UNIVERSITY OF KWAZULU-NATAL

Infrastructure development and sustainable rural livelihoods: Perceptions from Umzumbe Local Municipality

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DECLARATION

I, **Sabelo Reginald Buthelezi**, declare that:

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DEDICATIONS

This dissertation is dedicated to my parents Ms Dudu Ndlovu and Mr Muzi Buthelezi, who did not get an opportunity to be educated but they have made sacrifices for me to receive a decent education until this far. Furthermore, I dedicate this dissertation to my little sister Kwanele Ndlovu, may my academic achievement be a source of inspiration to you.

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GLOSSARY OF ACRONYMS

ANC	African National Congress
CBD	Central Business District
COGTA	Department of Co-operative Governance and Traditional Affairs
COVID-19	Coronavirus
CRDP	Comprehensive Rural Development Programme
DDM	District Development Model
DRDLR	Department of Rural Development and Land Reform
EC	Ethical Clearance
ERC	Ethics Research Committee
FSR	Farming Systems Research
IDP	Integrated Development Plan
IGR	Intergovernmental Relation
INEP	Integrated National Electrification Programme
ISRDS	Integrated Sustainable Rural Development Strategy
IT	Information Technology
KZN	KwaZulu-Natal
LED	Local Economic Development
LTT	Local Task Team
M&E	Monitoring and Evaluation
MIG	Municipal Infrastructure Grant
MIP	Municipal Infrastructure Programme
MPCC	Multi-Purpose Community Centre
NDP	National Development Plan
NGO	Non-Governmental Organisation
NIP	National Infrastructure Plan
OSS	Operation Sukuma Sakhe
PMU	Project Management Unit
PRA	Participatory Rural Appraisal
RDP	Reconstruction and Development Programme
RRA	Rapid Rural Appraisal

RSA	Republic of South Africa
SCM	Supply Chain Management
SDF	Spatial Development Framework
SGDs	Sustainable Development Goals
SLA	Sustainable Livelihoods Approach
SLF	Sustainable Livelihoods Framework
UKZN	University of KwaZulu-Natal
WCED	World Commission on Environment and Development
WSA	Water Service Authorities

ABSTRACT

Background: Realising South Africa's development vision 2030 entails the development of rural areas as a foundation for sustainable social and economic prosperity. In this context, the discourse on literature review and theoretical framework shed light that the development of quality infrastructure is an essential ingredient for achieving sustainable rural livelihoods. To date, however, quality infrastructure development and sustainable rural livelihood has not been fully realised across many South African rural communities, including Umzumbe Local Municipality in KwaZulu-Natal. This study has, therefore, uncovered that rural areas, such as those in Umzumbe Local Municipality, are still suffering from unsatisfactory infrastructural access, quality and reliability. As such, it has shown that efforts to quality infrastructure development is seemingly ineffective as it suffers from a variety of shortcomings including incompetent public management.

Objective: The main objective of this study was to ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development for sustainable rural livelihood. In doing so, the study was guided by the theory of infrastructure-led development and the sustainable livelihood approach to ascertain the impact of infrastructure development and sustainable rural livelihoods. The most striking results that emerged from both primary and secondary data suggested that poor infrastructure development performance was atrociously affecting the livelihood conditions and slowing achievements in attainment of sustainable socio-economic progress, including health and education, among other development needs. This finding further exacerbates the scale of poverty and inequality in rural areas.

Methodology: The study adopted a qualitative research design using a case study strategy from an interpretative paradigm. The data was generated through in-depth interviews, focus groups, observation and documentary evidence. A sample size of 42 participants was selected using non-probability sampling aligned with purposive sampling method. The participants of this study included councillors, municipal officials, traditional leaders and community members. The data collected was analysed using a combination of thematic and matrix analysis.

Findings: The empirical data revealed that there are a significant service delivery backlogs and unsatisfactory supply of infrastructure at Umzumbe Local Municipality. The study findings pointed out that the existing livelihoods conditions at Umzumbe Local Municipality are characterised by infrastructural deficits with serious water shortage, bad road conditions, poor telecommunication, and electricity. To this extent, Umzumbe Local Municipality is battling with

institutional capacity to respond to challenges associated with infrastructural needs as result of administrative, financial and governance obstacles. This includes the huge gaps in the quantity and quality of infrastructural projects.

Conclusion and recommendation: The study concludes with recommendation based upon data adduced, including a proposal for a broader infrastructural investment framework to formulate specific objective for ideal infrastructure investment.

Key words: sustainable rural livelihoods, infrastructure development, livelihoods, socio-economic development, basic services.

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CHAPTER 1
INTRODUCTION AND OVERVIEW OF THE STUDY

1.1 Chapter Introduction

In this chapter, a general introduction and overview of the dissertation is provided in its logical sequence. It firstly covers the study topics that include research background, research problem, main question and sub-questions, main research objective and sub-objectives, significance of the study, preliminary literature review and theoretical approach of the study. In addition, the chapter provides a summary of the research design and methodology outlining research paradigms, philosophical worldview adopted and study sites. The target population, sampling method and strategy, data collection, data quality-control techniques, data analysis, ethical consideration and limitation of the study are also discussed. This chapter concludes by outlining the forthcoming chapters of this dissertation.

1.2 Background of the Study

The advent of democracy in South Africa gave rise to community expectations for improved delivery of municipal services with all the necessary infrastructural facilities. The South African developmental vision stems from the dawn of democracy that marked a significant turning point for development endeavours with respect to the enhancement of the quality of life for all citizens. Resulting from South Africa's transition into democracy, Qwabe and Ruffin (2013:827) assert that the notion of development-state came into reality. Similarly, Zondi, Nzimakwe and Mbili (2017:635) affirm that, post 1994, the apartheid government deliberately under-invested in municipal infrastructure in the historically disadvantaged areas and Umzumbe Local Municipality is no exception. This resulted in millions of South African rural citizens being deprived of access to basic services including water, sanitation, refuse collection, electricity and roads (Zondi *et al*, 2017:635). The historical realities of apartheid in South Africa inhaled massive backlog of basic services that created major infrastructural gaps in the previously disadvantaged areas. The inherence of the development backlog including infrastructure necessitated the democratic government to establish relevant strategies to heal the bruised of the exploitation of human and natural resources of the citizens from the apartheid mode.

A variety of policies, programmes and development frameworks, that aimed at improving infrastructure and livelihoods of the people, were accordingly adopted in their respective segments. These policies, programmes and development frameworks include the Africa Union's Agenda 2063 adopted in 2015, Sustainable Development Goals (SDGs) adopted in 2015, National Development Plan (NDP) adopted in 2012, National Infrastructure Plan (NIP) adopted in 2012, Rural Development Framework of 1997, Integrated Sustainable Rural Development Strategy (ISRDS) adopted in 2000 and Comprehensive Rural Development Programme (CRDP) adopted in 2009. The fundamental purpose of the aforesaid policies, programmes and development frameworks were to provide insights into government in creating the best conditions for development endeavours and, in particular, infrastructure delivery especially for the previously marginalised.

The history of apartheid in South Africa is well-known and widely accepted as the apartheid-led government prioritised infrastructure development that served only the minority of the white population, whereas the majority of the South Africans including black people were excluded from benefiting from infrastructure development at that time. Khumalo, Choga and Munapo (2017:35) proclaim that the South African government has placed infrastructure development at the centre of its developmental strategy to accelerate socio-economic development as preamble by the NDP. Precisely, chapter four of the NDP as a national development framework echoes that South Africa at large needs to maintain and expand its electricity, water, transport and telecommunication infrastructure for socio-economic development. In this context, infrastructure development has been commonly considered as a developmental goal that is necessary for sustainable livelihoods for many countries and Sub-Saharan Africa in particular. Scholars including Oyedele (2012); Keke and Okem (2016) and Srinivasu and Srinivasu-Rao (2013) have presented studies that show how infrastructure development contributes to the economic growth, quality of life, general livelihoods, poverty reduction and other services.

Zondi *et al.* (2017:630) state that municipalities, in this regard, are legally obliged to ensure that all citizens have access to minimum level of basic services including electricity, water, transport and telecommunication infrastructure for better livelihoods. In cases of identified imbalances, development of a new infrastructure or the rehabilitation and upgrading of an existing infrastructure, or a combination of both, should reasonably be escalated (Zondi *et al*. 2017:630).

Infrastructure is widely considered as a lifeblood of prosperity and economic confidence for socio-economic development. Negesso, Ayele and Nigussie (2018:73) maintain that public infrastructure is essential for human-being in diversifying their livelihood strategies. As such, public infrastructure dominated the development thinking involving poverty reduction and approaches to improving the lives of the poor which reflected the notion of sustainable livelihoods.

In spite of the above, Nathaniel (2014:58) contends that livelihoods of the rural areas are inflicted by high levels of poverty, illiteracy, unemployment, slow economic development and infrastructural backlog. These challenges continue to present a huge developmental gap between urban and rural areas in the democratic dispensation; thus, it confirms the existence of inequality (Manggat, Zain and Jamaluddan 2018:649). In this context, Keke and Okem (2016:10) argue that most of the rural areas in KZN, for example, are characterised by poor and inadequate infrastructure in providing essential public services such as water, roads, electricity and sanitation. In this respect, the consolidated Municipal Infrastructure Programme (MIP) and Municipal Infrastructure Grant (MIG) have been established to provide capital grants to assist municipalities in funding bulk and connector infrastructure for low-income households (Zondi *et al*. 2017:630). It is for these reasons that this study called into question the *status quo* of infrastructure development with particular emphasis on infrastructural projects and programmes at Umzumbe Local Municipality which are at the lens of sustainable livelihood.

1.3 Research Problem Statement

Post 1994, the South African democratic government enacted legislation and established development plans, notably NDP and NIP, to combat infrastructural deficiency, poverty, inequality and underdevelopment particularly in rural areas. This also includes the CRDP of 2009 which termed ‘rural development’ as one of the key priority programmes in South Africa in response to socio-economic challenges (Obadire, Mudau, Sarfo-Mensah and Zuwarimwe 2013:273). Despite these legislative developments on infrastructure development, rural inhabitants are still engulfed with formidable challenges that continue to present the state of abject poverty, penury and high infrastructural deficiency, resulting in the failure to achieve adequate rural development wherein the dearth of infrastructure is the prominent factor. Ultimately, this results in dire consequences for human development and socio-economic development. Yet, the mission statement of Umzumbe Local Municipality advocates that they are dedicated to promote people-centred

development, acceleration of service delivery and sustainable local economic development. It is, however, contested that the term 'sustainable development' in a political arena is overused and abused without its true intention, resulting in no practical usefulness thereof (Amasuomo, Hasnain and Osanyinlusi, 2015:45).

Keke and Okem (2016:7) reiterate that South Africa is facing major challenges concerning the provision of infrastructure for sustainable rural livelihoods in rural municipalities including water, sanitation, electricity, health, roads and telecommunications which adversely hinders the attainment of sustainable rural development. In line with the above assertion, the plethora of developmental issues including poverty, unemployment, poor road condition, dearth of infrastructure, water crisis, poor health care services and deprived education have been attributed to poor infrastructural development in most of the rural areas of Umzumbe Local Municipality (Milford, 2015:7). This implies that communities of Umzumbe Local Municipality are likely to continue to suffer from walking long distances, having poor road networks and poor water supply. It could be argued that quality infrastructure provides accessibility to basic services for the communities to endure sustainable livelihoods. The persistence of the failure to develop infrastructure could portray an impression that the apartheid government entrenched developmental challenges into the fabric of black people so that services would remain inaccessible and drained to the core.

