural heritage sites | Yes | Yes | No | |
| | Percentage derelict area in urban areas | No | Yes | n/a | **(Urban decay)** |
| | Urban greening initiatives | No | Yes | n/a | |
| | Maintenance of public open spaces | No | Yes | n/a | |
| | Maintenance of infrastructure | Yes | Yes | No | |
| | Number of entertainment facilities and sports grounds per 1000 population and their spatial distribution | Yes | Yes | No | **Infrastructure** |
| | Maintenance and accessibility of cultural heritage sites | Yes | Yes | No | |
| | Number of cultural facilities | Yes | Yes | No | |
| **Sustainable rural development indicators as developed by Niggemann** | Population density | Yes | No | n/a | **Land use** (Environment) |
| | Land use (changes over time in utilisation types, including arable land; grassland etc.) | Yes | No | n/a | |
| | Protection of natural areas (protected ground and water as percentage of the total area) | Yes | No | n/a | |
| | Biodiversity | Yes | No | n/a | |
| | Awareness of environment: Utilisation of fertiliser | Yes | No | n/a | |
| | Sustainable use and saving of resources (e.g. gravel as non-renewable resource) | Yes | No | n/a | |
| | Separation of waste / recycling (waste recovered or scorched to produce energy) | Yes | Yes | No | |
| | Consumption of energy (prevention of overexploitation of non-renewable resources) | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| **See Table 3.3** | Consumption of water (prevention of overexploitation of existing resources). | Yes | No | n/a | |
| | Degree of economic diversity (Categories of occupations of the population) | Yes | No | n/a | **Economic Development** |
| | Unemployment rate (percentage of working age adults who are unemployed) | Yes | No | n/a | |
| | Composition of the population across educational levels (primary, secondary, tertiary) | Yes | No | n/a | |
| | Cost of living (basic living expenditure) | Yes | No | n/a | |
| | Economic vitality: Comparison between new businesses and bankruptcies | Yes | No | n/a | |
| | Economic vitality: Commuting (% employed inhabitants commuting elsewhere for work) | Yes | No | n/a | |
| | Mobility: Ownership of private vehicles (number of people) | Yes | No | n/a | |
| | Access to internet | Yes | No | n/a | |
| | Structure of the population (age and gender) | Yes | No | n/a | |
| | Population development over time | Yes | No | n/a | |
| | Health: Sick-leave taken (measured as the number of paid sick-leave days) | Yes | No | n/a | **Healthcare** |
| | Health: Life expectancy per gender | Yes | No | n/a | |
| | Culture: Municipal expenditure for cultural activity | Yes | Yes | No | **(Culture)** |
| | Culture: Events related to cultural activity | Yes | Yes | No | |
| | Incidences of crime | Yes | No | n/a | **Good Governance** |
| | Gender equity: Differences in income between genders | Yes | No | n/a | **(Socio Equity)** |
| | Gender equity: Leading positions per genders | Yes | No | n/a | |
| | Quality of life: Number of people at risk of poverty | Yes | No | n/a | **Poverty** |
| | Access to facilities such as grocery stores, post offices, local government facilities | Yes | No | n/a | **Infrastructure** |
| | Quality of transport provided to the public: (% population living within 2km of public transport) | Yes | Yes | No | **Transport** |
| | Level of participation in community: Voter turnout | Yes | No | n/a | **Gov. & Particip.** |
| **Sustainable rural development** | GDP growth per annum (%) | Yes | No | n/a | **Economic Development** |
| | Rural population (number) | Yes | No | n/a | |
| | Rural population (% of total population of a specific area) | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| **indicators (World Bank)**<br><br>**See Table 3.4** | Rural population density (people/ sq. km) | Yes | No | n/a | |
| | Life expectancy in rural areas (years) | Yes | No | n/a | |
| | GNI per capita (rural areas) | Yes | No | n/a | |
| | Subsidies for agricultural activities (% of total) | Yes | No | n/a | |
| | Tariffs related to agriculture (%) | Yes | No | n/a | |
| | Financial devolution (% of budget transferred to local municipalities) | Yes | Yes | No | |
| | Index for food prices (1995 = 100) | Yes | No | n/a | |
| | Independence of local courts | Yes | No | n/a | **Gov. & Particip.** |
| | Land Gini coefficient | Yes | No | n/a | **Economic Dev** |
| | Elections for local government | Yes | Yes | No | **Gov. & Particip** |
| | Number of farmers' organisations | Yes | No | n/a | **Land use** |
| | Exportation of agricultural raw materials (as % of total product exports) | Yes | No | n/a | |
| | Importation of food (as % of total merchandise imports) | Yes | No | n/a | |
| | Employment women in agricultural activities (as % of female labour force) | Yes | No | n/a | |
| | Agricultural household net disposable income (as a % of all household net disposable income) | Yes | No | n/a | |
| | Net disposable income per agricultural household member compared to that of members of all households | Yes | No | n/a | |
| | Rural domestic savings (gross value) | Yes | No | n/a | **Economic Development** |
| | Percentage of rural households with access to formal credit services | Yes | No | n/a | |
| | Number of market outlets for agricultural input produce | Yes | No | n/a | |
| | Employed labour force in rural areas | Yes | No | n/a | |
| | Roads in rural areas (% of rural population with access to proper roads) | Yes | No | n/a | **Transport** |
| | Rural population with access to electricity (%) | Yes | Yes | No | **Basic Services** |
| | Rural population with access to communication technologies (%). Radios, telephones, internet. | Yes | No | n/a | **Infrastructure** |
| | Per capita income of rural areas | Yes | No | n/a | **Poverty** |
| | Poverty gap ratio in rural areas | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| | Proportion of rural population that earns below $1 a day | Yes | No | n/a | |
| | Headcount ratio of rural poverty (% of rural population below the poverty line) | Yes | No | n/a | |
| | Rural per capita nutritional provision (expressed as calories per day) | Yes | No | n/a | |
| | Infants in rural areas with a low birth weight (expressed as the % of births) | Yes | No | n/a | |
| | Rural child malnutrition (% of children under five who are underdeveloped) | Yes | No | n/a | |
| | Agricultural gross value added (expressed as the % of the total GDP) | Yes | No | n/a | **Land use** |
| | Agricultural gross value added (expressed as the average annual growth) | Yes | No | n/a | |
| | Productivity of agricultural activities (gross value added per worker) | Yes | No | n/a | |
| | Number of farm households | Yes | No | n/a | |
| | Index for food production as well as the index per capita | Yes | No | n/a | |
| | Irrigated land (expressed as the % of cropland) | Yes | No | n/a | |
| | Cropland/ arable land (%) | Yes | No | n/a | |
| | Cereal yield (kilograms per hectare) | Yes | No | n/a | |
| | Cereal yield (average annual growth) | Yes | No | n/a | |
| | Rural gross fixed capital formation (expressed as the % of the GDP) | Yes | No | n/a | **Economic Development** |
| | Share of the rural labour force employed in non-farm activities | Yes | No | n/a | |
| | Share of rural women employed in the non-agricultural sector (% of total employment) | Yes | No | n/a | |
| | Growth in GDP for non-agricultural activities | Yes | No | n/a | |
| | Number of rural businesses | Yes | No | n/a | |
| | Number of non-agricultural jobs created annually | Yes | No | n/a | |
| | Forests (expressed as the % of the total land area) | No | No | n/a | **Land use** |
| | Protected rural areas (expressed as the % of the total land area) | Yes | No | n/a | |
| | Annual deforestation (% change) | No | No | n/a | |
| | Ratio of rural protected area to maintain biological diversity to rural surface area | Yes | No | n/a | |
| | Annual freshwater withdrawal in rural areas (as % of the total resources) | Yes | No | n/a | |

| Source of indicators | Indicators | Relevant to case study area? | Relevant to the functions of a Local Municipality? | Data fully available? | Themes (see Table 2.7)[1] |
|---|---|---|---|---|---|
| | Agricultural freshwater withdrawal (as % of the total freshwater withdrawal) | Yes | No | n/a | |
| | Release of untreated organic water pollutants (kg. per day) | Yes | No | n/a | |
| | Illiteracy rate in rural areas (% of total population) | Yes | No | n/a | **Education** |
| | Literacy rate in rural areas (% of ages between 15-24) | Yes | No | n/a | |
| | Rural literate ratio between females and males (% of ages between 15-24) | Yes | No | n/a | |
| | Primary education enrolment net ratio in rural areas (% of relevant age group) | Yes | No | n/a | |
| | Ratio between rural girls and boys regarding primary, secondary, and tertiary educational (%) | Yes | No | n/a | |
| | Proportion of rural pupils who reach grade 5 (% of grade 1 students) | Yes | No | n/a | |
| | Primary education completion rate in rural areas (% of relevant age group) | Yes | No | n/a | |
| | Prevalence of HIV/AIDS (% of rural adults, age 15-49) | Yes | No | n/a | **Healthcare** |
| | HIV prevalence among rural women who are pregnant (ages 15 to 24)f | Yes | No | n/a | |
| | Condom use rate | Yes | No | n/a | |
| | Percentage of rural population (15- to 24-years old) with adequate knowledge of HIV/AIDS | Yes | No | n/a | |
| | Per capita caloric intake | Yes | No | n/a | |
| | Immunisation rate for measles (% of rural children under 12 months) | Yes | No | n/a | |
| | Maternal mortality ratio in rural areas (per 1,000 live births) | Yes | No | n/a | |
| | Infant mortality rate in rural areas (per 1,000 live births) | Yes | No | n/a | |
| | Proportion of rural births attended to by skilled health staff (%) | Yes | No | n/a | |
| | Rural population with access to enhanced sanitation (%) | Yes | Yes | No | |
| | Rural population with access to an improved water source (%) | Yes | Yes | No | |
| | Rural population with access to health services | Yes | No | n/a | |
| | Under-five death rate (rural, per 1,000) | Yes | No | n/a | |

**Source: Own construction (2017)**

The indicators in Table 8.1 represent those that are ideal for the evaluation of interventions that aim to address the challenges of sustainable development. However, after sifting for relevance to the case study area and functions of a local municipality, only 34 indicators in Table 8.1 are deemed suitable.

Table 8.1 also indicates whether data are available for the relevant indicators. Only sources that contain data generally accepted as valid and reliable are used in this study. Furthermore, the aim is to obtain data for all six levels of assessment, namely sub-place, ward, local, district, provincial and national. It is increasingly difficult to find data at lower levels of government. National and provincial data are readily available, then somewhat restricted at district and local level, and severely restricted at ward and sub-place level. Official census statistics from Stats SA are used for most indicators, as these data are accurate, reliable and easily available. This pragmatic approach is recommended by Niggeman (2009). Unfortunately, the most recent census was in 2011, with the next one planned for 2021. The Stats SA Community Survey conducted in 2016 contain high quality data, but not at all levels required for this study.

Following the sifting process in Table 8.1, an Indicator Selection Matrix is used to organise indicators and display those that can be utilised in the Analytical Hierarchy Process.