Of concern is the decentralised structures in government including Intergovernmental Relation (IGR) for expanding the capacity for speedy service delivery. Meanwhile, municipalities as the coalface of service delivery, including Umzumbe Local Municipality, are under immense pressure from residents who often complain about poor service delivery. Section 40 (1) of the Constitution of the Republic of South Africa of 1996 succinctly affirms that all spheres of government are distinctive, interdependent and interrelated (RSA, 1996:25). This implies that all spheres of government must mutually co-operate and support each other within their areas of competency pertaining to matters of service delivery. With road infrastructure delivery, for instance, Mamabolo (2016:31) argues that it should be considered a genuine shared responsibility among the three spheres of government in South Africa. To this extent, South African municipalities in general and Umzumbe Local Municipality in particular bears the brunt for shared function such as road construction and maintenance. The notion of ensuring joint socio-economic development for the

interest of speedy service delivery somehow needs to be examined. Therefore, the need to examine the barrier hindering infrastructure development for attainment of optimal sustainable development cannot be overstated.

1.4 The Context of Umzumbe Local Municipality

Umzumbe Local Municipality, a rural local municipality located under Ugu District Municipality in the province of KZN in South Africa was chosen as a case study. According to the Constitution, the South African municipalities are divided into three categories (RSA, 1996) namely:

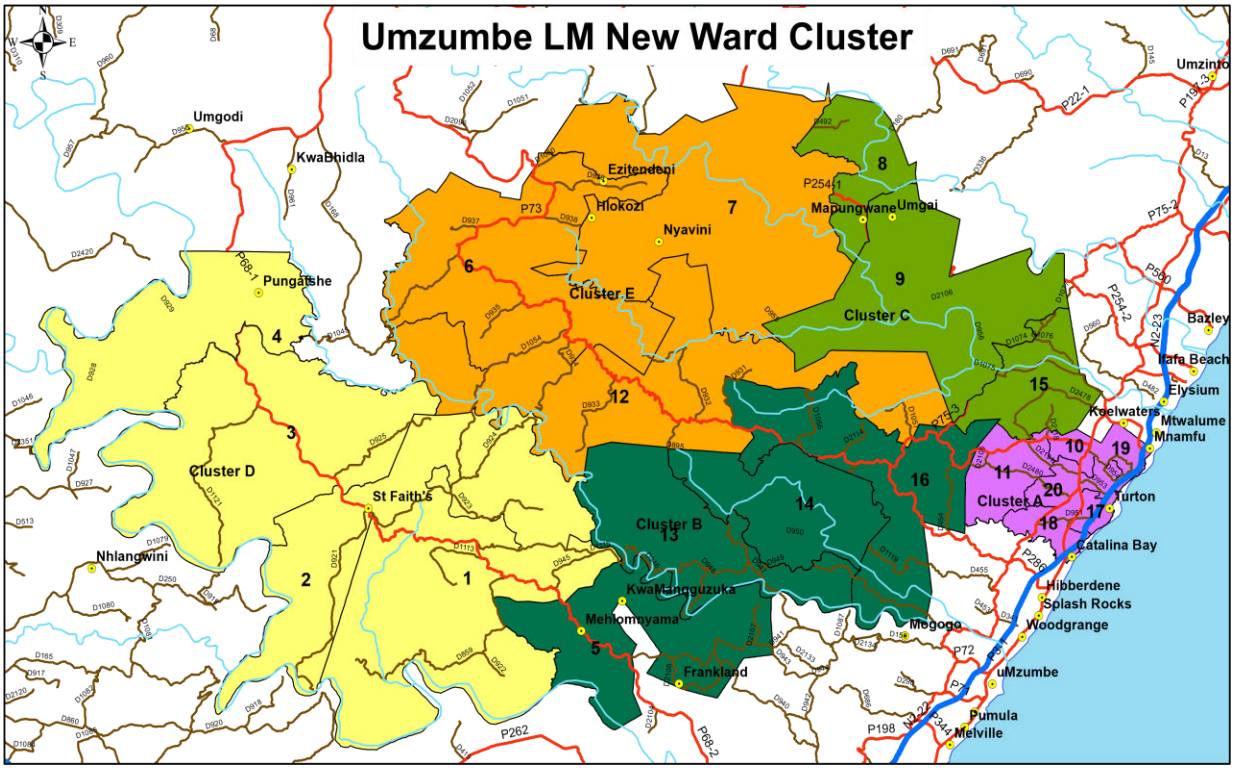
- Category A Metropolitan Municipalities
- Category B Local Municipalities
- Category C District Municipalities

Thornhill (2014:143) explains that the total area of South Africa has been divided into three categories of municipalities namely metropolitan, district and local municipalities. Similarly, Madumo and Koma (2019:583) describe the three categories of municipalities found in the entire territory of the Republic of South Africa. Firstly, category A is defined as a municipality that has exclusive executive and legislative authority in its jurisdiction. This municipality has a single municipal council that covers a large population, and it is situated in urban centres. Secondly, category B is a municipality that shares municipal executive and legislative authority in its area with category C municipality. These municipalities include rural and semi-urban areas with a low population density and have a single Central Business District (CBD). Finally, the category C is the municipality that has municipal legislative and executive authority in an area that has more than one local municipality. This municipality is established within the boundaries of the more than one local municipality (Madumo and Koma, 2019:583).

Umzumbe Local Municipality falls under Category B as a local municipality, and it is made up of 20 municipal wards with 16 traditional authorities. Umzumbe Local Municipality is a rural municipality that mainly comprises rural population with a vast backlog of basic services, high poverty rate and minimal economic base. Umzumbe Local Municipality runs along the coast within Mtwalume, Hibberdene, and further runs over the hinterland for approximately 60 km without any established town (Umzumbe IDP, 2020/21:4).

Map 1-1 reflect the map of Umzumbe Local Municipality.

Map 1-1: Geographical Location of Umzumbe Local Municipality



Source: Umzumbe IDP (2020/21)

The selection of this study site was highly motivated by the characteristics of basic services in terms of challenges such as lack of water supply, roads and bridges, and a high level of poverty and minimal economic base. Umzumbe Local Municipality operates without its own towns but Hibberdene and Port Shepstone, which both fall under Ray Nkonyeni Local Municipality becomes their main administrative node of economic significance. The municipality is sparsely populated hindering access to essential infrastructural services presenting a negative outcome of the livelihoods of the people of Umzumbe Local Municipality. In this municipality, the majority of households and individuals are entirely dependent on social grants, informal trading and subsistence farming for their survival (Umzumbe IDP, 2020/21:4).

Umzumbe Local Municipality, as Category B, has a constitutional mandate to provide access to basic infrastructure and services to their respective communities. However, Umzumbe Local Municipality is inflicted with infrastructural challenges to provide the required basic services. The IDP reveals that Umzumbe Local Municipality as a rural area is faced with immense challenges including infrastructural backlogs and slow economic development (IDP, 2020/21). In addition,

the settlement pattern and rural nature of Umzumbe Local Municipality poses a myriad of challenges to service delivery and infrastructure provision (Spatial SDF of Umzumbe Local Municipality, 2021).

In terms of road infrastructure, a very limited quality of roads has been constructed by the municipality. A majority of the access roads within Umzumbe Local Municipality are gravel which requires continuous road maintenance and upgrading. During rainy seasons, most of the gravel roads prevents access to residential areas while others are impassable. According to the IDP of Umzumbe Local Municipality (2020/21), the majority of roads surface are gravel which accounts to 85,5% while 11,5% of roads have a blacktop surface. However, approximately 67% of the households within Umzumbe Local Municipality are located in more or less 1 km towards a national, provincial or district road. The hierarchy of roads range from national road to local access roads. The national and provincial roads are generally in good conditions, but the quality of district and local roads are in poor conditions (IDP, 2020/21). Table 1-1 reflects on the road network at Umzumbe Local Municipality.

Table 1- 1: Road Networks at Umzumbe Local Municipality

Roads	Extent (metres)	Percentage %
District roads	37300	14.37
Local roads	159534	6.15
National roads	16234	0.63
On/off ramps	2376	0.09
Provincial roads	155607	6
Tracks	1888696	72.77
TOTAL AREA	**122094.63**	**100**

Source: Umzumbe Spatial Development Framework (2021)

The national road, which is N2 in this regard, provides access to a broader provincial and regional scale. The provincial road accounts for 6% of roads that provide access to settlements. Amongst the provincial road, the R102 is one of the most crucial provincial roads as it runs almost parallel to the national road. The provincial roads at Umzumbe Local Municipality are enlisted below:

- P68 between Assissi and Phungashe – a portions of this road with a blacktop surface.
- P286 links Hibberdene to Msinsini – the portions road within Umzumbe Local Municipality has a gravel surface.
- P73 links Msinsini to the North – this road has a blacktop surface.
- P75 between Msinsini and KwaQoloqolo – this road has a gravel surface.

In term of water and sanitation, although it falls under the core function for Ugu District Municipality, the IDP of Umzumbe Local Municipality (2020/21) outlines that Umzumbe Local Municipality has a large water backlog of approximately 35% with the existing water sources. Moreover, the IDP of Umzumbe Local Municipality that backlog in terms of sanitation is estimated at 30%.

Table 1-2: Access to Water at Umzumbe Local Municipality

Access to safe drinking water supply service	No. of people	Percentage (%)
Yes	99478	65.59
No	49507	32.64
Do not know	2177	1.44
Unspecified	516	0.34
Total	151676	100

Source: Umzumbe Spatial Development Framework (2021)

Table 1-2 reveals that roughly 32,64% of the people are still unable to access drinking water which becomes a clear indication of the existing water backlog. Water and sanitation are critical for human survival, but it issues of access remain a concerning matter for people of Umzumbe Local Municipality.

The access to telecommunication infrastructure within Umzumbe Local Municipality remains an alarming challenge as internet access is still not available to a majority of the people residing in Umzumbe Local Municipality. The cellular coverage is estimated at 99,7% but only 11% of households have access to high-speed internet through the 3G network whereas 13,5% have access to the internet theough Enhance Data for GSM Evolution (EDGE) (IDP, 2020/21). Most of the residential areas are experiencing network challenges which makes it difficult to access information and communicate. Furthermore, the provision of electricity at Umzumbe Local Municipality is solely supplied by Eskom but the IDP reveals that access to electricity continues

to be a challenge. The electrification backlog in terms of access to electricity stands at 12094 households including 5480 greenfield and 6614 infills (IDP, 2020/21).

The organogram of Umzumbe Local Municipality is presented next.

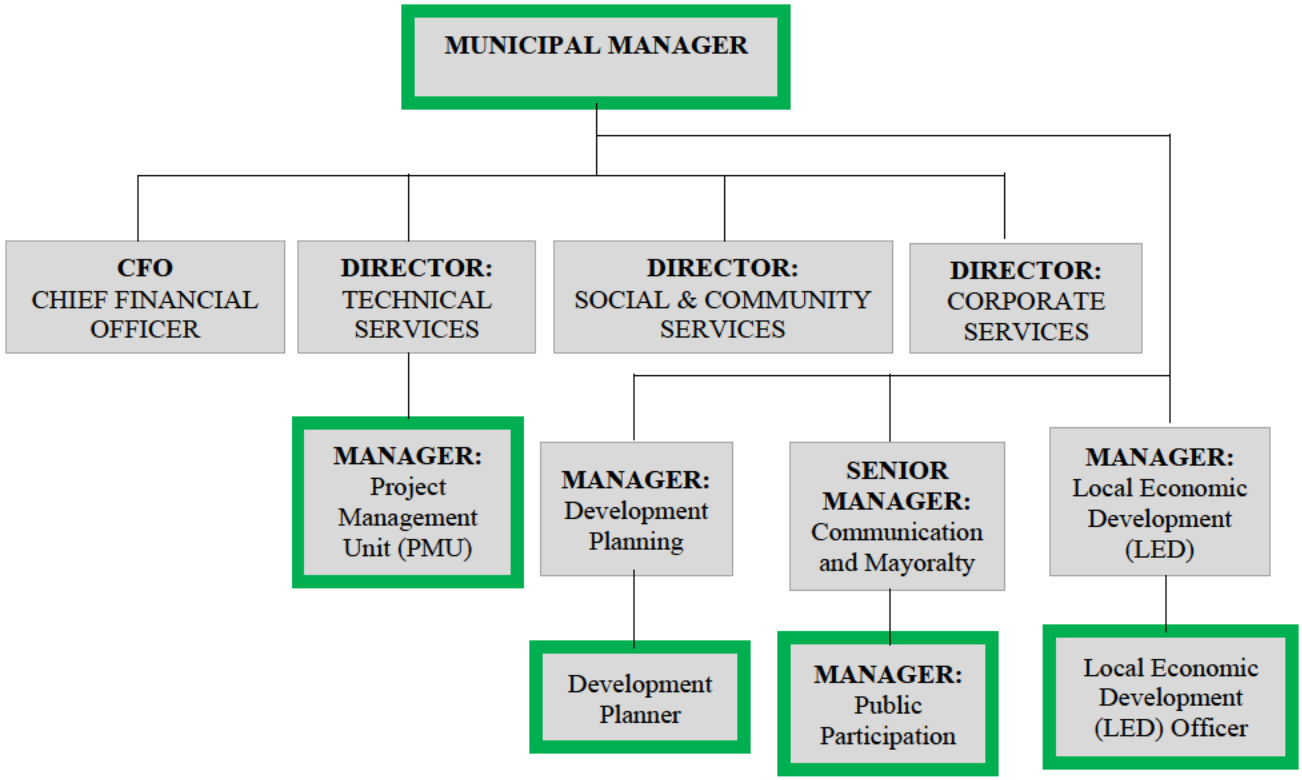


Figure 1-1: Umzumbe Local Municipality Organogram

Source: Umzumbe IDP (2020/21:45)

The municipality, as shown in Figure 1-1, has five administrative departments namely Office of the Municipal Manager, Finance, Technical Services, Social & Community Services and Corporate Services. The Municipal Manager is the Accounting Officer who is responsible for all the administrative matters of the municipality, including infrastructure development. The technical service is the department that has been entrusted with the delivery of basic services through operations and maintenance of existing infrastructural services. This department deals directly with infrastructure and projects management matters for the municipality, while the units such as Development Planning section is responsible for strategic planning, performance management and spatial planning and land use. The study participants included Municipal Manager (MM), Manager: Project Management Unit (PMU), Manager: Public Participation, Development Planner and LED Officer as highlighted in Figure 1-1.

1.5 Main Research Question

The initial stage of research studies, in general, requires the establishment of research questions. In this context, Strauss and Corbin (1998) provide a fundamental purpose of research questions by describing it as a "specific query to be addressed by the research that sets the parameters of the project and suggests the methods to be used for data gathering and analysis". Similarly, O'Leary (2017:84) succinctly affirms that research questions are highly essential in a research study because they set the agenda for the entire research process, set boundaries, and provide overall direction. In line with the above assertion, a set of research questions were developed for this study to provide direction and frame of reference.

The main research question for the study is as follows:

To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihoods?

1.5.1 Sub-Questions

Linked with the main question, the research sub-questions are as follows:

1. What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?
2. What are the salient contributing factors impacting on poor and inadequate infrastructure development and sustainable rural livelihoods?
3. What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?
4. In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?
5. What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?

1.6 Research Objectives

In relation to the distinct role of research questions as alluded above, research objectives that are clear and concise are fundamental in helping the researcher to organise the study within clearly defined research expectations sought by the researcher at the end of the study. Thus, it enables the

researcher to focus on collecting data that is necessary for understanding the phenomenon (O'Leary, 2017). As such, a set of research objectives were established.

Linked to the main research question the following is the main research objective:
To ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods.

1.6.1 Sub-Objectives

Linked with the main objective, the research sub-objectives are derived as follows:

1. To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihood.
2. To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.
3. To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.
4. To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.
5. To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.

The significance of this study is discussed next.

1.7 Significance of the Study

The study sought to challenge the orthodox production of knowledge in tackling several interrelated variables that hamper infrastructure development and sustainable rural livelihoods including Umzumbe Local Municipality. This study engaged the missing paradigm in the body of knowledge for improving infrastructure development and sustainable rural livelihoods. The research outcomes, therefore, intended to provide new perspectives and expand considerable knowledge on challenges and opportunities in infrastructure development and sustainable rural livelihoods within South Africa's decentralised governance set up. Thus, it contributes to the current and existing body of knowledge while increasing contemporary and available literature on

infrastructure development and sustainable rural livelihood. Overall, the study contributes to the ideals in South Africa's NDP, Africa Union's Agenda 2063 and the United Nation's SDGs.

Preliminary literature review pertinent to this study is discussed next.

1.8 Preliminary Literature Review

In South Africa, and elsewhere, in underdeveloped and developing nations, rural areas have remained underdeveloped and plagued with enormous development challenges and service delivery protests. This is despite South Africa's mandate that sought to build a developmental state with the high rates of social and economic development. Obadire *et al*. (2013:277) state that the end of apartheid legislation marked a renewed focus for South Africa's development agenda which has seen several rural development programmes and strategies being developed and implemented in their respective phases. This includes:

- Phase 1: Reconstruction and Development Programme: 1994–2000;
- Phase 2: Integrated Sustainable Rural Development Strategy: 2000–2009 and
- Phase 3: Comprehensive Rural Development Programme: 2009 to date.

The respective phases of rural development programmes were implemented in relation to socio-economic development and transformation of rural areas with the intention to curb urban-rural divide. According to Nkomo (2017:4) it has been over two decades into democracy and the urban-rural divide is still evident with several structural barriers to quality service delivery such as access to infrastructure. For example, the minority, including White South Africans, residing in urban areas with full time jobs are likely to be receiving and enjoying quality services from local municipalities. Contrary to this, the majority of South Africans including Blacks, who are either unemployed or employed in an informal sector residing in rural areas, are likely to be receiving poor and inadequate service delivery (Nkomo 2017:4). Obadire *et al*. (2013:279) argue that the rural development programmes had relatively few accomplishments with escalating development challenges whereby people in rural areas continue to battle with poverty, unemployment, inequality and poor infrastructural development. It remains debatable in the South African context that policies and programmes aiming at rural development are somehow good in theory, but the sound implementation seems to be arduous.

According to Ndevu and Muller (2017:13), lack of quality services, poverty and infrastructure development are the most prominent challenges, amongst others, in local government especially in rural areas. Keke and Okem (2016:5) raise concern that poor, inadequate and/or lack of infrastructural development in rural areas is one of the key constraints to socio-economic development that precludes rural people to escape from poverty and inequalities. Essential infrastructure includes water, sanitation, electricity, health, roads, education and telecommunications as a key priority and essential ingredient for sustainable rural development (Keke and Okem 2016:5). Sustainable rural livelihoods demand an environment with adequate economic and social infrastructure with the potential to reduce poverty. It cannot be ignored that South African rural municipalities are battling to provide sustainable rural infrastructure delivery which hampers development progress, and the quality of life deteriorates (Manggat *et al*. 2018:650).

Inadequate and/or poor infrastructure development has direct consequences to the quality of life. In the absence of quality of infrastructural facilities, poverty, unemployment and inequality forms a capability deprivation challenge which disqualifies the possibility of achieving sustainable rural development. The concept of sustainable rural development places emphasis on facilitating positive change in rural environments with long-lasting infrastructure to enable rural people to invest in their sustainable livelihoods (Nathaniel 2014:60). It is worthwhile noting that innovative and strategic intervention solutions are imperative. Manggat *et al*. (2018:649) succinctly affirm that urban areas are synonymous with adequate infrastructural facilities unlike the rural areas which are still characterised with limited and/or lack of infrastructure facilities. It is for these reasons that this study adopted the theory of infrastructure-led development that unequivocally advocates that the development of quality infrastructure creates sustainable living conditions for people.

Next is a discussion on the theoretical approach of this study.

1.9 Theoretical Frameworks

This section presents the theoretical frameworks that underpinned the study.

1.9.1 Theory of Infrastructure-Led Development

This study adopted the theory of infrastructure-led development which was proposed by Pierre-Richard Agénor in 2006. The theory presented that development of infrastructure is the driving force to achieve socio-economic development and sustainable livelihoods in general. The theory posits that sustainable livelihoods depend directly on the availability of adequate social and economic infrastructure namely electricity, telecommunication, sewege, roads, water and sanitation, education and health care services (Agénor,2010:2). Sufficient infrastructural development remains indispensible to socio-economic development; thus, the theory argues that the lack of infrastucture remains the key obstacle for sustainable livelihoods for the development of countries including Sub-Saharana Africa (Agénor, 2010:2).

Scholars including Aziz (2015); Oyedele (2012); Fizza (2014); Mustapha, Tukur and Ajayi (2018) and Ozurumba and Amadi (2019) have examined the impact of infrastructure development for the development of rural communities at the lens of the theory. Their studies have examined infrastructure development using case studies from India, Nigeria, and Pakistan. Similarly, this study explored infrastracture development within the South African context using Umzumbe Local Municipality as a case study. The findings of the earlier mentioned authors confirm that sustainable livelihoods is attainable through the development of quality infrastructure which becomes a powerful tool for poverty reduction while poor infrastructural project selection, dismal financial control and poor project implementations are amongst the major setbacks for infrastructure development in general. Oyedele (2012:5) further confirms that the state of infrastructure for any country is directly linked with the quality of life. It could be argued that an infrastructural development is the core development strategy, and effort as constructive headway, to achieve quality of life within the framework of sustainable rural livelihoods.

In line with the above assertion, there was a precise link with the main objective of this study wherein it sought to explore the impact of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. For example, it has been eloquently suggested that for people to access clean water, proper sanitation and paved roads amongst other things, it requires the use and development of quality infrastructural projects. Chotia and Rao (2017:469) assert that infrastucture development expands the accessibility of productive opportunities for the poor which in return increases the values of their assets. Taking advantage of the key findings of scholars

mentioned, the premise of this study is that the persistence of inadequate infrastructural development at Umzumbe Local Municipality continues to endure inefficiencies with a high prevalence of socio-economic challenges keeping the people of Umzumbe Local Municipality marginalised. Therefore, one cannot expect rapid socio-economic development in rural areas without adequate provision for infrastructural facilities.

1.9.2 Sustainable Livelihoods Framework (SLF)

Serrat (2017:22) defines Sustainable Livelihoods Framework (SLF) as the way of thinking with respect to objectives, scope and priorities for development activities. Hence, the thinking is based on the manner in which poor and vulnerable people live. As such, the framework connects the vulnerable people with the environment that influences the outcomes of livelihood strategies. It could be assumed that the approach is holistic as it attempts to capture and offer a deeper understanding and highlights essential causes and dimensions of poverty. According to Gambe (2015:53), SLF is a development approach that is suitable for analysing development and poverty. The approach provides perspective on understating poverty and further outlines possible strategies to improve the conditions of people in poverty. In this case, the approach relates with the analysis of infrastructure development as a poverty migration strategy for the rural areas and establishing sustainable livelihood thereafter. Similarly, Wang (2018:5) opines that the framework provides diverse ways through multiple activities in which people attain their livelihoods in rural areas in particular. The approach considers a wide range of factors including economic, political, cultural and environmental.