## 8.3 Indicator Selection Matrix

An Indicator Selection Matrix is a simple matrix with two dimensions, namely data relevance and data availability, within which large sets of indicators can be organised. This enables one to identify their suitability in relation to the purpose of the study, and any needs for adjustment (UN, 2007: 32). The components of the Indicator Selection Matrix as it applies to Table 8.1, are explained in Table 8.2:

**Table 8-2: Components of the Indicator Selection Matrix**

| Relevance | Availability |
|---|---|
| • **Relevant:** These are indicators that are relevant to the study.<br>• **Irrelevant:** These are indicators that do not apply to the context of the study. | • **Fully available:** Data are freely available.<br>• **Related data available:** Important data are not available, but certain data sets which are available can be used to construct or compute related indicators.<br>• **Not available:** No data for the Indicator can be found within the scope of the study. |

**Source: Adapted from UN (2007:32-35)**

The Indicator Selection Matrix illustrates the criteria for suitability of indicators and availability of data for them. Table 8.3 summarises all the relevant indicators from Table 8.1 in this format. The indicators identified in green are relevant to the study and have data that are fully available. Indicators identified in yellow are relevant to the study, however only have data available that are closely related and that can be used to compute the indicators. The indicators identified in red are relevant to the study, but do not have data available.

**Table 8-3: Indicator Selection Matrix**

| Availability of data | Relevant indicators [2] | Irrelevant indicators |
|---|---|---|
| Fully Available | Proportion of population utilising an upgraded sanitation facility | See Table 8.1 |
| | Proportion of population utilising an upgraded water source | |
| | Number of households without electricity or other modern energy services | |
| | Percentage of people with access to a minimum standard of sanitation | |
| | Percentage of people with access to clean drinking water | |
| | Percentage of people with proper waste removal | |
| Related data available | Prevalence of corruption among government officials | |
| | Treatment and disposal of waste | |
| | Level of services provided to houses and area | |
| | Availability and affordability of public transport | |
| | Participatory approach to decision-making and development | |
| Not available | Percentage of population with access to basic health care facilities. | |
| | Reliability of services regarding water provision | |
| | Proximity of waste removal sites to human habitation | |
| | Municipal vector management programmes | |
| | Percentage of people affected by diseases caused by inadequate waste management | |
| | Percentage of households making use of hazardous energy sources | |
| | Regulations on disability access enforced | |
| | Access to municipal information | |
| | Location of municipal offices | |
| | Number of libraries per 1000 people | |
| | Percentage of open green areas per capita | |
| | Number of protected natural heritage sites | |
| | Maintenance of infrastructure | |
| | Number of entertainment facilities and sport grounds per 1000 population and their spatial distribution | |
| | Maintenance and accessibility of cultural heritage sites | |
| | Number of cultural facilities | |
| | Separation of waste / recycling (waste recovered or scorched to produce energy) | |
| | Culture: Municipal expenditure for cultural activity | |
| | Culture: Events related to cultural activity | |
| | Quality of transport provided to the public (% population living within 2km of public transport) | |
| | Financial devolution (% of budget transferred to local municipalities) | |
| | Elections for local government | |
| | Rural population with access to electricity (%) | |
| | Rural population with access to enhanced sanitation (%) | |
| | Rural population with access to an improved water source (%) | |

**Source: Own construction (2017)**

[2] Indicators that are relevant to the case study area and relevant to the functions of a Local Municipality.

The Indicator Selection Matrix, as exhibited in Table 8.3, can be explained as follows:

- It identifies relevant indicators with fully available data in the green box. These indicators can all be used in the analysis as they are.
- The indicators highlighted in yellow represent relevant indicators for which the exact data are not available, but there are data that can be used to measure closely related indicators. This methodology is in accordance with guidance by the United Nations Department of Economic and Social Affairs. (UN 2007:33)
- Indicators in red box are either irrelevant or are not available. These indicators are not used in the analysis.

Table 8.4 presents the relevant indicators that can be used in the analysis, derived from Table 8.1. Each Indicator is categorised within a Theme that relates to challenges of rural areas, identified in Table 2.7. The selected indicators in Table 8.4 form part of local municipal functions, they are directly related to the case study area and they have data that are available. Indicators identified in green are those with data that are fully available and do not need to be modified. Indicators in yellow are those that need to be modified because the data that are available compute closely related indicators. The modifications are shown in Table 8.5, displaying the final list of indicators for which data are fully available and that will be used in the analysis. For ease of comparison, all indicators are expressed as percentages.

**Table 8-4: Selected Indicators**

| Theme | Indicator | |
|---|---|---|
| Infrastructure | 1 | Proportion of population utilising an upgraded sanitation facility |
| | 2 | Proportion of population utilising an upgraded water source |
| | 3 | The number of households without electricity or other modern energy |
| | 4 | Treatment and disposal of waste |
| Basic Services | 5 | Percentage of people with access to a minimum standard of sanitation |
| | 6 | Percentage of people with access to clean drinking water |
| | 7 | Level of services provided to houses and area |
| | 8 | Percentage of people with proper waste removal |
| Transportation | 9 | Availability and affordability of public transport |
| Good Governance | 10 | Prevalence of corruption among government officials |
| | 11 | Participatory approach to decision-making and development |

**Source: Own construction (2017)**

**Table 8-5: Indicators to be used in the analysis**

| Theme | Indicator | |
|---|---|---|
| Infrastructure | 1 | Percentage of population utilising an upgraded sanitation facility |
| | 2 | Percentage of population utilising an upgraded water source |
| | 3 | Percentage of households with electricity or other modern energy[3] |
| | 4 | Percentage of households with regular refuse removal |
| Basic Services | 5 | Percentage of people with access to a minimum standard of sanitation |
| | 6 | Percentage of people with access to clean drinking water |
| | 7 | Percentage of households with electricity |
| | 8 | Percentage of people with proper waste removal |
| Transportation | 9 | Percentage of public transport facilities per 1000 population |
| Good Governance | 10 | Percentage of unqualified Local Municipal audit reports |

**Source: Own construction (2017)**

The chosen indicators and their themes are expected to differ in their importance with regards to sustainable development. Therefore, assessing performance against the indicators on equal terms would risk a biased representation of the results. It is important to assign weights to each of the themes and indicators to account for their relative importance, and this can be achieved by utilising a Pairwise Comparison Matrix.

## 8.4 Implementation of the Pairwise Comparison Matrix

The Pairwise Comparison Method utilises a scale of numbers to indicate the level of importance or dominance of one element over another with respect to the matter under investigation (Saaty, 2008:85). The following table presents the scale of comparison.

[3] 'Percentage of households without electricity or other modern energy' is changed to 'Percentage of households with electricity or modern energy' for ease of comparison to other indicators

**Table 8-6: Scale of comparison**

| Scale | Definition |
|---|---|
| 1 | Equally important |
| 2 | Equally or slightly more important |
| 3 | Slightly more important |
| 4 | Slightly to much more important |
| 5 | Much more important |
| 6 | Much to far more important |
| 7 | Far more important |
| 8 | Far more important to extremely more important |
| 9 | Extremely more important |

**Source: Flitter *et al.* (2013:20- 21)**

It is clear from Table 8.6 that a scale from 1 to 9 is used, with 1 indicating that the two elements being compared have equal importance, and 9 indicating that they differ enormously in their importance. For example, for elements X and Y, 9 would be chosen if X is extremely more important than Y. A reciprocal scale is used to indicate the weight of Y in relation to X, and therefore Y would have a weight of 1/9 in relation to X in this example.

The Analytical Hierarchy Process (AHP) as described in Section 8.1 is used to determine the steps for the pairwise comparisons. The highest order element of the hierarchy is the starting point, and the elements immediately underneath are compared to each other for their contribution to the highest order element. This step is repeated at each level of the hierarchy. In this study, the hierarchical elements are Sustainable Development, themes and indicators. The themes are firstly compared to each other with respect to their contribution to Sustainable Development, then the indicators are compared to each other with respect to the themes.

### 8.4.1 Pairwise Comparison of the themes in relation to sustainable development

To facilitate the comparison of themes in the Pairwise Comparison Matrix, the merits of each are discussed in brief:

#### 8.4.1.1 Good governance

The United Nations (2007:50) places a high value on governance, and maintains that it is essential for sustainable development. Governance spans all three sustainable development pillars

identified in Figure 3.2 and is linked to public participation (Goodhand 2001:16). The Auditor-General of South Africa (2017:106) also points out that community participation is necessary to hold municipal officials accountable. In turn, good governance is necessary for management to deliver services and be responsive to the needs of communities. Bierman et *al.* (2014:1) in their Policy Brief for the UN Project on Sustainability Transformation beyond 2015, state that governance must play a crucial part of the Sustainable Development agenda. As a result, the theme Good Governance is deemed equally to slightly more important than Infrastructure and Basic Services and therefore rated 2 against each of these. It is rated slightly more important against Transportation, with a rating of 3. The ratings are indicated in Table 8.7.

#### 8.4.1.2 Infrastructure

From 2008 to 2010, African Monitor conducted poverty hearings in various African countries to which a variety of communities, especially those from rural areas, were invited. Participants identified the lack of rural infrastructure as the main obstacle affecting socio-economic improvement, and also pointed out that it hampers their governments' poverty alleviation efforts (African Monitor, 2012:6). Rural areas, according to Fox and Porca (2001:103) would be well positioned for rapid economic growth but only if they had an infrastructure that was competitive with the infrastructure available in urban places. It could be argued that infrastructure and basic services are equally important to citizens, but without infrastructure basic services cannot be delivered. The provision of basic services is an important component of settlement upgrading (DHS, 2009). Yet infrastructure is needed to deliver basic services. According to Fox and Porca (2001:104), basic services are drawn from physical facilities such as infrastructure. Infrastructure is therefore rated 2 (equally to slightly more important) against basic services. Infrastructure is slightly more important than transportation (3), because road infrastructure is needed for transportation to happen.

#### 8.4.1.3 Access to basic services

According to the DHS (2009), and as previously discussed in Chapter 2, the lack of basic services is viewed as a major challenge faced by the inhabitants of rural settlements. It can be argued that transportation is needed to deliver basic services and to travel for work opportunities. However, it can be argued that people need water, electricity and sanitation before they travel elsewhere. Basic Services are deemed equally to slightly more important than transportation, and rated 2.

#### 8.4.1.4 Transportation

Human mobility is important for economic activity and development. It is arguably of secondary importance compared to infrastructure and access to basic services, as the latter are crucial for people where they live. Results from the 2016 South African Community Survey indicate that transportation ranked relatively low in terms of problems identified by respondents. In response to the question, "What do you consider to be the main difficulty facing this municipality presently?" the availability of public transport was ranked lowest of 21 factors that respondents could choose from. Only 0.4% of respondents identified the availability and affordability of public transportation as the biggest challenge faced by municipalities.

In accordance with the discussion of the relative importance of the themes in 8.4.1.1 to 8.4.1.4 above, the comparison matrix for the selected themes that contribute to sustainable development is presented in Table 8.7.