Food insecurity and poverty are considered as pressing and persistent development issues that are, however, resolvable in diverse ways. In this context, Ndlovu (2013:31) used the SLF in the study that examined community-based projects and food security to stimulate socio-economic status in rural areas. Through the approach, the study by Ndlovu (2013) analysed the contribution and the impact that different livelihoods' assets contribute to the lives of the poor. As such, the approach provided a methodology that offered an understanding of how poor people put their lives together for sustainable rural livelihoods. Hence, the key finding of the study is that sustainable livelihoods in one community can greatly contribute to the net benefit of the other livelihoods at community level. This is so because the approach focuses on local methods within a specific context including transforming relations between community and local government and community development

projects in particular. However, the approach was also criticised for failing to pay attention on inequalities of power and further focusing on category of asset.

A study conducted by Namabanda in 2019 examined livelihoods challenges in rural growth point using Namibia as a case study also successfully utilised the SLF. The study articulated that development in general is synonymous with sustainable livelihoods, but the achievement of the desired livelihoods demands a deeper understanding of the prevailing conditions of the people as proclaimed by the approach. SLF strongly emphasises in-depth knowledge on various types of livelihoods that are of utmost importance for planning livelihood strategies. In this context, Namabanda (2019) affirmed that it is possible to improve the standard of living and create decent employment for the people in rural areas, provided that the implementation of programme or projects are employed using livelihood-based approaches. While livelihood is key in people's lives and a critical tool in poverty alleviation, the insights also reflected that poverty is not only about low incomes but other dimensions such as illiteracy, dearth of infrastructure, poor health, lack of social services, state of vulnerability and powerlessness, which negatively shape the livelihoods. In developing nations, the investment in human resources, social safety and infrastructure is significant for developing sustainable livelihoods.

Based on common ideas arising from the literature of the above-mentioned studies, both confirm that SLF attempts to strengthen people's potential and survival mechanisms to ensure that livelihoods are indeed sustainable. In this perspective, the SLF covered a wide spectrum of poverty-related aspects to understand the nature of poverty in this study and is termed a feature of triple constraints of development to be discussed in detail in chapter 2 of this dissertation. Furthermore, and in relation to this study, the impact of infrastructure development on livelihoods implies that while rural people grapple with putting their lives together for sustainable rural livelihoods, the infrastructural gain needs to be escalated for reliable and convenient livelihood at the lens of providing quality roads, supply of water, electricity and telecommunication. This implies that in rural areas, for example, the absence of infrastructure that provides reliable water supply coerces people to rely on rainfall for water sources which in return poses health hazards. Hence, the approach is centred on the purpose of ensuring decent livelihoods that intends to contribute to the quality standard of life which is in line with the objective of the study at hand.

The ensuing section presents the research design and methods that accounts for the methodological approach of this study which is further expanded in chapter four.

1.10 Research Design and Methods

This section outlines the research methods, paradigms, designs and methodological tools for data collection and analysis. It further presents study limitation, ethical considerations, validity and reliability of the study.

1.10.1 Research Design

According to Rahi (2017:2) there are three broad research designs namely quantitative, qualitative and mixed method. The qualitative research design was adopted for this study. The qualitative research is defined as a systematic and subjective approach that aims to provide a proper meaning in relation to a daily life experience of the people by capturing people's feelings, opinions and practices (Mohajan, 2018:3). The characteristics of qualitative design helped to ascertain and explore the challenges that confine infrastructural development and sustainable rural livelihoods at Umzumbe Local Municipality.

1.10.2 Research Paradigms

According to Rehman and Alharthi (2016:51), there are three dominant research paradigms, namely positivist, interpretivist and critical paradigms. The authors define positivist paradigm as a doctrine that stipulates that true knowledge is mainly accomplished through observation and experiments that reflect a deterministic philosophy. While the interpretive paradigm emerged in contradiction to the characteristics of positivism, interpretive is described as a subjective interpretation of the viewpoint and perception of the subject being observed (Rehman and Alharthi, 2016:55). The aforesaid paradigms are underpinned by their own philosophical assumptions including ontology, epistemology, axiology and methodology. According to Neuman (2011:91) ontology and epistemology are the two areas of philosophy in a social research. Ontology pertains to what exists and the nature of reality, while epistemology is the reflection of how the individuals perceive the world and what holds true (Neuman, 2011:91). This study adopted a combination of philosophical world views in line with the interpretivist paradigm that fits into the context of this study.

This study was guided by interpretivist paradigm in exploring perceptions of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. The study considered participants' subjective experiences and also appreciated the secondary data. This was relevant as the study intended to understand and describe meaningful social action and experience relating to infrastructure development and sustainable rural livelihood. From the position of interpretivism in the ontology standpoint, the researcher considered the reality of infrastructure development and livelihoods as not absolute. This philosophical assumption was used to assess the impact of the existing infrastructure to see whether the reality of meaningful livelihood was evolving. Furthermore, from the position of interpretivism in the epistemological perspective, the key informants of the study were assessed through their experience, role and background on how infrastructure development impacts the sustainable livelihoods. This formed an essential source of knowledge for understanding the livelihoods of the people in rural areas. Lastly, the research design and methods discussed in detail in chapter 3 of this study accounts for the methodological perspective of the philosophical worldview.

1.10.3 Study Site

Study site is the physical place identified by the researcher to conduct the study on a phenomenon (Maree 2014:96). Therefore, Umzumbe Local Municipality was chosen as the study site and case context which comprised of mainly rural areas with no established town. Umzumbe Local Municipality is amongst the local municipalities under the family of Ugu District Municipality which are rural-serving municipalities with limited resources and high infrastructural backlogs.

1.10.4 Target Population

Asiamah, Mensah and Oteng-Abayie (2017:1612) define target population as a group of individuals or participants with the specific attributes of interest and relevance to the phenomenon. The target population for this study was all actors that are directly or indirectly involved in service delivery within the jurisdiction of Umzumbe Local Municipality such as councillors, officials, traditional leaders and local citizens.

1.10.5 Sample Size

The sample was drawn from the target population which amounted to a sample size of 42 participants in total. The sampled population for the study is described below.

1.10.5.1 Sampled Population

Ranjit (2005:24) defines sample as a subset of the entire or target population selected to participate in the study from a wider population to a narrowed scale. For this study, sample was selected using non-probability sampling strategy and the researcher also applied a purposive sampling technique. The sampled population included five councillors, five municipal officials, two traditional leaders and thirty general community members residing in and around Umzumbe Local Municipality.

1.10.6 Sampling Strategies

Probability and non-probability sampling are two broad sampling strategies (Rahi, 2017:3). Mouton (2011:133) defines probability sampling as a technique used to select units of analysis using theories of selection. Meanwhile, non-probability is described as a technique that select units of analysis based on the judgement of the researcher. Rahi (2017:3) advocates that for probability sampling inclusion into the sample is not guaranteed and non-probability inclusion is by the choice of the researcher (Yates 2004:25).

While it is impossible to include the entire population, this study employed non-probability sampling aligned with a purposive sampling method to select participants. Purposive sampling was considered appropriate for this study because the selection of participants depends on the sound judgement of the researcher. In consideration of a sample rather than an entire population, the participants were chosen based on the purpose of the study to provide rich information for the better understanding of the phenomenon. The sample was drawn from the target population including councillors, municipal officials, traditional leaders and general community members as key participants that solicited their perceptions on infrastructure development and sustainable rural livelihoods in their respective roles.

1.10.7 Data Collection Methods

The data was gathered using both primary and secondary data. For primary data, the study used semi-structured, in-depth interviews, field observation and a focus groups to acquire data directly from the participants as first-hand sources. Due to the Corona Virus pandemic, otherwise known as Covid-19, all the interviews and a focus group were done through WhatsApp and Zoom video conferencing. From the sample size of 42 participants, only 4 participants including 3 municipal officials and 1 councillor agreed to participate while the other 8 identified participants refused to participate with suffering any negative consequence. In addition, 30 participants comprised of

general members of the community that formed part of a focus groups to share their knowledge regarding infrastructure development and sustainable rural livelihoods. Their participation provided a deep understanding of the socio-economic living conditions and livelihoods in general within the existing infrastructure. For secondary data, the study used document analysis to examine the available literature such as books, academic journals, thesis, and government publication to provide historical data pertaining to infrastructure development and sustainable rural livelihoods.

1.10.8 Data Quality Control

The data collection and presentation were evaluated based on a variety of instruments that ensured the quality of the study and trustworthiness of data. For qualitative research, the term trustworthiness refers to credibility, transferability, dependability and confirmability (Du-Plooy-Cilliers, Davis and Bezuidenhout 2014:258). Similarly, Anney (2014:276) succinctly affirms that trustworthiness criteria are mainly about demonstrating the true value of the research data as a framework that appraise the rigour of a qualitative study. The trustworthiness strategies suggested by Anney (2014:276) were upheld in this study to ensure that credible, dependable, transferable and confirmable aspects were maintained. The strategies included prolonged and varied field experience, well-defined interview techniques, structural coherence, audit trail, data coding strategy, triangulation and peer examination.

In line with the above, the strategies required the researcher to spend extended time in the research field with established data collection tools which enabled the researcher to account for all the research decisions and activities. In addition, it is required that the analysis of data to be grouped into themes with the use of multiple and different methods to validate data. For this study, as noted earlier, the primary data was collected by using clearly defined interview techniques and focus group strategies which allowed for the flow of information to be validated by the use of a recording device that ensured accuracy. The interview questions and guidelines for the focus groups were established and applied continuously for all the participants. It was further checked and approved by the research supervisor and research office of the University of KwaZulu-Natal (UKZN). Primary data was manually analysed using Word by utilising thematic analysis and matrix structure that arranged the data into categories and patterns. In terms of secondary data, the researcher ensured that the literature cited was obtained from reliable sources and from accredited scholars.

1.10.9 Data Reduction and Analysis

The data obtained from in-depth interviews and the focus group were analysed using a combination of thematic analysis and matric structure. According to Creswell (2009:20), a thematic analysis is a grouping of themes into conceptual framework by observing the recurring themes in the analysis of data. All the emerging themes were grouped together using matrices. This method enabled the data to be presented in the manner that made it possible to interpret the factors that hinder infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality.

1.10.10 Ethical Considerations

Ethical concerns in research are critical as they entail the use of human subjects and behaviour (Grix 2010:142). Therefore, the study ensured that participants were not harmed either physically or psychologically, and their human privacy were not compromised in any form as a result of participation. The gate keeper's letter was obtained from the Office of the Municipal Manager (MM) at Umzumbe Local Municipality while the Ethical Clearance (EC) was granted by the Ethics Research Committee (ERC) of the UKZN. Prior to the interviews and focus group sessions, a covering letter highlighting research intent was presented to the participants together with gate keeper's letter and EC. In addition, the researcher strictly adhered to confidentiality, anonymity, legality, professionalism and privacy and also obtained participants' informed consent.

1.10.11 Limitations and Delimitations of the Study

The study was not intended to be longitudinal study. Therefore, there were timeframes attached to this study. Furthermore, the study focus was only conducted at Umzumbe Local Municipality, excluding other municipalities. Therefore, recommendations might not be applicable to other rural municipalities. In a qualitative research, the analysis of data heavily depends on the skills and experience of the researcher. Thus, the influence of personal biases in the analysis of data was more likely because the researcher resigned as an employee of Umzumbe Local Municipality during the course of the study. The researcher adhered to research phases that were approved by the research supervisor including establishment of an interview guideline and transparent data analysis tools that intended to combat any form of bias. In addition, the researcher upheld the regulations outlined in the ethical clearance obtained from UKZN research office.

1.11 Key Terms and Definitions

Table 1-2 below provides the key terms and definition used in this study.

Table 1- 3: Key Terms and Definitions

Key Term	Definition and sources
Infrastructure	Infrastructure is a physical, social, ecological, and organisational component of interrelated systems that provide commodities and services that are essential to enable, sustain or enhance the living conditions and maintain surrounding environment. It became a fundamental facilities and services that are necessary for public consumption including roads, water and sanitation, electricity, telecommunication system, health, and education facilities (Khumalo *et al.* 2017:35).
Development	Development concerns the satisfaction of material needs occurring in a positive change that improves the standard of living for the people including the reduction of poverty, inequality and unemployment (Nathaniel, 2014:62).
Sustainable Rural livelihoods	Rural livelihoods as defined by Robert Chamber and Gordon Conway comprise of the capabilities, assets (both material and social resources) and activities required for means of living. This includes adequate stocks and flows of food and cash to meet the basic needs of the people. A livelihood is sustainable when it can cope with and recover from stress and shocks, maintain, or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation (Sajid, Khan, Iqbal and Abbas, 2018:1)
Livelihood strategies	It's the combination of activities that people choose to undertake in order to achieve their livelihood goals (Gambe, 2015:55).
Rural development	"People taking control of their destiny, thereby dealing effectively with rural poverty through the optimal use of natural resource. It is regarded as a participatory process through which rural people learn over time, through their own experiences and initiatives, on how to adapt their indigenous knowledge to their changing world." (CRDP, 2009:4).

1.12 Chapter Inventory

The study comprises six chapters in the following segment:

Chapter One: provides an introduction and overview of the study. In this chapter, the background to the study, research problem statement, main question and sub-questions, main research objective and sub-objectives, significance of the study, preliminary literature review and theoretical approach of the study are discussed. In addition, the chapter also provides a summary of the research design and methodology, research paradigms, philosophical worldview adopted, study sites, targets population, sampling method and strategy, data collection, data quality-control techniques, data analysis, ethical considerations and limitations of the study.

Chapter Two: delineates and reviews comprehensive literature on infrastructure development and sustainable rural livelihoods. The discussion herein is on the basis of the available literature that outline the findings and gaps presented by other scholars.

Chapter Three: offers a detailed discussion on the theoretical frameworks that underpinned the study. This chapter located the study in the theoretical realm with reference to the wider literature together with the gaps identified in the literature thereof.

Chapter Four: presents the research design and methodology that guided the research process. This chapter elaborates, in detail, the research paradigms, philosophical worldview adopted, study sites, targets population, sampling method and strategy, data collection, data quality-control techniques, data analysis, ethical considerations adhered to and limitations for this study.

Chapter Five: provides the research results obtained from the interviews and focus groups. This chapter further provides analysis and interpretation of the primary data which is reduced to related themes using thematic analysis.

Chapter Six: outlines the recommendation and conclusion drawn from the entire study as informed by the finding of this study. This chapter suggests in detail the necessary policy recommendations and possible areas for future studies.

1.13 Chapter Summary

This chapter examined the background and the research problem which provided motives for the choice of the topic to be studied. Thus, the research objectives and questions were offered to express the intent of the study. A preliminary literature review was also presented with the intention of showing how the available literature on infrastructure development and sustainable rural livelihood converge in order to respond to the research questions. To this extent, it provided a summary of the research design and methodology, research paradigms, philosophical worldview adopted, study sites, targets population, sampling method and strategy, data collection, data quality-control techniques, data analysis, ethical consideration and limitation of the study. Lastly, the definitions of key terms and chapter inventory was presented.

CHAPTER 2
LITERATURE REVIEW

2.1 Chapter Introduction

This chapter presents a literature review on infrastructure development and sustainable rural livelihoods for the conceptual understanding of the study. Using academic material including scholastic articles and documents, the chapter establishes and elaborates on how this study fitted into the broader context using Umzumbe Local Municipality as a case study. From this perspective, major theoretical debates, legislative framework, related concepts and empirical findings made available by other scholars are presented and discussed in this chapter. To this extent, a wide range of challenges and opportunities for infrastructure development and sustainable rural livelihood for rural municipalities, in general, and Umzumbe Local Municipality, in particular, are presented.

2.2 Literature Review: A Conceptual Understanding

For all disciplines of research in general and research projects in particular, Snyder (2019: 334) proclaims that the review of prior and relevant literature is paramount for offering a foundation of knowledge. Neuman (2011:127) defines literature review as comprehensive, in-depth, systematic and critical review of scholarly articles, books and any other relevant sources in a particular subject. While it offers the summary of key sources and findings of other scholars, it establishes a framework that outlines the significance and relevance of the study in relation to previous findings. Thus, it provides insights into concepts and further identifies gaps that exist in the literature and how the study at hand will address the gaps (Snyder,2019:334). Neuman (2011:127) states that there are six types of literature review for research projects including context, historical, integrative, methodological, self-study and theoretical reviews. The meaning of these types of literature review are presented in Table 2-1 overleaf.

Table 2-1: Types of Literature Review

Types of literature review	Description
Context review	A common type of review that links a specific study to a larger body of knowledge. For this review, the chapter on literature review is located at the beginning of the research report to place a study within the broader framework also showing how it develops the line of thought.
Historical review	A specialised review that traces an issue phenomenon over time.
Integrative review	A common type of review that presents a summary of the current state of knowledge on a particular topic showing arguments. This review is mostly combined with context review.
Methodological review	A specialised type of integrative review which compares and evaluates methodological strength of various studies. It further demonstrates how diverse methodologies accounts for different results.
Self-study review	A review that shows the familiarity with a subject area as part of educational program or course requirement.
Theoretical review	A specialised review that offers a variety of theories or concepts of the same topic. Furthermore, it compares them on the basis of assumptions, logical consistency and scope of explanation.

Source: Adapted from Neuman (2011:127)

As shown in Table 2.1 above, the understanding of the different types of literature reviews are presented. In line with above table, the literature review of this study was conducted using both context and integrative review. Using context review, the overall focus of this study was infrastructure development and sustainable rural livelihoods. The focus of the study was able to be linked with the larger body of knowledge based on the past findings of other scholars and, therefore, the focus for this study was located within the context of existing literature. In terms of an integrative review, this chapter provided contemporary academic debates that shows agreements and disagreements relating to infrastructure development and sustainable rural livelihood.

In line with the above, the review of available academic material for this study, for instance, has established previous theories, models, concepts and empirical findings presented by scholars to avoid unnecessary duplication as pronounced by Mouton (2011:6). For this study in particular, the bulk of the literature review incorporated the studies of various scholars including Oyedele (2012), (2015), (2019); Srinivasu and Rao (2013); Nathaniel (2013); Fizza (2014), (2019); Agenor (2010); Cloete (2015) and Sobcyyk (2014) as key authors informing this study. Their studies have largely examined infrastructure development and sustainable development in general.

2.3 Infrastructure Development: An overview

Infrastructure, in general, is a broad and umbrella concept that enhances investment in tangible public assets and social services. Olaseni and Alade (2021:64) explain that there are two broad and prominent classification of infrastructure namely physical and social infrastructures. Physical infrastructure is viewed as a long-term physical asset that enables the provision of goods and services while social infrastructure is a subset of the infrastructure sector and typically includes assets that accommodate social services. In addition, Lee, Chon and Ahn (2014:7564) proclaim that ecological infrastructure is neglected while it is equally as important as physical and social infrastructure. Therefore, ecological infrastructure is viewed as suite of natural or semi-natural functioning ecosystems that delivers a range of essential services to humankind. The ecological infrastructure can be considered as a natural landscape and natural assets that intends to provide support to socio-economic service in the environmental space.

In line with ecological infrastructure as a natural asset that give effects to the physical and social infrastructure, the world report of 1994, categorised infrastructure as public utilities, public works and transport sector. The categorisation is depicted as follows:

- Public utilities – power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas.
- Public works – roads and major dam and canal works for irrigation and drainage
- Other transport sectors – urban and interurban railways, urban transport, ports and waterways and airports

Taking from the above, Srinivasu and Srinivasu-Rao (2013:82) further describe infrastructure as the stock of basic facilities and capital equipment which are of utmost significance for the functioning of the country or a specific area. The basic infrastructural facilities include the provision of quality roads, bridges, telecommunication, energy, clean water supply and sanitation. Similarly, Manggat *et al.* (2018:649) see infrastructure as a basic physical and organisational structure that is necessary for service delivery in general and for community well-being in particular. Infrastructure is considered as a set of interconnected structural elements that provides framework that supports socio-economic development. It further enables the production of goods and services; thus, it becomes the foundation for economic activities and social services for long-term gain. It could be argued that the realisation of quality infrastructure development for quality

service delivery is also dependent on the social structures, economic conditions, living standards and geographical structures (Olaseni and Alade, 2012:64).

In line with the above assertion, the concept of infrastructure development is collectively categorised as public utilities, public works, and maintenance. In this context, public utilities are regarded as set of infrastructural services that are provided for public consumption, whereas public works accounts for the building and construction of the set of infrastructural services for the communities, while maintenance is the process of upkeeping the state of condition of the set of infrastructural services by means of regular checks and repairs when deemed necessary (Chigwata, De Visser and Kaywood, 2019:34). In the same vein, Briceno-Garmendia and Estache (2004) cited in Keke and Okem (2016:9) advance that the development of infrastructure entails electricity that provides power to industries, businesses, schools and households, whereas telecommunications supports business communication and general interaction. On the other hand, roads and railways enhance the transportation of goods and services, and sanitation supports hygiene and water facilities for drinking and domestic use.

Oleseni and Alade (2012:64) succinctly affirm that infrastructure, poverty reduction, socio-economic development and environmental stability are intertwined. This implies that these interrelated features have a level of reinforcement as it share a common characteristic for development especially in previously neglected areas such as rural areas. It is, therefore, highly contested that the availability of infrastructure facilities, as mentioned, has little value in the absence of sound operation and maintenance which unfolds the basic service delivery and further improves the quality of life for the people.

The availability of infrastructure facilities is likely to tackle major service delivery challenges faced by various countries and further supports economic growth, meets the basic needs, reduces poverty, facilitates mobility and social interaction (Oleseni and Alade, 2012:65). In economic terms, for instance, Manggat *et al*. (2018:650) maintain that infrastructure development impacts the employment rate, productivity and income, and also reduces societal gaps. Moreover, Yizza (2014:8) affirms that improved infrastructure is strongly associated with better functioning markets as well as reduced poverty. This highlights that poverty is seemingly reduced in countries where infrastructure is better established as compared to countries with poor infrastructure. In India for example, households that are most likely to escape poverty are those in or near villages with better

infrastructure (Yizza, 2014:8). It could be argued that quality, quantity and accessibility of economic infrastructure in developing countries is seriously lagging behind when compared to the developed and/or developing countries. This advocates that developing countries like South Africa, in a strict sense, need to invest in adequate supply of infrastructure facilities in order for people to access clean water and proper sanitation and quality roads, to name a few.