**Table 8-7: Pairwise Comparison Matrix for Themes**

| Themes | Good Governance | Infrastructure | Access to basic services | Transportation |
|---|---|---|---|---|
| **Good governance** | 1 | 2 | 2 | 3 |
| **Infrastructure** | 1/2 | 1 | 2 | 3 |
| **Access to basic services** | 1/2 | 1/2 | 1 | 2 |
| **Transportation** | 1/3 | 1/3 | 1/2 | 1 |

**Source: Own construction (2017)**

### 8.4.2 Pairwise comparison of the indicators in relation to the themes

Rating the indicators with respect to their contribution to themes is the next step.

#### 8.4.2.1 Infrastructure

The results of the 2016 South Africa Community Survey (Stats SA, 2016) are used to understand the relative importance of each of the indicators under Infrastructure. During this national survey, individuals were asked what the main difficulty was that their municipality faced. Those difficulties that correspond to indicators for Infrastructure are displayed in Table 8.8.

**Table 8-8: 2016 Community Survey Results**

| Indicator | Number of Respondents indicating the item as main difficulty | % Respondents indicating the item as main difficulty |
|---|---|---|
| **1: Lack of safe and reliable water supply** | **11,505,448** | **20.67%** |
| **2: Lack of reliable electricity supply** | **3,132,108** | **5.63%** |
| **3: Inadequate sanitation/sewerage/toilet services** | **1,850,087** | **3.32%** |
| **4: Inadequate refuse/waste removal** | **974,811** | **1.75%** |
| **Total number of respondents in Community Survey** | **55,653,654** | |

**Source: Adapted from Stats SA (2017)**

According to Table 8.8, it is evident that a lack of safe and reliable water supply is a major challenge for people, as 20% of respondents in the 2016 Community Survey indicated it as the main difficulty faced by their municipality. In the pairwise comparison, water is therefore deemed a dominant Indicator over electricity, sanitation and refuse. The supply of electricity was identified as the second largest challenge by the community, and the second most important Indicator for municipalities to address. Electricity is therefore more important than sanitation and refuse removal. In accordance with the views of the Community Survey respondents, inadequate sanitation is deemed a more important problem than inadequate waste removal.

It is interesting to note that the results of the survey of municipal officials from Chapter 7 concur with the community survey. The municipal officials rated water as the most important challenge in Boikhutsong, followed by electricity and sanitation. The relative importance of each is calculated as follows: Water: 18%, Electricity: 12% and Sanitation: 10% (see Table 7.11).

The statistics in Table 8.8 are used to inform the pairwise comparisons of relative importance of each of the indicators for Infrastructure, as indicated in Table 8.9 below.

**Table 8-9: Pairwise comparison matrix for Infrastructure**

| Indicators | Water | Electri-city | Sanita-tion | Refuse |
|---|---|---|---|---|
| **Percentage of population utilising an upgraded water source** | 1 | 5 | 6 | 7 |
| **Percentage of households with electricity or other modern energy** | 1/5 | 1 | 3 | 4 |
| **Percentage of population utilising an upgraded sanitation facility** | 1/6 | 1/3 | 1 | 3 |
| **Percentage of households with regular waste removal** | 1/7 | 1/4 | 1/3 | 1 |

**Source: Own construction (2017)**

The ratings in Table 8.9 are explained as follows: The Indicator for water is deemed much more important than for electricity, and therefore a rating of 5 is awarded to it as per the scale of comparison shown in Table 8.6. This is evidenced by statistics from the 2016 Community Survey presented in Table 8.8 where four times as many people indicated safe and reliable water supply to be the main problem faced by municipalities. Based on the statistics in Table 8.8, water is much more important than Sanitation (6), and far more important than refuse (7). Electricity is slightly (3) more important than sanitation, and slightly much more important than refuse. Sanitation is slightly (3) more important than refuse.

#### 8.4.2.2 Access to basic services

The indicators for basic services are on the same topic as Infrastructure, namely water, electricity, sanitation and waste removal. For this reason, the results from Table 8.8 are also used for Basic Services. The ratings against the specific indicators for Basic Services are exhibited in Table 8.10

**Table 8-10: Pairwise Comparison Matrix for Basic Services**

| Indicators | Water | Electricity | Sanitation | Refuse |
|---|---|---|---|---|
| **Percentage of people with access to clean drinking water** | 1 | 5 | 6 | 7 |
| **Percentage of households with electricity** | 1/5 | 1 | 3 | 4 |
| **Percentage of people with access to minimum standards of sanitation** | 1/6 | 1/3 | 1 | 3 |
| **Percentage of people with proper waste removal** | 1/7 | 1/4 | 1/3 | 1 |

**Source: Own construction (2016)**

#### 8.4.2.3 Transportation

There is only one Indicator for Transportation, therefore no pairwise comparison is needed.

#### 8.4.2.4 Good Governance

No pairwise comparison is required for good governance, as only one Indicator reached the final list of indicators to be used in the analysis (see Table 8.5).

### 8.4.3 Priority rating

The third stage of the Analytical Hierarchy Process (AHP) for this study entails rating the six geographical areas (rural village, ward, local, district, provincial and national) according to their performance for each of the selected indicators.

Firstly, the importance of the themes and indicators as determined in the Pairwise Comparison matrices is used to calculate a normalised weight for each Theme and Indicator. The resulting weights are presented in Table 8.11:

**Table 8-11: Normalised weights for themes and indicators**

| Theme | | Indicator | |
|---|---|---|---|
| Infrastructure | 0.3145 | Percentage of population utilising an upgraded sanitation facility | 0.0423 |
| | | Percentage of population utilising an upgraded water source | 0.1788 |
| | | Percentage of households with electricity or other modern energy | 0.0772 |
| | | Percentage of households with regular refuse removal | 0.0162 |
| Basic services | 0.1936 | Percentage of people with access to a minimum standard of sanitation | 0.0261 |
| | | Percentage of people with access to clean drinking water | 0.1100 |
| | | Percentage of households with electricity | 0.0475 |
| | | Percentage of people with proper waste removal | 0.0100 |
| Transportation | 0.1048 | Percentage of public transport facilities per 1000 population | 0.1048 |
| Governance and participation | 0.3871 | Percentage of unqualified Local Municipal audit reports | 0.3871 |
| | 1.0000 | | 1.0000 |

**Source: Own construction (2017)**

### 8.4.4 Performance calculation

The normalised weights are used to calculate the performance for the different levels of government. Table 8.12 shows the data for each Indicator for each level of government. The normalised scores for each entity by Indicator are presented in Table 8.13. The scores are the products of the data in Table 8.12 and the weights in Table 8.11, normalised to 1. The results in Table 8.13 determine the ranking of each of the areas under investigation, presented in Table 8.14. The ranking is displayed on a scale of 1-7, where 1 represents the best performance possible (indicated in green) and 7 the worst (indicated in red).

**Table 8-12: Data for each indicator for each level of government**

| Themes | Indicators | Title of measurement | Data Source | Boikhut song | Goedge vonden | Ward 5 | Venters dorp | Dr KKDM | North West | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Infrastructure** | Percentage of population utilising an upgraded water source | % of households who have access to piped water inside dwelling | StatsSA (Census 2011) T14PIPE01 | 0.50% | 0.57% | 14.21% | 18.90% | 48.61% | 30.14% | 45.50% |
| | Percentage of households without electricity or other modern energy | % of households with electricity, solar or gas energy for lighting | StatsSA (Census 2011) T06ELIGH00 | 43.17% | 79.80% | 62.63% | 72.07% | 90.22% | 86.84% | 83.94% |
| | Percentage of population utilising an upgraded sanitation facility | % of households with flush toilet connected to sewerage system | StatsSA (Census 2011) T13T0IL01 | 0.00% | 0.57% | 8.81% | 37.74% | 85.50% | 43.27% | 56.07% |
| | Percentage of households with regular waste removal | % of households with weekly refuse removal | StatsSA (Census 2011) T09REFSE01 | 0.00% | 0.00% | 0.83% | 36.30% | 75.80% | 50.20% | 62.10% |
| **Access to Basic Services** | Percentage of people with access to clean drinking water | % of households with source of water regional or local water scheme | StatsSA (Census 2011) T14SRCE01 | 44.67% | 0.49% | 8.73% | 51.79% | 88.63% | 76.43% | 78.37% |
| | Percentage of households with electricity | % of households with electricity for lighting | StatsSA (Census 2011) T06ELIGH01 | 42.50% | 79.80% | 62.35% | 71.79% | 89.89% | 86.44% | 83.36% |
| | Percentage of people with access to minimum standards of sanitation | % of households with toilet facilities (flush toilet, chemical toilet, latrine or bucket latrine) | StatsSA (Census 2011) T13T0IL01,02,03, 04,05,06 | 84.50% | 89.53% | 80.55% | 88.69% | 96.22% | 95.46% | 91.17% |
| | Percentage of people with proper waste removal | % of households serviced by the local municipality or appointed contractor regarding refuse removal | StatsSA (Census 2011) T09REFSE01,02 | 0.50% | 0.00% | 1.16% | 34.82% | 77.75% | 51.70% | 62.55% |
| **Transportation** | Percentage of public transport facilities per 1000 population | % of taxi ranks per 1000 population | DrKKDM SDF 2011, Ventersdorp SDF 2010, Transaction Capital (2017) | 0.00% | 0.00% | 0.00% | 3.53% | 2.87% | 2.71% | 5.24% |
| **Good Governance** | Percentage of unqualified Local Municipal audit reports | Number of Auditor General unqualified reports 2011-12 to 2015-16 | Auditor General MFMA 2015-16 Annexure 3 | 0.00% | 0.00% | 0.00% | 0.00% | 37.14% | 27.59% | 56.60% |