Infrastructure development is widely considered as a key priority and vital ingredient in enhancing sustainable rural development and providing the foundation for poverty reduction and economic growth in rural areas. It was of considerable interest that various development challenges are evident, but infrastructure gaps are still rampant. The premise of this study, as supported by the literature above, outlines that sustainable rural development demands the accessibility of basic services for the communities which are satisfied through the sustainable use of natural resources to enhance the social and economic condition. The provision of necessary infrastructure could, therefore, be regarded as baseline for attainment of sustaining developmental strives. Consequently, the failure to develop infrastructure is very likely that the goals of satisfying the basic needs of the people would be unrealistic and remain to be a widespread challenge, especially to those who are struggling to survive on their own which makes it difficult to escape from the poverty trap.

2.4 Sustainable Development: Concept and Applications

The concept of sustainable development is a multidimensional and catchphrase in development circles. In pursuit of global competency and long-term impact, it has instigated the importance of sustainable development in securing better ways in improving human welfare and tackling human poverty especially in rural areas (Ukwandu, 2015:162).

On a global context, Van der Waldt (2015:40) sustains that the prominence of sustainable development could be traced back to the Brundtland Report published in 1987 by the World Commission on Environment and Development (WCED). This report placed the notion of sustainable development on the global agenda by providing an eminent definition of sustainable development as follows:

> *"advancement of meeting the needs of the present without compromising the ability of the future generation to meet their own needs. Furthermore, sustainable*

development entails the process of change in which the exploitation of natural resources, the direction of investment, the orientation of technological development and institutional change are all in harmony and enhance the current and future potential to meet the needs and aspirations" (Ukwandu, 2015:167).

In its definition of sustainable development, it has been used to refer to the idea of the use of environmental and socio-economic resources to enhance the standard of living for the people so that future generations would be able to enjoy the same resources in the long run. In this context, however, Ukwandu (2015:167) points out that the WCED has failed to account to the specific parameters, guidelines or minimum positions wherein the true constituents of the concept are not well grounded. In his review of the concept, Ukwandu (2015:167) believes that the definitions provided in Table 2-2 below encapsulate the accurate meaning of sustainable development with precise parameters and guidelines.

Table 2-2: Definitions of Sustainable Development

Definition of sustainable development	Authors cited in Ukwandu (2015)
Sustainable development is a pattern of social and structural economic transformations which optimises the economic and other social benefits available in the present, without jeopardising the likely potential for similar benefits in the future. The primary goal of sustainable development is to achieve a reasonable and equitably distributed level of economic well-being that can be perpetuated continually for future human generations.	Goodland and Ledec (1987:35)
Sustainable development is a concept which involves satisfying the multiple criteria of sustainable growth, poverty alleviation, and sound environmental management.	World bank (1987:10)
Sustainable development is development that is likely to achieve lasting satisfaction of human needs and improvement in the quality of life.	Allen (1980:23)
Sustainable development involves learning how long-term and large-scale interactions between environment and development can be better managed to increase the prospects for ecologically sustainable improvements in human well-being.	Clark and Munn (1986:5)

Source: Ukwandu (2015:167)

Given the various definitions of sustainable development as mentioned in Table 2-2 and the eminent definition, in particular, as defined by the Brundtland Report in 1987, it is generally

accepted that the concept is complex and multidimensional in nature. Ukwandu (2015:161) echoes that "the widening inequality in the standard of living between developed and developing countries alongside with the increased poverty within and among developing nations brought increased popularity to the concept of sustainable development." In this stance, Van der Waldt (2016:54) proclaims that sustainable development is indeed highly dynamic and multidimensional which sees a number of scholars arguing on the meaning and understanding of the concept. While the concept has been used in various literature, Berke and Conroy (2000) cited in Van der Waldt (2016:54) highly contest that the lack of consensus on what exactly should be sustained remains unfounded. The rationale of the study has established that infrastructure is the baseline for sustainable rural development that needs to be constructed, maintained and sustained for long term development.

Amasuomo, Hasnain and Osanyinlusi (2015:45) maintain that sustainable development is a quality of a thing with the capacity for continuance over a period with minimal or no damage to the environment. In this perspective, however, the increased popularity of the concept has led to it being conceived for visionary expressions with no practicality to its true meaning. As such, it has been criticised for its purpose as it is overused and abused by many which often results in the confusion of the concept with no practical usefulness (Amasuomo, *et al*. 2015:46) Evidently, Umzumbe Local Municipality subscribes to the mission that the municipality is dedicated to promote people-centred development, acceleration of service delivery and sustainable local economic development. Therefore, it could be argued that the purpose of the concept is unclear with a widespread controversy in the public, political and academic arena.

According to Singh (2014:329) the term sustainable development is characterised as follows:

- **A conceptual framework**: a way of changing the predominant world view to one that is more holistic and balanced;
- **A process**: a way of applying the principles of integration- across space and time – to all decisions; and
- **An end goal**: identifying and fixing the specific problems of resources depletion, health care, social exclusion, poverty and unemployment

Figure 2-1 below shows three pillars of sustainable development namely social, economic and environmental pillars. Figure 2-1 is subsequently discussed below:

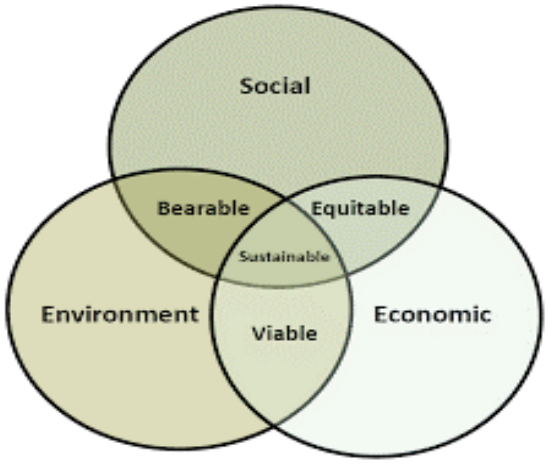


Figure 2-1: Pillars of Sustainable Development

Source: Van der Waldt (2015:41)

Economic pillar – refers to a capacity of an economic system to generate a continuous and improve economic indicators. Precisely, the economic indicators relate to the capacity to generate incomes and employment growth to endure the population. This refers to the creation of economic value with means of mixing resources to produce goods and services (Cloete, 2015:63).

Social pillar – the social pillar denotes human element alongside their living conditions that contributes to the implementation of sustainable development. Social pillar is represented by indicators such as unemployment rate, education level and social status (Cloete, 2015:63).

Environmental pillar – it refers to the ability to protect and ensure the renewal of natural resources. The environmental pillar is represented by the consumption of natural resources namely air, land, water, soil, fauna and flora (Cloete, 2015:63).

In line with Figure 2-1, Cloete (2015:51) contends that sustainable development is an essential umbrella concept that integrates various developmental paradigms including social, economic and environmental pillars. Equally, Van der Waldt (2015:40) provides an explanation of the Venn diagram as depicted in Figure 2-1 above. In his analysis, sustainable development lies at the centre of the three pillars with the key drivers namely bearable, viable and equitable wherein it overlaps their boundaries. In this perspective, when the social pillar interacts with the environment, for

instance, the society establishes whether the environment is bearable to live in and prosper. In terms of the economic pillar, the interaction between the economic and environment pillars is whether the economic growth is viable in the consumption of natural resources. To this end, when it comes to the interaction between social and economy, the question that arises is whether prosperity is equitable (Van der Waldt, 2015:40).

These pillars assume the responsibility to advance and strengthen the interdependent and mutually reinforcement of the pillars of sustainable development. It stems on the notion that people, habitats and economic systems are interlinked. However, in practise, Semenova, Busalova and Eremina (2016:2) argue that the focus has been largely devoted to social and economic issues while neglecting the emerging environmental issues such as, among others, anthropogenic pollution, water scarcity and climate change. The exclusion of environmental consideration as a pillar in the circle of sustainable development advocates that there is a dark side to sustainable livelihoods as environmental factors have negative impacts on infrastructure development.

2.5 Sustainable Rural Livelihoods

The concept of livelihood is defined by Chambers and Conway (1992) cited in Sajid, Ayatullah, Khan, Iqbal and Abbas (2018:1) as "livelihood comprises of the capabilities, assets and activities required for a means of living. As such, a livelihood is sustainable when it is able to cope with and recover from stress and shocks, enhance its capabilities and assets, while not undermining environmental resources." Similarly, Scoones (2009:172) is of the view that "livelihood is concerned with methods used to make a living, attempts to meet consumption and economic needs, the manner in which people respond to opportunities and choices between different values." Livelihood is also viewed as the adequate stocks and flows of food including cash to fulfil the daily basic needs of the people. The aforesaid livelihood is sustainable on the ability to maintain resource productivity for the long-term in order to cope with chronic situations (Sajid *et al.* 2018:1). In simple terms, livelihood can be generally understood as means of support for acquiring the basic necessities to satisfy their needs for survival going beyond the income and consumption that can be maintained for a longer period of time. Sustainable livelihoods may be gained in various ways by the household including farming, ownership of land and stable employment with satisfactory remuneration.

Across the globe, the notion of sustainable rural livelihood is an important area of focus as poverty and unemployment remain predominantly a rural phenomenon. Ukwandu (2015:170) asserts that, in Sub-Saharan Africa, most of the people in rural areas continue to live in the conditions of deprivation with poverty and unemployment rates at the highest peak. In developing countries for example, Israr, Yaseen and Ahmad (2017:98) proclaim that people from the rural areas are the economic backbone as they contribute to the overall economic growth by supplying surplus of labour, food and raw materials to other sectors of the economy. In spite of these contributions, however, it remains a concern that people in rural areas are the most marginalised as they are characterised by food insecurity, unemployment, poverty, income inequality and lack of important socio-economic services (Israr *et al*. 2017:98). The characteristics of sustainable rural livelihood is interconnected to the development of infrastructure and subsequent impact of the socio-economic development in rural areas as infrastructure development, poverty reduction and socio-economic development are a factory for sustainable rural livelihood.

In line with the above, Sajid *et al*. (2018:2) point out that water shortage and poor roads infrastructure are major socio-economic challenges that confront sustainable rural livelihood in rural areas. In the same vein, Schalkwyk (2015:78) assert that prominent challenges in rural areas of South Africa include unstainable use of natural resources, inadequate access to socio-economic and poor infrastructural development, lack of access to water, low literacy rate and skills, migratory labour practices and unexploited economic opportunities. In the same line of reasoning, Karim and Heshemi (2010) cited in Savri and Maymand (2013:790) succinctly affirm that sustainable rural livelihoods are hindered with a variety of key barriers. The barriers include "social environment barriers (unemployment and high population growth, high rates of migration, adult illiteracy, low life expectancy, poor nutritional status and lack of appropriate health facility), environmental barriers (high consumption of chemical fertilizers, lack of recycling and reuse of waste and land increased operation), economic environment barriers (reducing annual groundwater, lack of facilities and lack of sustainable use of natural resources) and institutional environment barriers (low employing rate of rural poor, low savings ratio and low public awareness and information)."