**Source: Own construction (2017)**

**Table 8-13: Normalised scores for themes and indicators**

| Theme | Boikhutsong | Goedgevonden | Ward 5 | Ventersdorp | Dr KKDM | North West | South Africa |
|---|---|---|---|---|---|---|---|
| **Infrastructure** | 0.0070 | 0.0126 | 0.0270 | 0.0416 | 0.0893 | 0.0584 | 0.0785 |
| **Access to basic services** | 0.0215 | 0.0112 | 0.0119 | 0.0281 | 0.0436 | 0.0383 | 0.0389 |
| **Transportation** | 0.0000 | 0.0000 | 0.0000 | 0.0258 | 0.0210 | 0.0198 | 0.0383 |
| **Good governance** | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1185 | 0.0880 | 0.1806 |
| **Total** | **0.0285** | **0.0238** | **0.0389** | **0.0955** | **0.2724** | **0.2045** | **0.3363** |

| Themes | Indicators | Boikhutsong | Goedgevonden | Ward 5 | Ventersdorp | Dr KKDM | North West | South Africa |
|---|---|---|---|---|---|---|---|---|
| **Infrastructure** | Percentage of population utilising an upgraded water source | 0.0006 | 0.0006 | 0.0160 | 0.0213 | 0.0548 | 0.0340 | 0.0513 |
| | Percentage of households with electricity or other modern energy | 0.0064 | 0.0119 | 0.0093 | 0.0107 | 0.0134 | 0.0129 | 0.0125 |
| | Percentage of population utilising an upgraded sanitation facility | 0.0000 | 0.0001 | 0.0016 | 0.0069 | 0.0156 | 0.0079 | 0.0102 |
| | Percentage of households with regular waste removal | 0.0000 | 0.0000 | 0.0001 | 0.0026 | 0.0055 | 0.0036 | 0.0045 |
| **Basic Services** | Percentage of people with access to clean drinking water | 0.0141 | 0.0002 | 0.0027 | 0.0163 | 0.0279 | 0.0241 | 0.0247 |
| | Percentage of households with electricity | 0.0039 | 0.0073 | 0.0057 | 0.0066 | 0.0083 | 0.0080 | 0.0077 |
| | Percentage of people with access to minimum standards of sanitation | 0.0035 | 0.0037 | 0.0034 | 0.0037 | 0.0040 | 0.0040 | 0.0038 |
| | Percentage of people with proper waste removal | 0.0000 | 0.0000 | 0.0001 | 0.0015 | 0.0034 | 0.0023 | 0.0027 |
| **Transportation** | Percentage of public transport facilities per 1000 population | 0.0000 | 0.0000 | 0.0000 | 0.0258 | 0.0210 | 0.0198 | 0.0383 |
| **Good Governance** | Percentage of unqualified Local Municipal audit reports | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1185 | 0.0880 | 0.1806 |

**Source: Own construction (2017)**

**Table 8-14: Ranking for themes and indicators**

| Theme | Boikhutsong | Goedgevonden | Ward 5 | Ventersdorp | Dr KKDM | North West | South Africa |
|---|---|---|---|---|---|---|---|
| **Infrastructure** | **7** | **6** | **5** | **4** | **1** | **3** | **2** |
| **Access to basic services** | **5** | **7** | **6** | **4** | **1** | **3** | **2** |
| **Transportation** | **5** | **5** | **5** | **2** | **3** | **4** | **1** |
| **Governance** | **4** | **4** | **4** | **4** | **2** | **3** | **1** |
| **Overall** | **6** | **7** | **5** | **4** | **2** | **3** | **1** |

| Theme | Indicators | Boikhutsong | Goedgevonden | Ward 5 | Ventersdorp | Dr KKDM | North West | South Africa |
|---|---|---|---|---|---|---|---|---|
| **Infrastructure** | **Percentage of population utilising an upgraded water source** | 5 | 7 | 6 | 4 | 1 | 3 | 2 |
| | **Percentage of households with electricity or other modern energy** | 7 | 4 | 6 | 5 | 1 | 2 | 3 |
| | **Percentage of population utilising an upgraded sanitation facility** | 7 | 6 | 5 | 4 | 1 | 3 | 2 |
| | **Percentage of households with regular waste removal** | 6 | 6 | 5 | 4 | 1 | 3 | 2 |
| **Access to basic services** | **Percentage of people with access to clean drinking water** | 7 | 6 | 5 | 4 | 1 | 3 | 2 |
| | **Percentage of households with electricity** | 7 | 4 | 6 | 5 | 1 | 2 | 3 |
| | **Percentage of people with access to minimum standards of sanitation** | 6 | 4 | 7 | 5 | 1 | 2 | 3 |
| | **Percentage of people with proper waste removal** | 6 | 7 | 5 | 4 | 1 | 3 | 2 |
| **Transportation** | **Percentage of public transport facilities per 1000 population** | 5 | 5 | 5 | 2 | 3 | 4 | 1 |
| **Governance** | **Percentage of unqualified Local Municipal audit reports** | 4 | 4 | 4 | 4 | 2 | 3 | 1 |

**Source: Own construction (2017)**

### 8.4.5 Interpretation of results

According to Table 8.14, most indicators rank highest at the national level (South Africa) and district level (Dr Kenneth Kaunda District Municipality), and lowest at sub-local level (Boikhutsong and Goedgevonden). This demonstrates that the provision of services, infrastructure, transportation and good governance in rural settlements are inferior in comparison with other sectors. Consequently, it can be assumed that living conditions in the case study area, Boikhutsong, are much worse than in other areas.

Table 8.14 indicates that sustainable development challenges are addressed most effectively at national and district level. Sub-local places such as Boikhutsong, Goedgevonden and the ward these fall under, fare the worst in terms of having their challenges addressed. The latter three are all in the rural area of the Ventersdorp Municipality. When urban settlements are included in the geographic area, it seems that the challenges are better attended to, such as in the case of the local municipal geographical area of Ventersdorp.

A radar chart can be used to provide a graphical illustration of rankings in terms of the main challenges at various geographical levels. According to Mosley and Mayer (1999:1), radar charts are useful when comparing performance on manifold dimensions concurrently. A radar chart consists of four, or more, axes merged into a single circular figure on which data for various cases can be demonstrated at the same time. To present the various main themes of challenges on a radar chart, the original data are standardised to a scale ranging from of 0 to 1. A value of 0 (at the centre of the chart) illustrates the worst possible performance, while a value of 1 (on the periphery of the chart) denotes the best (Mosley & Mayer, 1999:2). The normalised scores for the themes of challenges for each of the geographical areas are depicted in the radar chart in Figure 8.3.

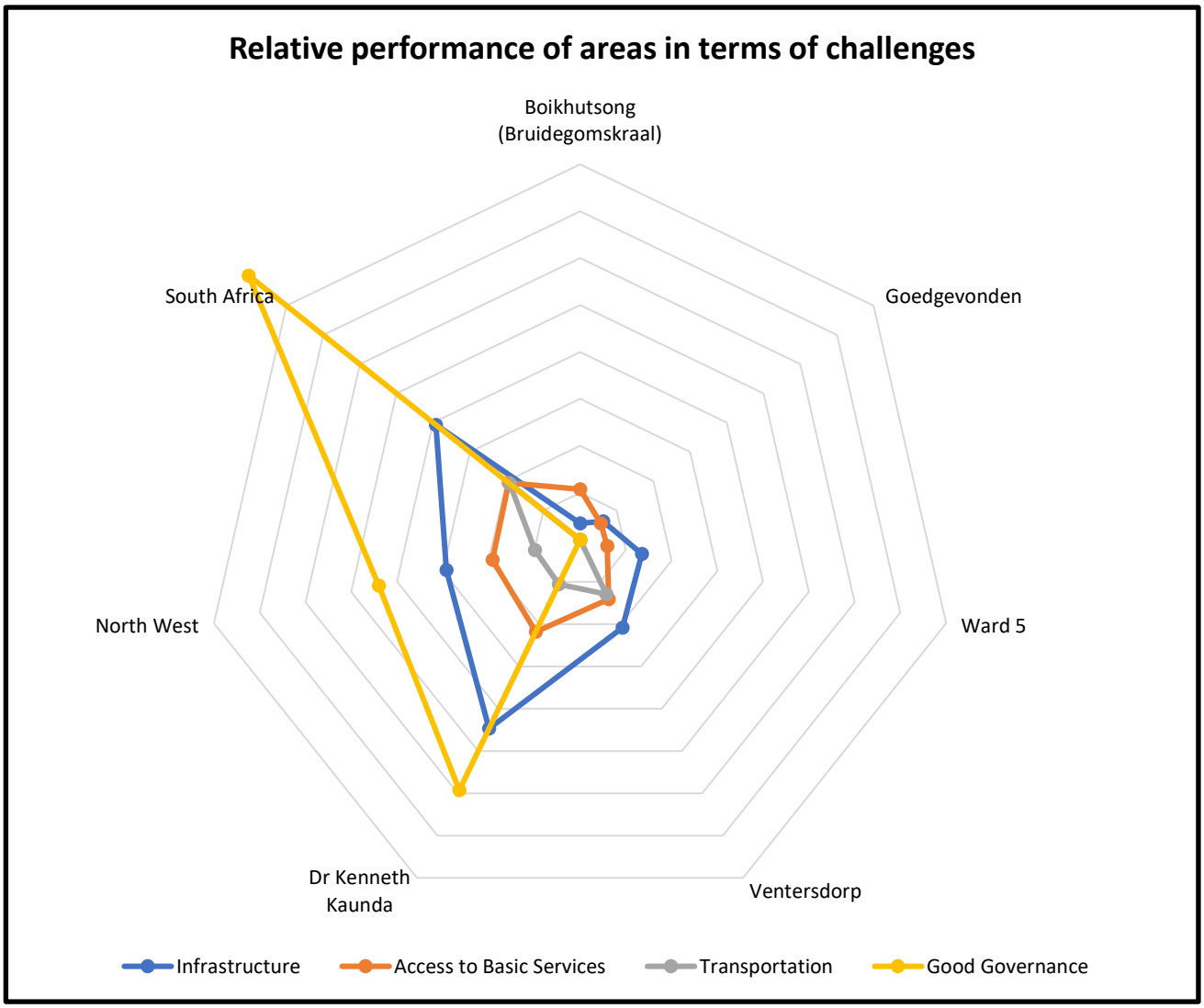


**Figure 8.3: Performance of local municipalities in geographical areas**

**Source: Own construction based on Table 8.14**

## 8.5 Chapter summary

This chapter provided an analysis of indicators of sustainable development challenges faced by communities in rural settlements. As part of the AHP, a comprehensive set of indicators was identified from the literature, categorised in terms of Themes, selected by means of an Indicator Selection Matrix, and then weighed within pairwise comparison matrices to determine the relative importance of each Theme and Indicator. Additionally, it was essential to gather data from various sources for each of the selected indicators to determine the performance of local municipalities within a ladder of geographical settings (sub-local, local, district, provincial and national). Determining the normalised weights for each of the indicators assisted in ranking the performance of local municipalities in carrying out their municipal functions to address sustainable development challenges.

According to the analyses conducted by means of the AHP, it is apparent that rural settlements (in some cases referred to as sub-local areas), are marginalised in terms of their challenges being addressed. Areas such as Boikhutsong, Goedgevonden and the ward they fall within, have a much lower performance level than that of Ventersdorp, Dr Kenneth Kaunda, the North West Province and the whole of South Africa. The analysis also indicated lower performance at a provincial level than at a district and national level. It is therefore evident that the Dr Kenneth Kaunda District, with a smaller geographical area, fares better in addressing the sustainable development challenges faced by communities in rural settlements than the North-West Province as a whole. Nationally, the country's municipalities on average fare better than those of Dr Kenneth Kaunda District, North West Province or Ventersdorp. The case study area (Boikhutsong) fares the worst. The possible reasons for the poor performance of Boikhutsong need to be explored.

# CHAPTER 9: CONCLUSION

## 9.1 Background

In this chapter, the conclusions drawn from the study are presented. The conclusions identified in this chapter are based on the research questions and objectives of the study. The link (or lack of) between practice and theory is assessed and emphasised through the investigation of the research questions and objectives. The main goal of this chapter is to evaluate and identify the connection between the evidence that transpired from literature and empirical chapters of this study in relation to local government interventions in addressing the challenges within rural settlements.

## 9.2 Rural settlements

The first objective of the study was to understand what rural areas and rural settlements are. According to section 2.1, rural settlements originated by means of people moving closer together into settlements where they could all benefit from fertile land, water and security (Mandal, 1979:90). These settlements were all located in larger geographical settings known as rural areas. Rural areas, as defined in section 2.3.1, are regions that are not classified as urban areas, taking into account its fiscal location, population densities and socio-economic factors. Christaller's Central Place Theory and Philbrick's theory of Areal Functional Organisation correlate with this definition seeing that they explain rural areas as the midway point between two central places where the population density will be much lower and where land is least expensive and often utilised for agricultural purposes.

The empirical research conducted during this study supports views found in the literature in that the location of the case study area (Boikhutsong) is between two central places namely Ventersdorp and Rustenburg and that it has a relatively low population density. In addition to this, it is also revealed that before the establishment of Boikhutsong, it was a farm which had little infrastructure. Boikhutsong grew from being a small agricultural farm to an area with approximately a population of 2292.

The alignment between literature and the empirical research is evident and addresses the research objective which is *to understand what rural areas are and how they come about*.

### 9.2.1 Marginalisation of rural areas

The second research objective was *to illustrate the various challenges faced by communities in rural areas*. In section 2.4, it was identified that the marginalisation of rural areas and its underlying settlements cause numerous challenges. Viewpoints from several authors (Section 2.5) established that rural households tend to experience more challenges regarding land, poverty, transport, infrastructure, health, water, energy, education, economic development and governance than households located in urban areas. These challenges were placed in higher and lower order themes. Furthermore, literature identified a number of specific measures by various organisations to mitigate aforementioned challenges. However, it appeared that these mitigation measures were not successful in addressing the challenges appropriately and this has led to major protests in the rural spaces of countries such as South Africa, Brazil, and China etc.

Interviews conducted with municipal officials (see Chapter 7) confirmed that a number of challenges exist within the case study area. These challenges correspond with the challenges identified in the literature and form part of the municipal functions as outlined in Chapter 5. The community of Boikhutsong, as referred to within numerous newspaper articles, engaged in service delivery protests because of aforementioned challenges.

According to abovementioned, it can be stated that the research objective *To illustrate the various challenges faced by communities in rural areas,* was achieved.

## 9.3 Sustainable development indicators

The third research objective was *to assess whether a PMS utilises indicators that are in line with SDIs as adopted by various global organisations, and how far the challenges of rural communities are addressed by the SDIs.* In Chapter 3 of the literature review, the roles of indicators and their functions were discussed. It was emphasised that numerous organisations utilise specific indicators to meet their own needs and objectives. In the same way, as unveiled in section 3.7, the Minister of the Department of COGTA emphasised the importance of indicators and their use by municipalities to ensure service delivery (Van der Waldt, 2012: 223).

Sets of sustainable development indicators from four different sources were represented in the literature study, including the United Nations and the World Bank. These indicators (Tables 3.1 to 3.4) were compared to the challenges identified for rural settlements in section 2.5 and municipal functions in section 5.3. This assisted in identifying specific indicators that could be expected to be implemented by municipalities to ensure sustainable development within rural

areas and underlying settlements. These activities assisted in meeting the aforementioned research objective.

## 9.4 Performance Management Systems

The third research objective was also addressed in Chapter 4 during which it became apparent that a PMS consists of two different dimensions, namely the organisational and human resource dimensions (Boland & Fowler, 2000: 418). Additionally, it was emphasised that during this research project, attention would only be directed to the organisational dimension (OPMS). Further investigations confirmed that an OPMS utilises indicators in the form of KPAs and KPIs. These indicators highlight the main objectives that need to be achieved within a municipal boundary and therefore have the ability to measure progress. It could therefore reasonably be expected that the indicators used in municipal PMSs are in line with SDIs. Indicators (KPAs and KPIs) relating to the Ventersdorp municipality are discussed in section 9.8.

## 9.5 Policy and Legislative Framework

The fourth objective was *to state the various pieces of legislation and policies that underpin a PMS and its indicators***.** Chapter 5 (Table 5.1) identified that various policies and legislation support the implementation of indicators within the municipal structure. One policy in particular, the Municipal Organisational Performance Management Guide, provides sufficient information regarding the utilisation of indicators within an OPMS. These indicators are known as KPIs, and are utilised to meet a specific set of objectives at both local and national level. Resulting from the aforementioned, it is evident that legislation and various policies drive the implementation of PMSs and their indicators thus addressing this research objective.

The information gathered from Chapter 5 thus accomplished the research objective which is *to state the various pieces of legislation and policies that underpin a PMS and its indicators.*

## 9.6 Case study

The fifth research objective of this study was *to investigate the challenges faced by the community within the case study area and compare them to country-wide challenges as found in the literature.* For this purpose, the challenges of Boikhutsong had to be determined. The first step was to conduct a case study of Boikhutsong. In chapter 6, it was found that Boikhutsong is located within the Ventersdorp Local Municipality. According to Boikhutsong's characteristics, as outlined in sub-sections 6.1.2 and 6.1.3, Boikhutsong can be regarded as

a rural settlement. The challenges that exist in Boikhutshong were therefore expected to be similar to those of other rural areas as identified in Chapter 2.

## 9.7 Survey

During the survey of municipal officials reported in Chapter 7, it transpired that the challenges identified by the respondents concurred with those outlined in the literature (see Table 7.1.3), except for 'Land' that was identified in the literature but not in the survey. Furthermore, it emerged that the prioritisation of water as the most important challenge by the local municipal officials corresponds with the National Community Survey (Stats SA, 2016) as presented in Tables 7.1.1 and 71.3. Challenges related to housing, electricity and sanitation were awarded high priority by both the surveys.

## 9.8 Effectiveness of a Performance Management System

To determine *to what extent the indicators of the Local Municipality's PMS address the challenges of the case study area* (Boikhutsong), the performance of the Local Municipality was assessed against other municipalities at local, district, provincial and national level. It transpired that all sustainable development challenges rated in this analysis are addressed more effectively by other municipalities in the district, province and country than Ventersdorp Local Municipality (see Table 8.14). It was also found that the municipalities in the geographical area of the DrKKDM fare better than those in the entire geographical area of North West Province. It therefore appears that Ventersdorp performs exceptionally poorly compared to other municipalities within the district. It can also be added that Boikhutsong and Goedgevonden fare worst of the enumerator areas within their Ward and the municipal area of Ventersdorp. It may possibly be inferred that the challenges of the remote rural areas such as Boikhutshong are attended to worse than those of the more urbanised areas.

One of the research questions of this study is whether a PMS, with regard to its underlying indicators, can be considered an effective tool to ensure sustainable development in rural areas. For a PMS to be used as a tool for sustainable development, one would expect sustainable development indicators to be monitored within that system on an ongoing basis. When scrutinising the comprehensive set of Sustainable Development Indicators during the compilation of the Indicator Selection Matrix for this study, it became apparent that the data were not consistently available at the local municipal level. Reliable data were only available from the Stats SA 2011 Census.

With regard to the case study area and the local municipality of Ventersdorp, no useful or verifiable data for the selected indicators could be found within the Ventersdorp Municipality

IDP or Annual Reports. It was later noted that the reports of the Auditor General (AG) for Ventersdorp were condemning with regard to the usefulness and reliability of their data. For example, with regard to Service Delivery and Infrastructure Development, the 2015 AG report (NW401 Ventersdorp Audit Report 2014-15) stated that "Management did not adhere to the requirements of the FMPPI due to a lack of proper systems and processes and technical indicator descriptions." In other words, data were not collected, collated, verified or stored in a way that performance can accurately and reliably be measured, monitored and reported. The report stated that 24% of Service Delivery targets were not specified, and 38% of performance indicators were not verifiable. In terms of Local Economic Development, the report stated that 33% of the targets and indicators did not relate logically to the Municipality's mandate.

From the results of the sustainable development indicators in this study, and the findings of the Auditor-General, the PMS of the Ventersdorp Municipality could not be considered an effective tool to ensure sustainable development in its rural areas and specifically in the case study area of Boikhutsong.

The questions are whether these findings are unique to Ventersdorp Municipality, and whether the Performance Management Systems of other municipal entities are more effective tools for planning, monitoring and reporting performance. The national sustainable development indicator statistics for South Africa are much better than those for Ventersdorp and Boikhutsong. However, the Performance Management Systems of many South African municipalities appear to be lacking.

The Auditor-General stated in his 2015-16 Consolidated General Report on Local Government Audit Outcomes (MFMA 2015-16: 11) that 47% of municipal entities in South Africa had no material findings with regards to the Performance Reports, but that this would have been only 31%, had the auditors not identified material misstatements and allowed the entities to make corrections. Almost half of municipalities still struggled to report reliable information on service delivery.

It appears that a lack of public participation and good governance may be a crucial factor in weak performance management. Weak management is the consequence when municipal officials are not held accountable. Such municipalities experience worsening performance and are prone to corruption and fraud (MFMA 2015-16: 12). In the Community Survey of 2016, 1.90% of respondents indicated corruption as the main difficulty faced by municipalities. According to the Auditor General, corruption can only be addressed when municipal officials are held accountable. Public participation is necessary for such accountability to take place

(Makwetu, 2017:12). This concurs with the UN-HABITAT Agenda (2015) that identified community participation as a key strategy for improving sustainable development.

The Auditor-General (2015-16) also proposed that municipalities should prioritise and be responsive to the needs of communities. However, according to Makwetu (2016:10), it seems that other factors may influence the focus of municipal leaders. For example, in 2016, the focus of municipal leaders may have been on the local government elections rather than the performance management of the municipalities. This resulted in important interventions being postponed. It is essential that municipal leaders take responsibility and are held accountable for their decisions, actions, and policies. The key outcomes then should be Putting People First, and Good Governance. (Makwetu, 2017:106).

## 9.9 Chapter summary

This sub-section provides the conclusion to the study based on the literature review and empirical analysis. The study reveals that the utilisation of a Municipal PMS to ensure sustainable development in Boikhutsong has not been successful, and that it fails to address the challenges faced by the community. The provision of basic services, infrastructure and transportation in rural settlements is inferior compared to urban areas. The non-fulfilment of local government's obligations in this regard results from inadequate public participation and weak governance.

The results of this study do not support the hypothesis that the Ventersdorp Municipal PMS includes sufficient indicators for the development of its rural areas. However, the findings correlate with the second part of the hypothesis, which states that the indicators utilised by the municipality are not implemented effectively.

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# CHAPTER 10: RECOMMENDATIONS

This chapter proposes recommendations based on the analysis, findings, and conclusions of this research study. With the amalgamation of the Ventersdorp and Tlokwe local municipalities, the new J.B. Marks Local Municipality may consider these recommendations against the lessons from this study.

Figure 10.1 illustrates the structure of Chapter 10.