Sustainable livelihood has gained popularity in the debates on development. As explained by Scoones (2015:492), approaches to sustainable livelihoods are at the lens of rural development in

general. It is for this reason that Israr *et al*. (2017:98) believe that "development and livelihood are interlinked with each other because the poor and rich both peruse livelihood for living". In attempt to highlight the rural development narratives and ideas, Ellis and Biggs (2001:439) presented a rural development idea timeline as reflected in Figure 2-2 below:

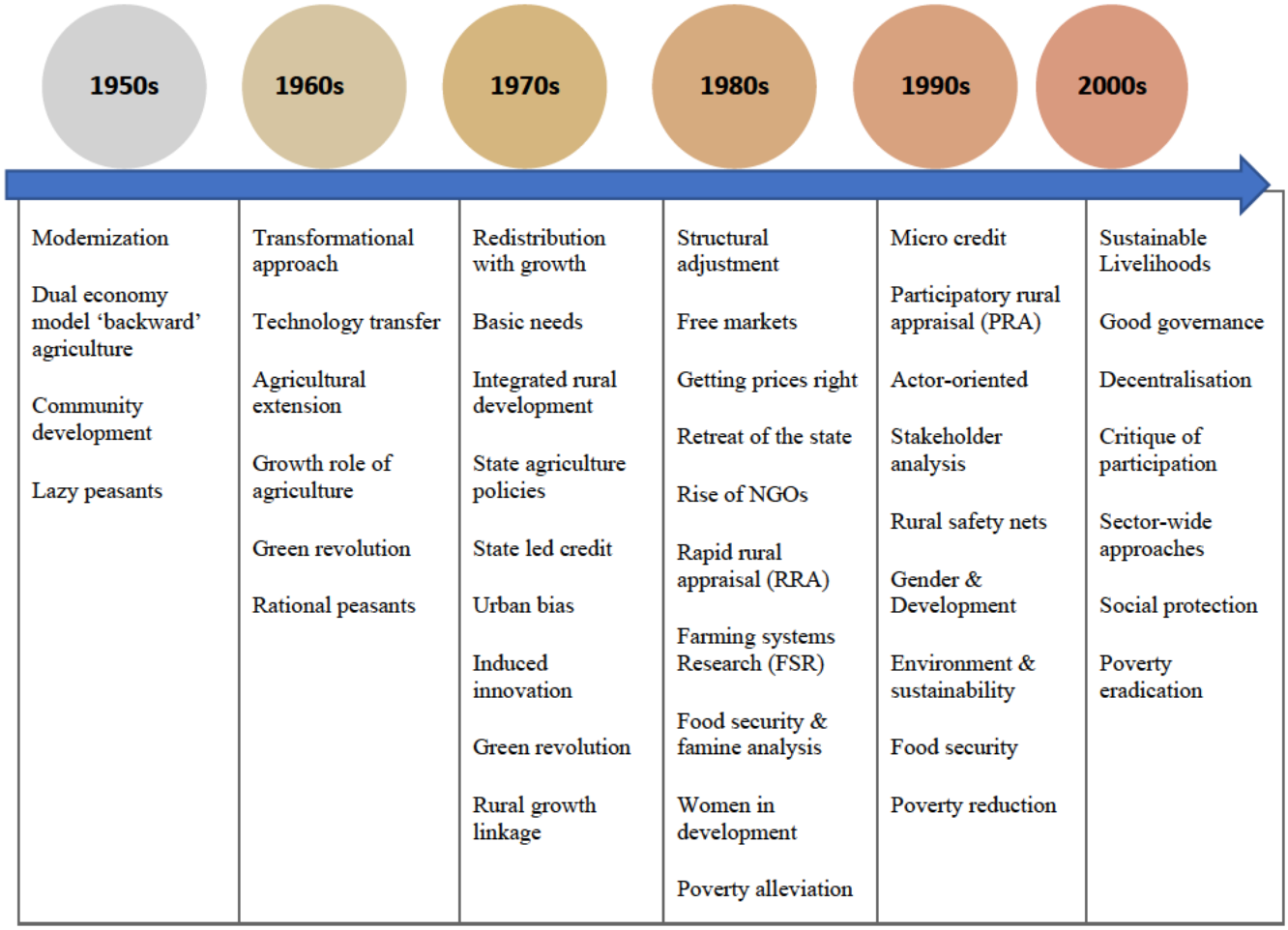


Figure 2-2: Rural Development Ideas Timeline

Source: Adapted from Ellis and Biggs (2001:439)

The ideas of rural development from 1950s to 2000s outline a variety of theories, themes and policy thrusts that have, to date, stimulated the rural development thinking as reflected in Figure 2-2 above. According to Ellis and Biggs (2001:439), the timeline of ideas basically depicts era characterised by modernisation in the 1960s, states intervention in the 1970s, market liberation in the 1980s and participation and empowerment in the 1990s and 2000s. Precisely, in the period of 2000 the trends of ideas for rural development brought the focus of sustainable livelihoods into

light from wider development paradigms. Sustainable livelihood approach, however, originated in the 1980s and 1990s, as described by Chamber and Conway (1992), but the focus as guiding principle to rural development ascended in the 2000s. Moreover, it is of interest to this study that the transition from the idea of poverty alleviation in 1980 to poverty reduction in 1990. Later, poverty eradication in 2000 confirms that poverty is the beast that continues to challenge sustainable rural livelihoods.

2.5.1 Rural Livelihood Strategies

Tesema and Berhanu (2018:7) state that livelihoods strategies for rural areas are either farming related and/or non-farming. Similarly, Biljohn (2015:67) asserts that the prime rural livelihoods strategies for rural areas include food security, agriculture, job creation, stimulation of rural economies, infrastructural development and reduction of poverty. In this context, Scoones (1998:07) is of the view that the implementation of livelihood strategies lies on livelihood resources which are in a form of capital. These livelihoods' resources are notably social capital, natural capital, human capital, financial capital and physical capital. In relation to this study, providing infrastructure development in its different forms in rural areas may help increase income and local assets for rural communities as increase in income activities and opportunities are essential preconditions for reducing poverty and employment creation. Thus, it will encourage rural people to expand the range of economic and social choice instead of being comfortable in their poverty and impoverished state.

2.6 Service Delivery and Infrastructure Development in Rural Areas

Generally, municipalities including Umzumbe Local Municipality have an essential social function of rendering basic services as set out in various chapters of the Constitution such as chapter seven and ten. As mentioned earlier in this chapter, infrastructure includes basic facilities and services, thus, becoming a tool through which service delivery is provided. Bohler-Muller *et al*. (2016:3) define service delivery as distribution of basic resources that citizens depend on. notably water, electricity, sanitation, infrastructure, land and housing. In this perspective, the absence of infrastructure in which service delivery is provided presents barriers for poor people to engage in economic activities such as lack of road infrastructure prevents transportation of commodities (Keke and Okem, 2016:10). Equally, Mamabolo (2016:28) assert that poor road infrastructure in rural areas is believed to be a major cause of road accidents, low economic output

and threat to the durability of transport modes, including taxis. Infrastructure and service delivery are considered to be interlinked and complementary in nature, for instance, infrastructure such as water pipes require services such as constant supply of water. While infrastructure is the tool that enable service delivery to be rendered, the provision of service delivery can be broken into different levels as shown in Table 2-3. The different levels were pivotal in determining and assessing extent into which service delivery is rendered against the existing infrastructure at Umzumbe Local Municipality.

Table 2-3: Levels of Basic Services

Service Type	Level 1 (Basic)	Level 2 (Intermediate)	Level 3 (Full)
Water	Standpipes within 200m	Yard taps tanks	In house water
Sanitation	Sewerage disposal	VIP Latrine Septic tanks	Full sanitation system
Electricity	5 – 8 AMP or non-grid	20 Amps	60 Amps
Roads	Graded	Gravel	Pave / tarred & Kerbs
Storm water	Earth lined opened channel	Open channel lined	Pipe and canal systems
Solid waste disposal	Communal (Residents)	Communal (Contractors)	Kerbside collection

Source: Adapted from Local government Budget and Expenditure Review (2011:197)

Table 2-3 depicts a summarised level of basic services in accordance to the provision of the infrastructural service type. It is a vision of all municipalities to provide basic services in line with level 3 (full) as reflected in Table 2-3 for people to enjoy full basic services at the decent and acceptable standard. The level of satisfaction with basic services in South African rural areas is generally low when compared to urban areas. In rural areas in particular, access to water, sanitation and electricity is significantly lower than those residing in urban areas (Gnade, 2013:3). Mamabolo (2016:32) also found that the level of satisfaction with roads provision in rural areas is concerningly low as most of the roads are easily swept away during rainy seasons. It could be argued that in most of the rural areas, the level of basic services is general falling within the lowest level. This necessity the highest need of infrastructural projects in rural areas to meet the needs of basic services.

Qwabe and Ruffin (2013:282) explain that, in South Africa, projects are central to the delivery of developmental endeavours and strategic programmes in line with the national targets for delivery of infrastructural projects in the post-apartheid regime. As such, the capacity to render and

maintain quality service delivery demands the development of infrastructure that is competently operated and well maintained for optimal results of service delivery. In this stance, Chigwata *et al*. (2019:34) remark that delivery is not concluded by the installation of infrastructure nor a ribbon cutting ceremony to celebrate the inauguration of the service. For instance, the laying of the pipe in the ground cannot be concluded as infrastructure development. It is considered that delivery of infrastructure would be the clean and pure water coming from the pipe for twenty-four hours a day, at the right pressure and for many years. This implies that an increase in the number of taps provided for the community is a fair indicator for infrastructure development. However, it must reflect sustainability measures such as providing reliable water supply at all times.

The role of infrastructure in enabling the rolling out of service delivery is escalated by the economic and social infrastructure. The economic infrastructure accounts for the consumption of basic goods such as water, electricity, roads and sanitation while social infrastructure accounts for the provision of houses, health care and education services (Olaseni and Alade, 2012:64). Both the social and economic infrastructures are central contributions to socio-economic development needed by the communities as enshrined in the Section 152 of the Constitution of 1996. The manner in which service delivery is planned and the rolling out of infrastructure development depend highly on the regulatory environment and structure of responsibility in the respective spheres of government. It is, however, a concern that basic infrastructural failure in terms of quality and reliability remains a great barrier to service delivery as the condition of infrastructure is the result of many factors including poor maintenance. In this regard, it becomes a major drawback that service delivery is highly dependent on infrastructure development which is seemingly an area of concern in rural areas.

In the aforesaid importance of infrastructural projects in delivery of basic services, several municipalities, including Umzumbe Local Municipality, are scaling up in infrastructure development as a baseline for discharging municipal basic services. Mubangizi (2019:555) echoes that municipalities have the mandate of growing local economies and providing infrastructure and basic services. Similarly, Oyedele (2016:1) affirms that "infrastructure is the medium, the tools and techniques of executing a project or programme or strategy" to the delivery of economic and social services. Table 2-4 offers some of the key infrastructural projects undertaken in year 2019 at Umzumbe Local Municipality to provide critical service to their community members.