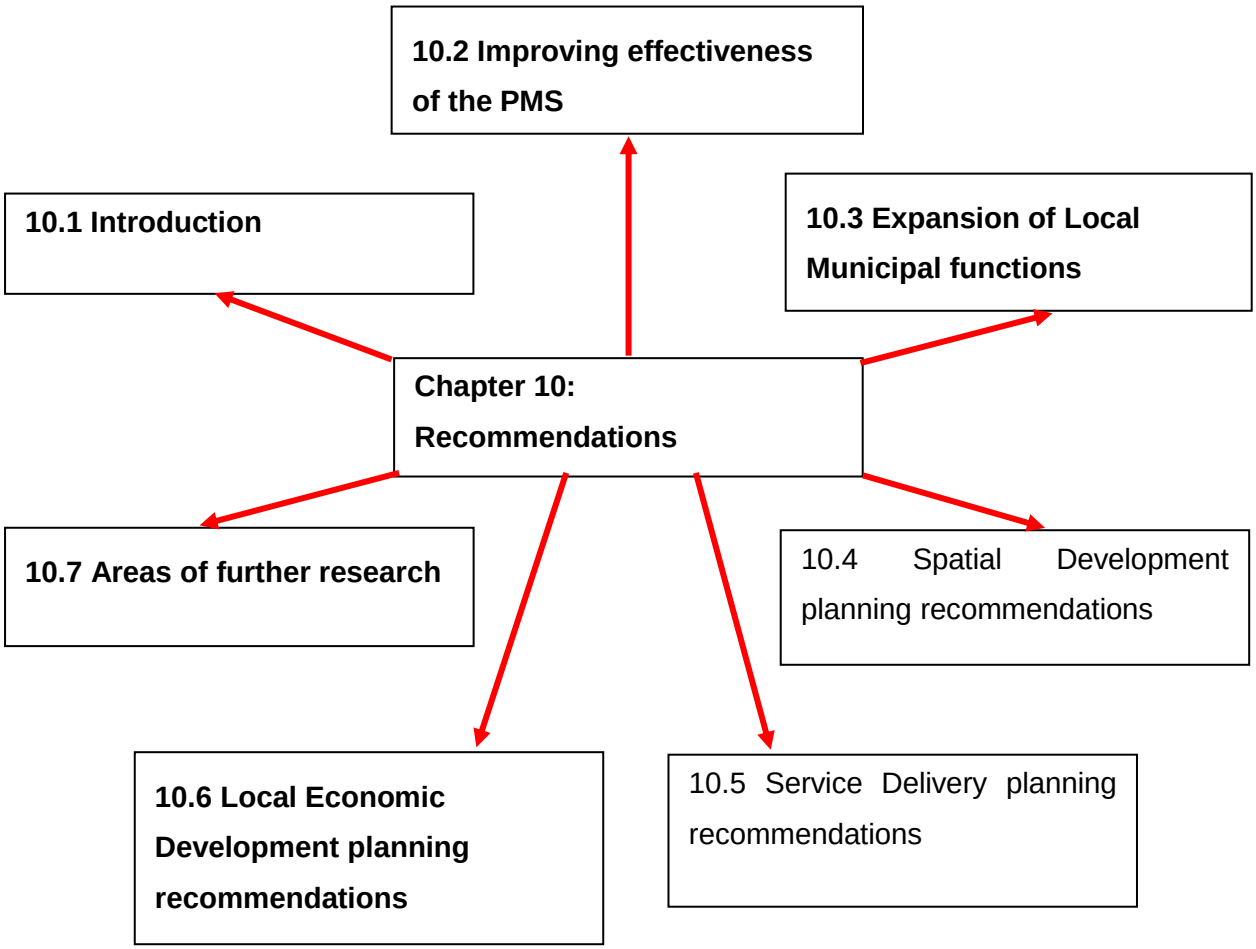


**Figure 10.1: Recommendations**

**Source: Own construction (2017)**

## 10.1 Introduction

The purpose of this chapter is to recommend interventions to enhance the effectiveness of performance management systems (PMS) for sustainable development of rural areas. It includes development and improvement of the literature, policy and legislative frameworks, planning instruments and processes. The recommendations relate to national, provincial and local government. At the national level, the principles for improving effectiveness of a PMS may be adopted in all planning instruments, one example being the National Development Plan of the Department of Planning, Monitoring and Evaluation. At local level, and for the J.B. Marks Municipality in particular, these recommendations should assist in attending to the shortcomings of the Ventersdorp Local Municipality PMS. The chapter concludes with recommendations for research that emerged from this research project.

## 10.2 Improving effectiveness of the PMS

This study concluded that the PMS of the Ventersdorp Municipality was not effective in addressing the challenges of the case study area. The ineffective execution of a PMS, rather than the inherent effectiveness of a PMS as a tool, appears to be the obstacle. Therefore, measures to ensure effective functioning and implementation of the PMS at J.B. Marks Local Municipality should help to address the challenges of Boikhutsong and other rural communities within its municipal area.

PMS stages include Planning, Monitoring, Evaluation, Reporting and Review. In the planning phase, strategic objectives need to be identified, and KPIs need to be developed to enable performance monitoring. In the performance monitoring stage, data for each KPI need to be collected for measurement and performance evaluation. These data need to be audited for validity and reliability. Finally, performance needs to be reported to management and the community for review and corrective action.

Table 10.1 displays a matrix of the recommendations for improvement of a Local Municipality's PMS, based upon the findings of this study, followed by further explanation of each of the interventions.

**Table 10-1: Matrix with suggested interventions for J.B. Marks Municipal PMS**

| Core elements of PMS | Components of core elements | Recommended intervention | Evidence required | Timeframe / Frequency | Accountability |
|---|---|---|---|---|---|
| **Performance planning** | • IDP process<br>• Develop Strategic Focus Areas (SFAs)<br>• Develop strategic objectives<br>• Develop KPIs<br>• Set targets | Ensure transparent decision-making and community engagement through establishment of an oversight committee and structured public participation in the budgeting process (see section 10.2.1) | Establish an oversight committee | 2018/19 financial year | Municipal Council |
| | | | Notices and leaflets distributed in community | Quarterly | Municipal Manager |
| | | | Minutes of Public Participation Meetings signed by Ward Committee chairpersons | Quarterly | Municipal Manager; Ward Committee Chairperson |
| | | Develop KPIs aligned to SDIs, specifically for Good Governance and Public Participation (see section 10.2.2) | IDP | 2018/19 update | Municipal Manager; IDP Manager |
| **Performance measuring & monitoring** | • Collect and analyse the performance data | Monitor KPIs data at municipal, sub-place and ward levels (see section 10.2.3) | SDBIP | Annually | Municipal Manager; IDP manager |
| | | Provide source documentation for KPI data. Publish it for scrutiny by stakeholders (see section 10.2.4) | Source documents for data | Annually | Municipal Manager; IDP manager |
| **Performance evaluation** | • Evaluate targets against achievements<br>• Establish reasons for inconsistencies | Provide clear and comprehensive reasons and remedial | IDP | Annually | Municipal Manager; IDP Manager<br>Municipal Manager; IDP Manager |

| Core elements of PMS | Components of core elements | Recommended intervention | Evidence required | Timeframe / Frequency | Accountability |
|---|---|---|---|---|---|
| | • Provide corrective action;<br>• Review for changes | action plans to address discrepancies | | | |
| | | | SDBIP Performance Report | Quarterly | Municipal Manager |
| **Performance reporting** | • Provide quarterly and annual reports to the relevant council committees and to the community for comments | Report timely on under spending of capital budgets | SDBIP Performance report | Quarterly | Municipal Manager; Chief Financial Officer |
| | | Publish performance reports on website, issue by mail and make available in libraries and municipal offices (see section 10.2.1) | SDBIP Performance reports | Quarterly | Municipal Manager |
| | | Presentation of SDBIP Performance report at public participation meetings (see section 10.2.1) | Minutes of public participation meetings signed by Ward Committee chairpersons | Quarterly | Municipal Manager; Ward Committee chairperson |
| **Performance auditing and review** | • Internal Audit<br>• Audit Committee<br>• Audit-General<br>• Standing Committee on Public Accounts (SCOPA) | Discuss Auditor-General reports in public participation meetings (see section 10.2.1). | Auditor-General report on municipal website.<br><br>Signed minutes of public participation meetings. | Annually | Municipal Manager; Chief Financial Officer; Ward Committee chairperson |

**Source: Own construction (2017)**

### 10.2.1 Improving public participation processes

According to the literature review in this study, a lack of good governance, plus inadequate public participation, are contributing factors in weak performance management. The deteriorating performances of municipalities may be directly attributed to a lack of accountability of officials. Section 195 of the 1996 Constitution prescribes that public administration must be accountable. This is echoed in the PFMA for the accountability of public officials.

Committees should be formed to oversee the executive function of municipalities. The MSA allows for the establishment of 'other' committees in section 79. Oversight committees must not report to the executive, but scrutinise the executive and report directly to the municipal council. Oversight committees should comprise non-councillors with the ability to oversee the entire PMS so that they may communicate progress to their communities.

Public participation should be actively encouraged and notices should be distributed through as many different channels as possible to ensure a proper general awareness. Municipalities should demonstrate their bona fides in treating inputs from wards as essential feedback for action. Progress reports from these interactions should also be communicated back to the communities with full transparency as to why certain actions were not taken.

Municipal officials must conduct pre-resolution meetings and engage the community in a meaningful way before finalising their IDPs and sectoral plans for service delivery budgets. It is important that consultations be properly evidenced in minutes of the proceedings. The minutes must be signed by community representatives and made available on the municipal website, or for collection at the municipal offices, or by mail when requested.

Operational and capital budget performance reports should also be made freely available to the public. This will assist the community in questioning the performance and accountability during public meetings. Communities must also have information regarding the monitoring and reporting on KPIs. Sectoral plans, IDPs, SDBIPs and municipal budget reports should be published on the municipal website (and in other public channels) on a timely basis. The Auditor-General's findings should also be communicated to the community. These reports need to be made available on the same transparent basis as the reports just mentioned. This will facilitate comparisons between internal and external audit reports to assess the objectivity of internal audits.

### 10.2.2 Develop new KPIs based on SDIs

The UN recently launched a database of indicators for Global Sustainable Development Goals presenting country-level data for each of the 17 goals. Some of these indicators could be appropriate for utilisation as national, provincial and local level KPIs. The mandatory national KPIs (NKPIs) prescribed by Department of COGTA should be reviewed and aligned with the UN indicators. However, local municipalities need not wait for the modification of NKPIs, since they are at liberty to implement their own additional KPIs. Consequently, they can immediately adopt the relevant UN indicators for these purposes. Applying weightings to these indicators will facilitate the prioritisation of development needs whether they are applied in rural or urban areas.

Good quality and timely data for performance monitoring in any PMS is crucial, and it is important to strengthen the statistical infrastructure and its validity. In accordance with the Cape Town Global Action Plan for Sustainable Development Data, Statistics SA should take the lead in upgrading the capacity and coordination of statistical data among local, provincial, national and international statistical systems for the production of data needed for sustainable development indicators.

The 10 indicators used in this study's analysis were based on internationally recognised SDIs and may be readily adopted as KPIs by local municipalities. The measurement descriptors are well-defined and weightings for priority have been determined by means of the Analytical Hierarchy Process. Most of these measurements were used in the most recent national census, which means that baseline data already exist. Table 10.2 summarises these indicators as well as the manner in which they are measured.

**Table 10-2: Indicators to be considered as KPIs by the J.B. Marks Local Municipality**

| Theme | KPI | Measurement | Weighting |
|---|---|---|---|
| **Infrastructure** | Percentage of population utilising an upgraded sanitation facility | Percentage of population utilising an upgraded sanitation facility | 0.0423 |
| | Percentage of population utilising an upgraded water source | Percentage of population utilising an upgraded water source | 0.1788 |
| | Percentage of households with electricity or other modern energy | Percentage of households with electricity or other modern energy | 0.0772 |
| | Percentage of households with regular refuse removal | Percentage of households with regular refuse removal | 0.0162 |
| **Basic services** | Percentage of people with access to a minimum standard of sanitation | Percentage of people with access to a minimum standard of sanitation | 0.0261 |

| Theme | KPI | Measurement | Weighting |
|---|---|---|---|
| | Percentage of people with access to clean drinking water | Percentage of people with access to clean drinking water | 0.1100 |
| | Percentage of households with electricity | Percentage of households with electricity | 0.0475 |
| | Percentage of people with proper waste removal | Percentage of people with proper waste removal | 0.0100 |
| **Transportation** | Percentage of public transport facilities per 1000 population | Percentage of public transport facilities per 1000 population | 0.1048 |
| **Governance** | Percentage of unqualified Local Municipal audit reports | Percentage of unqualified Local Municipal audit reports | 0.3871 |
| | | | **1.0000** |

**Source: Own construction (2017)**

It is important that the measurement of KPIs be defined and standardised, to ensure that results are comparable between entities and over time. For example, one of the current national KPIs prescribed by COGTA is “The percentage of households with access to basic levels of water, sanitation, electrical and solid waste removal”. The words “access” and “basic levels” can be interpreted in different ways which could lead to a wide scope in the application and measurement of KPIs. The ways in which KPIs are measured and the standards need to be clearly defined and agreed.

### 10.2.3 Monitor KPIs at ward, sub-place and town levels

With regard to this study, a review of the Ventersdorp SDBIPs evidenced utilisation of only two KPIs for the development of Boikhutsong. These were the provision of bulk water and electricity. As a result, half of the participants of the survey in Chapter 7 stated that additional KPIs should be implemented for Boikhutsong. However, all the KPIs of the municipality already include Boikhutsong, but they are not reported for Boikhutsong in particular. It is therefore recommended that where possible, KPIs within J.B. Marks municipal IDP and SDBIP be monitored and reported not only at municipal level, but also at ward, sub-place and town levels.

### 10.2.4 Make source documentation for KPI data available for scrutiny

The lack of reliability of data in Ventersdorp municipal reports was highlighted in Chapter 9. To enhance the accuracy of performance measurement, it is recommended that J.B. Marks Local Municipality collect and store KPI data in a way that the reported results can be verified.

This means that source documentation of data should be held where it can be scrutinised by stakeholders. The community also needs to have access to the data, which means that data need to be stored in a way that facilitates easy access, for example, on the municipal website.

### 10.3 Expansion of Local Municipal functions

Provision of housing, clinics, schools and roads are neglected because they fall outside of the Local Municipal functions. It is recommended that certain functions and funding, as supported in section 84(3) of the MSA, be directed to local government. This should eliminate possible communication gaps between local, district and provincial governments and accelerate development. It will also allow for a single accountable authority regarding service delivery, thereby improving good governance. In order to facilitate monitoring of these functions, suitable KPIs should be implemented in the Local municipal IDP and SDBIP and amended at district and provincial levels.

### 10.4 Spatial development planning recommendations

The issue of dolomite in the Boikhutsong area must be taken into consideration when planning any future developments. Collaboration and guidance should be sought from the North-West University's School of Geography and Geo-Spatial Planning and other relevant organisations with regard to its dolomite risk management strategy and the education of communities living in dolomite areas.

### 10.5 Service delivery planning recommendations

Delivery of basic services to rural settlements in the municipal boundaries should be prioritised. This will improve living conditions for the inhabitants and enhance economic development in these areas. Lack of water was identified as the most pressing need by the inhabitants of Boikhutsong. J.B. Marks Local Municipality is obliged to provide a minimum level of basic services to settlements within its boundaries and therefore they should prioritise the delivery of potable water to this area. Furthermore, a performance measure for service delivery by ward is recommended for municipalities. It should indicate the minimum level of services that the public can expect, and also the current levels of services for each of the wards. This mechanism should highlight discrepancies and drive corrective action.

### 10.6 Local Economic Development planning recommendations

Economic development opportunities for Boikhutsong and other rural settlements should be actively encouraged by J.B. Marks Local Municipality. Strategies for promoting income-generating opportunities, entrepreneurship and farming activities should be incorporated into

the municipality's local economic development strategy. Basic services and transport infrastructure should be provided to enable residents to become economically active, for example, to access markets, job opportunities and educational facilities.

### 10.7 Areas of further research

There is a need for further research regarding the relationship between SDIs and KPIs at local, provincial and national level to address the challenges of rural areas. For example, it would be interesting to determine whether internationally recognised SDIs are used in other countries as the basis for KPIs in performance management at local government level.

The challenges related to rural areas were readily identified by reviewing the literature. However, information on the challenges pertaining to good governance was scarce. It was also recognised in the literature that SDIs for good governance are largely undeveloped. Further research and methodological work is required to develop measurable and internationally accepted indicators on good governance.

With regard to land reform, the expectations of communities should be sought. Officials and consultants should respect these views and incorporate them in the fulfilment of their planning roles. Communities should be allowed to apply their own yardsticks for failure and success.

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# ANNEXURE A: DETAILED DESCRIPTION OF POLICY FRAMEWORK

**Table 1: Application of Key Performance Areas and Key Performance Indicators within National governmental policies: South Africa**

| Management Element | Key Performance Areas KPAs | Key Performance Indicators KPIs |
|---|---|---|
| **National Spatial Development Perspective (NSDP)** | The NSDP does not make reference to KPAs, but does outline the importance of consensus between the different government spheres on national development priorities (Presidency, 2006: xv- 3). | The NSDP does not make direct reference to KPIs, but does, however, identify various indicators used to measure challenges such as poverty (Presidency, 2006: ix). |
| **National Development Plan (NDP)** | It is not apparent whether the document makes any reference to KPAs or development priorities. However, it is stated by the Lesedi Local Municipality (2014:3) that the NDP highlights twelve development priorities. The purpose of these development priorities is to eliminate poverty by 2030. | The NDP outlines the importance of sustainable development indicators as well as PIs in order to ensure environmentally sustainable development of human settlements (National Planning Commission, 2012:203). |
| **Rural Development Strategy (RDS)** | This document does not make direct reference to KPAs. However, annexure 2 of the ISRDS (2000) points out the importance of implementing development priorities and objectives within an IDP. | The ISRDS (2000, 20) regards KPIs as one of many key elements required to develop an integrated rural development strategy. |
| **Breaking New Ground (BNG)** | It appears that the BNG document does not make any reference to KPAs. | 'Systems, monitoring and evaluation' is one of ten topics that form part of a comprehensive plan for housing delivery. It is under this topic where it is stated that a complete housing sector monitoring, information and reporting structure based on KPIs must be developed. It is important that this structure is capable of reporting on housing programmes (Department of Human Settlements, 2004: 41) |
| **Performance management guide for municipalities, 2001** | The PM Guide for Municipalities (2001: 14) emphasises how KPAs could be used to align the development priorities of a municipality with its KPIs. | The document also aims at describing how input, output and outcome indicators form part of KPIs and how they can be used to develop sustainable housing (The PM Guide for Municipalities, 2001: 14-16). |
| **White paper on local government, 1998.** | It is outlined within the White Paper on local government (1998: 30) that it is expected of municipalities to produce land development objectives. These municipalities must ensure that its development objectives are included within its IDP. On the other hand, it is not | The White Paper on local government (1998: 32) clearly states that municipalities set their own specific KPIs. These KPIs vary from one municipality to another. These KPIs are utilised to gather valuable information as well as to develop a common goal for improved performance |

| Management Element | Key Performance Areas KPAs | Key Performance Indicators KPIs |
|---|---|---|
| | clear whether the policy makes direct reference to KPAs. | and delivery. |
| **Evaluation/ Commentary**<br>It is evident that the NSDP, NDP, RDS, and BNG do not provide proper guidelines for KPA implementation. Nor do the policies make adequate reference to KPAs. Nonetheless, the ISRDS, BNG and White Paper on local government 1998 makes adequate reference to KPIs. Even though these two policies make reference to KPIs, it is evident that they do not provide a comprehensive set of KPIs or a guide for the implementation thereof.<br><br>The NDP as well as the NSDP refers to indicators, SDIs and performance indicators.<br><br>The Performance Management Guide for Municipalities, 2001, can be regarded as the only policy highlighted in this table at a national level that provides sufficient information on KPAs and KPIs as well as a proper framework for implementing these two factors within the municipal | | |

**Source: Own construction (2016).**

**Table 2: Application of Key Performance Areas and Key Performance Indicators within Provincial government policies: North West Province**

| Management Element | Key Performance Areas KPAs | Key Performance Indicators KPIs |
|---|---|---|
| **Municipal Organisational Performance Management Guide (North West Province)** | The guide provides appropriate steps for the implementation of KPAs within an OPMS (DDLGH, 2009: 54- 55). | This document makes adequate reference to KPIs and provides a proper guideline to implementing KPIs within a municipality (DDLGH, 2009: 55-60). |
| **Performance management made simple. A Guide to developing and implementing a PMS (KwaZulu-Natal).** | The guide developed by the department of Co- operative governance and traditional affairs (COGTA) provides sufficient information on KPAs as well as guidance to implementing KPAs within the municipal structure (COGTA, : 67). | Proper provision of information regarding KPIs was made within this guide. All the different NKPIs as well as the steps needed to implement KPIs within a municipality are highlighted (COGTA, 42). |
| **North West Provincial growth development strategy (PGDS)** | The document does not make direct reference to KPAs. . It does however; make adequate provision for development priorities within the province which include infrastructure and construction as well as community facilities and services (NW, 2004: 25). | The North West PGDS does not make any reference to KPIs. |
| **North West- Provincial development plan (PDP)** | The document does not make adequate provision for KPAs. However, it is apparent that various development priorities are identified which the NW intends to align to the NDP (NW, 2013: xvi). | Various KPIs that measure economic growth and poverty elimination, infrastructure development, renewable energy, education as well as training and innovation are identified (NW, 2013:53, 101- 102, 170). |
| **North West- Provincial Spatial Development Framework (SDF)** | The North West SDF does not make any reference to KPAs or development priorities. | It is not clear whether any reference to KPIs is made within the policy. |
| **Evaluation/ Commentary**<br>The PM guidelines developed by the DDLGH and COGTA provide ample information regarding KPAs and KPIs. A proper framework for selecting and implementing KPAs and KPIs is provided within these guidelines. Similarly, the North-West PDP also provides various sets of KPIs which the province aims to address and measure. In addition to this, it provides various development priorities but does not regard them as KPAs.<br><br>On the other hand, neither the PGDS nor the SDF provides ample information on KPAs and KPIs. Nonetheless, the PGDS does outline various development priorities within the province. | | |

**Source: Own construction (2016).**

**Table 3: Application of Key Performance Areas and Key Performance Indicators within District government policies: Dr Kenneth Kaunda District Municipality (DRKKDM)**

| Management Element | Key Performance Areas KPAs | Key Performance Indicators KPIs |
|---|---|---|
| **SDBIP** | The SDBIP of the DRKKDM makes reference to the five different NKPAs. Additional underlying KPAs are added to each NKPA as pointed out in the SDBIP (DRKKDM: 11-100). | For each KPA identified within the SDBIP, at least a single underlying set of KPIs are identified (DRKKDM: 11- 100). |
| **IDP** | The DRKKDM makes adequate reference to KPAs as well as NKPAs within its IDP. The DRKKDM highlights various KPASs, which are not within the NKPAs, utilised | The IDP of the DRKKDM points out various KPIs which are utilised in order to achieve the district's major strategic goal (DRKKDM, 2012: 57). Other KPIs are also outlined within the |
| | in order to meet the districts major strategic goals (DRKKDM, 2012: 57). | document which is aligned with the budget of the district (DRKKDM, 2012: 148-154). |
| **SDF** | The DRKKDM SDF (2011) does not make any reference to KPAs. | It is not evident whether the SDF (2011) provides any information of KPIs. |
| **PMS Policy review (2010/ 2011)** | The DRKKDM will regularly evaluate its performance with regards to all KPAs and its respective KPIs (DRKKDM, 2010: 15). | The PMS policy review states that KPIs are determined in terms of Section 41 of the MSA (DRKKDM, 2010: 8). When a municipality develops a PMS, the system must review its KPIs regularly (DRKKDM, 2010: 14). These KPIs must include the 7 general indicators (DRKKDM, 2010: 15). |
| **Evaluation/ Commentary** The SDBIP as well as the IDP of the DRKKDM provides sufficient information on KPAs and KPIs. The SDBIP and IDP highlight all the different KPAs as well as KPIs utilised within the municipality which is also cascaded down to local municipal level. The DRKKDM PMS policy review provides proper information regarding the implementation of KPAs and KPIs within a PMS. However, it does not place sufficient emphasis on KPAs. In addition to this, the SDF review of 2010 doesn't provide any information on KPAs or KPIs. | | |

**Source: Own construction (2016).**

**Table 4: Application of Key Performance Areas and Key Performance Indicators within Local Municipal government policies: Ventersdorp Local Municipality**

| Management Element | Key Performance Areas KPAs | Key Performance Indicators KPIs |
|---|---|---|
| **Service Delivery and Budget implementation plan (SDBIP).** | The SDBIP of the Local Municipality of Ventersdorp points out and makes adequate reference to the five different NKPAs as highlighted in sub-section 4.5.1. | Each of the NKPAs highlighted in the SDBIP of the Ventersdorp Local Municipality outlines various underlying KPIs. These KPIs are described comprehensively. |
| **Integrated Development Plan (IDP) - Department of provincial and local government (DPLG).** | It is not apparent whether any reference is made to KPAs within the IDP guideline.<br>However, it does highlight the importance of development priorities and objectives (DPLG, | The IDP guideline clearly outlines the importance of KPIs within a municipal IDP. It's made evident that KPIs can be regarded as a core component of an IDP (DPLG, 34). The Midvaal IDP discusses the different KPIs implemented within its framework in great detail (Midvaal Local Municipality, 2013: 55- 87). |
| | 34). On the other hand, an IDP document from the Midvaal Local Municipality provides sufficient information on KPAs (Midvaal Local Municipality, 2013:11-15). | |
| **Spatial Development Framework (SDF)** | The SDF development guideline doesn't make any reference to KPAs. On the other hand, it points out the importance of taking national development priorities and objectives into account (DRDLR, 2014: 9). | It is pointed out within the development guidelines for municipal SDFs that PIs can be regarded as important elements within a SDF (DRDLR, 2014: 83). According to the Midvaal SDF, it is important to note that KPIs be regarded as a core component of an IDP (Midvaal Municipality, 2014: 5). |
| **Local Economic Development** | LED is regarded as one of the five KPAs for local | According to Mogale City (2011: 179) it is important that KPIs be utilised as a component of the monitoring, evaluation and evaluation framework. |

**Evaluation/ Commentary**

The information provided within the SDBIP's at a local municipal level can be regarded as adequate. The SDBIP highlights all the different KPAs and KPIs utilised within that specific municipality. It is therefore evident which challenges the municipality aims to address and measure.

It is apparent that detailed information regarding KPAs and KPIs can be found within the municipal IDP and not the guidelines for an IDP.

SDFs at a local municipal level do not provide sufficient information regarding KPAs and KPIs.

The information provided by the Lesedi Local Municipality as well as Mogale city with regards to KPAs and KPIs is not detailed and cannot be seen as sufficient.

**Source: Own construction (2016)**

# ANNEXURE B: QUESTIONNAIRES FOR MUNICIPAL OFFICIALS


**Evaluating the effectiveness of a Performance Management System to enhance sustainable development: a case study of Boikhutsong.**

Questionnaires

SI Visser

22187359

The following questionnaires are based on semi-structured interviews. These interviews were held with the Executive mayor, Ward Councilor (ward 5), Town and Regional Planner and PMS Manager of the Ventersdorp local municipality. Additionally, interviews were also conducted with officials from the DRKKDM and the Department of Local Government and Human Settlements (Provincial government). The purpose of these questionnaires was to gather information from the various participants with regards to whether the Ventersdorp local municipality utilises an OPMS which consists of KPAs, KPIs and SDIs in order to ensure sustainable development within Boikhutsong.

It is important to note that a maximum of seven questions were asked. The sub-questions were not presented to the participants. These questions were merely used to initiate constructive and relevant feedback from the participants. However, this did not restrict any additional information provided by the participant.

**Questionnaire: Ventersdorp Municipal Officials**

| **Question 1:** | **Sub-questions:** |
|---|---|
| 1. What knowledge do you have on Boikhutsong? | 1.1 Challenges<br>1.2 The manner in which these challenges are addressed<br>1.3 Utilisation of policies to address these challenges<br>1.4 How would you prioritise these challenges in Boikhutsong?<br>➢ 1- Must receive attention first and is a high priority<br>➢ 10- Can receive attention last and is not of a priority |

| **Question 2:** | **Sub-questions:** |
|---|---|
| 2. What knowledge do you have on the municipality's OPMS? | 2.1 Implementation of KPAs and KPIs<br>2.2 Implementation of SDIs<br>2.3 Policies (SDBIP, IDP) |

| **Question 3:** | **Sub-questions:** |
|---|---|
| 3. Are there specific KPIs (input indicators) in place to address the challenges in Boikhutsong? | |

| **Question 4:** | **Sub-questions:** |
|---|---|
| 4. Do you think it is important to implement additional KPIs (input indicators), to insure further development in Boikhutsong? | 4.1 What types of KPIs?<br>4.2 In which policies? |

| **Question 5:** | **Sub-questions:** |
|---|---|
| 5. Do you believe that the Ventersdorp local municipality will achieve all its development objectives within this financial year (1 July 2015- 30 June 2016)? | |

| Question 6: | Sub-questions: |
|---|---|
| 6. When will the Ventersdorp local municipality merge with the Tlokwe local municipality and how will this affect the current OPMS? | 6.1 KPAs<br>6.2 KPIs<br>6.3 Development within Boikhutsong |

| Question 7: | Sub-questions: |
|---|---|
| 7. If you were in the position of the Chief executive officer, what would you have done differently? | |

# ANNEXURE C: QUESTIONNAIRES FOR DRKKDM AND PROVINCIAL OFFICIALS


**Evaluating the effectiveness of a Performance Management System to enhance sustainable development: a case study of Boikhutsong.**

Questionnaires

SI Visser

22187359

**Questionnaire: DRKKDM and Provincial Officials**

| **Question 1:** | **Sub-questions:** |
|---|---|
| 1. What knowledge do you have regarding the villages in the Ventersdorp local municipality? (Villages in DRKKDM or North West Province) | 1.1 Current challenges in these villages.<br><br>1.2 The manner in which these challenges are addressed by the district municipality/ provincial government.<br><br>(Responsibilities of provincial government such as housing, public transport, fences etc.)<br><br>1.3 Have the district/ province taken over any of the local governments (Ventersdorp) responsibilities with regards to addressing these challenges (development).<br><br>1.4Utilisation of policies to address these challenges<br><br>1.4 How would you prioritise these challenges?<br><br>➢ Must receive attention first and is a high priority<br>➢ 10- Can receive attention last and is not of a priority |

| **Question 2:** | **Sub-questions:** |
|---|---|
| 2. What knowledge do you have on OPMS's? | 2.1 Does an OPMS make use of KPAs and KPIs<br><br>2.2 Provide support regarding the implementation KPAs and KPIs within local government<br>2.3 Alignment with SDIs |

| Question 2: | Sub-questions: |
|---|---|
| | 2.4 Are KPAs and KPIs addressed in any policies? |

| Question 3: | Sub-questions: |
|---|---|
| 3. Does the district municipality/ provincial government utilise any KPAs and KPIs to address the challenges found within the Ventersdorp municipality's villages? | |

| Question 4: | Sub-questions: |
|---|---|
| 4. Does the district municipality/ provincial government recommend any general KPAs and KPIs to the Ventersdorp municipality in order to address the challenges found in its villages? (MSA Sec 43). | |

## ANNEXURE D: PROOF OF LANGUAGE EDITING

*Declaration*

*This is to declare that I, Annette L Combrink, accredited language editor and translator of the South African Translators' Institute, have language-edited the dissertation by*

**SI Visser (22187359)**

*with the title*

**Evaluating the effectiveness of a Performance Management System to enhance sustainable development: A case study of Boikhutsong**

*Prof Annette L Combrink*
*Accredited translator and language editor*
*South African Translators' Institute*
*Membership No. 1000356*
*Date: 20 October 2017*

## *Declaration*

*This is to declare that I, Annette L Combrink, accredited language editor and translator of the South African Translators' Institute, have language-edited the dissertation by*

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*Prof Annette L Combrink*
*Accredited translator and language editor*
*South African Translators' Institute*
*Membership No. 1000356*
*Date: 16 November 2017*