Table 2-4: Infrastructure Projects at Umzumbe Local Municipality in 2019

Project name	Ward	Type	Project	Duration	Responsible Department
Ncazolo Access Road	2	Road Construction (Tarred)	Construction	Multi-year	Umzumbe Local Municipality: Technical Service
Umzumbe Municipal Office	10	New Municipal Building	Construction	Multi-year	Umzumbe Local Municipality: Technical Service
Housing Projects	All wards	Housing Construction	Construction and planning	Multi-year	Umzumbe Local Municipality: Technical Service
Turton Beach Development	19	Beach Development	Planning phase	Multi-year	Umzumbe Local Municipality: Planning Unit
Ntelezi Msani Heritage Centre	11	Tourism site construction	Construction	Multi-year	Umzumbe Local Municipality: Technical Service, Department of Transport (DOT) and Umzumbe LED unit
Nkanini Indoor Sport Centre	18	Sport ground construction	Construction	Multi-year	Umzumbe Local Municipality: Technical Service
Mhlabatshana Dam	04	Water provision construction	Construction	Multi-year	Umgeni Water Ugu District Municipality

Source: Adapted from Umzumbe IDP (2020/2021:97)

Table 2-4 above summarises the infrastructural projects at Umzumbe Local Municipality for the year 2019. Among the infrastructure projects, it includes projects related to provision of access roads, housing, water, sport facilities and tourism development. It is evident that in Umzumbe Local Municipality, infrastructure projects have received attention in response to the socio-economic demands. In relation to the above infrastructure projects, however, Chigwata *et al.* (2019:37) point out that the combination of poor quality of infrastructure projects, limitation of resources, inefficiency and act of vandalism are bringing infrastructural failure into perspective. Thus, it leads to extreme pressure into the condition of the infrastructure and the level of sustainability. Equally, Bohler-Muller *et al.* (2016:3) argue that infrastructural development initiatives are evident, however, the report on service delivery reveals that progress has been

uneven throughout the country with various issues at different areas including conditions of socio-economic variables and competence in municipalities.

Chigwata *et al.* (2019:35) provide the generic causes of infrastructure-related challenges that result in the failure to provide service delivery. The causes of infrastructure related challenges are summarised as follows:

- Fragmented planning and implementation;
- Lack of skills – technical skills;
- Insufficient budgets;
- Underspending of budgets;
- Life-cycle planning of infrastructure is not practised much;
- The generally shot tenure of political leadership as opposed to the needs of infrastructure;
- Inappropriate choice of infrastructure;
- Limited 'out of the box' thinking;
- Supply chain management – delays and inconsistencies;
- Political influences on prioritisation of projects and on procurement;
- Lack of accountability;
- High turnover rates of leadership and of staff;
- Ethical issues; and
- Inadequate community involvement.

These challenges reflect that service delivery and socio-economic development in municipalities, including Umzumbe Local Municipality, are inflicted by incessant challenges that continue to slow the progress towards sustainable rural livelihoods. Ndevu and Muller (2017:13) are of the view that the rising service delivery protests over the last two decades confirm that municipalities, as a first point of contact with the community, are struggling to provide service delivery within the required standards. Chigwata *et al*. (2019:35) argue that infrastructural efforts have been limited to physical infrastructure also referred to as tangible service delivery such as water, roads, clinics, electricity and houses while neglecting intangible service delivery that includes the building quality of life, restoration of human dignity and strengthen of mutual respect. It could be argued that the possible failure of government is largely assessed through the performance of municipalities as a sphere that is closer to their jurisdiction.

2.7 Infrastructure Development Challenges in Rural Areas

As previously mentioned, infrastructure development is the potential key to achieve sustainable rural livelihoods with socio-economic prosperity. Olanipekun, Aje and Awodele (2014:83) affirm that infrastructure development is one of the fundamental drivers and backbone of the economy at the lens of the infrastructure system. This includes water supply and sanitation, solid waste, electricity and transportation. Yet, it remains a complex and pressing developmental challenge especially in rural areas (Olaseni and Alede, 2012:68). Similarly, Chigwata *et al.* (2019:37) proclaim that the conditions of the current infrastructure are decayed, poorly maintained and erroneously operated or constructed. The implication of the incessant challenges of infrastructure development exacerbate poor health, unsafe water and sanitation, unreliable transportation and less productivity. It further unfolds other complex challenges notably poverty, unemployment and inequality, otherwise known as triple challenge of development which is to be discussed later (Qwabe, 2013:28).

According to Gaal and Afrah (2017:51), the level of infrastructure in South African rural areas namely roads, bridges, electricity, trails, water, and sanitation, are seemingly very low. Equally, Gnade (2013:2) found that urban areas in South Africa are mostly well-serviced in the provision of basic services such as electricity, water and sanitation, telecommunication and transportation, while their rural counterparts fall significantly short in these respects. The development of rural infrastructure is lagging behind which holds back economic development, raises unemployment and promotes poor standard of living. Moreover, the lack of infrastructure contributes to economic retardation and further encourages unemployment and poverty (Gaal and Afrah, 2017:49).

Figure 2-3 depicts a snapshot of the consequences of lack of infrastructure in general.

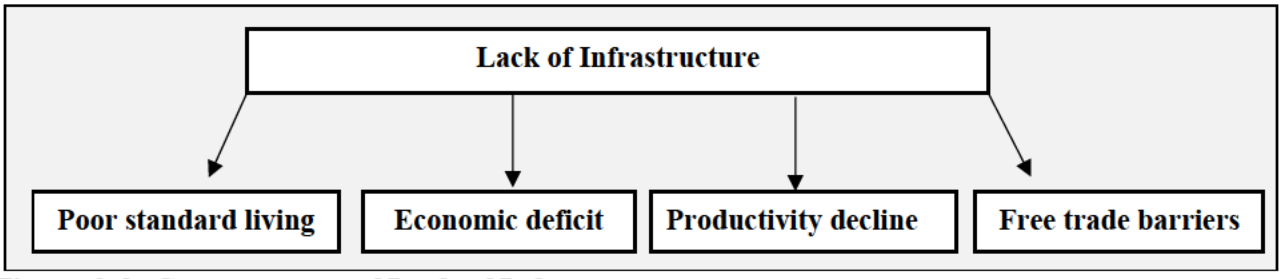


Figure 2-3: Consequences of Lack of Infrastructure

Source: Adapted from Gaal and Afrah (2017:51)

Figure 2-3 shows that poor standard of living, economic deficit, productivity decline and free trade barriers are the result of the lack of infrastructure. Rural people, for example, are exposed to living conditions with unreliable potable water and sanitation, no electricity, poor road conditions and no proper bridges. Gaal and Afrah (2017:49) note that lack of infrastructure means that rural people remain disconnected from basic service. As such, areas with poor road conditions means people would be unable to sell their products. They would have, as a result, little access to markets and services. Areas without electricity makes the industrialisation process unlikely. Additionally, the inability to access safe portable water and sanitation expose people to health hazards. Furthermore, infrastructure is associated with availability of production endeavours required for the traditional factors of production such as capital, labour, and entrepreneur (Gaal and Afrah, 2017:50). The availability of infrastructure contributes to economic development by increasing productivity and providing services, which enhance the quality of life.

The challenges related to road infrastructure, water provision and electricity are discussed subsequently.

2.7.1 Road Infrastructure

Road infrastructure is a powerful tool in stimulating the economies of the world, thus it becomes a prerequisite to socio-economic development of any country including South Africa (Ivanova and Masarova, 2013:263). In the same vein, Moeketsi (2017:6) describes road infrastructure as the infrastructure that underpins roadway, pathway or shoulder for transportation. This includes the provision of tarred, gravel and paved roads which ensures mobility for people, efficiency and effectiveness in the distribution of resources. Gbadamosi and Olorunfemi (2016:36) assert that human activities in space depends on quality of transportation infrastructure as a wheel that turns the economic activities. Thus, road infrastructure is a primary mode of transportation in rural areas of South Africa such as Umzumbe Local Municipality. In this context, Umzumbe Local Municipality is responsible for local roads otherwise known as access roads including the construction and maintenance of tarred or gravel access roads and the advancement of bridges and corridors which connect social services and markets in general (Umzumbe IDP 2020/21). Table 2-5 shows some of the completed road infrastructure projects that relate to construction of access roads in various wards as a core function of the municipality.

Table 2-5: Road Infrastructure Projects at Umzumbe Local Municipality for 2014-2017

Project name	Ward	Year	Project Duration	Project completion	No of jobs created
Construction of Mfazazane access road	17	2014/15	7 months	Yes	13
Construction of Ntatshane access road	08	2015/16	22 months	Yes	32
Construction of Guquka access road	15	2014/15	04 months	Yes	15
Construction of Sgananda access road	19	2014/15	03 months	Yes	15
Construction of Mdletshe access road	06	2014/15	03 months	Yes	8
Construction of Isiphofu Phase 2 access road	12	2014/15	06 months	Yes	11
Construction of Mfazazane Low level bridge	17	2016/17	06 months	Yes	9
Construction of Khathi access road	14	2015/16	05 months	Yes	11

Source: Adapted from Umzumbe IDP (2020/2021:118)

In spite of the road infrastructure projects at Umzumbe Local Municipality, as reflected in Table 2-5 above, the municipality is still grappling to meet the ever-increasing demand of road infrastructure while it remains a daunting challenge (Umzumbe IDP, 2020/2021:122). Mamabolo (2016:38) raises concerns that the South African government is largely focused on the quantity of service rendered including roads provision, while neglecting the quality of the service received. Equally, Ivanova and Masarova (2013:265) assert that expenditure on road infrastructure is evident and significant but poor quality is the major hindrance. Most of the upgraded and constructed roads, for example, are easily swept away during rainy seasons. This leads to motorists encountering difficulties in driving during rainy seasons as roads are muddy with huge potholes. When comparing South Africa with other African countries, the standard of road provision in terms of quality and quantity is unreasonably low (Mamabolo, 2016:33).

One could decipher that the upgrading and construction of new road infrastructure are carried out as shown in Table 2-5, however, the quality of infrastructure remains the greatest impediment. Schalkwyk (2015:78) points out that in rural areas road infrastructure is plagued with challenges related to dismal maintenance and construction capabilities. As a result, it threatens the economic development of local communities, and Umzumbe Local Municipality is no exception. Bhandari, Shari and Shrestha (2012:2) maintain that the stimulation of economic activities and provision of basic human facilities in rural areas demands an efficient rural transportation system which will improve the accessibility and mobility of the people. The consequences of poor road infrastructure

are categorised into accessibility and mobility, infrastructure provision and rural transport provision as depicted in Table 2-6.

Table 2-6: Consequences of Poor Road Infrastructure

Accessibility and Mobility	• Substantial human effort in daily water collection; • Burden on women in meeting household transportation needs; • Poor access to social and economic facilities such as clinics, school, hospital, telephones and municipal offices; and • Community isolation including long walking distances.
Infrastructure provision	• Roads and tracks that substantially prevent vehicle movement; • Inadequate basic road infrastructure such as lack of bridges and poor road surfaces; and • Poor provision and inadequate funding of road maintenance.
Rural transport provision	• Infrequent, unsafe and high-priced local transport services; • High vehicle maintenance costs and poor operating practices of motorised vehicles; and • High tariffs for transit and small loads.

Source: ARDF (2013)

The consequences of poor road infrastructure are universal and applicable to Umzumbe Local Municipality. Gbadamosi and Olorunfemi (2016:35) argue that transport infrastructural challenges have made it difficult for rural dwellers to access health care facilities, as a result of inadequate accessibility as presented by infrastructural backlog. The consequence of poor road infrastructure results in people either walking long distance or waiting for long periods of time for public transport to the cities and surrounding areas. Furthermore, people become deprived of receiving emergency assistance from ambulances or police services where majority of access roads are predominantly narrow, unpaved and/or in bad conditions.

2.7.2 Water Provision

Post 2000, the National Municipal demarcation led to water services function being assigned to municipalities as Water Service Authorities (WSA). The Constitution imposed a constitutional mandate to all WSA to ensure that every citizen, in their respective jurisdictions, has access to safe, reliable, affordable and sustainable water services (RSA, 1996). From this perspective, Sutherland, Hordijk, Lewis, Meyer and Buthelezi (2014:470) echo that water provision is an essential service that constitutes a fundamental and basic necessity for human survival as espoused in the Constitution. This brought into light that water is a basic human right and is an economic good. This means that municipalities ought to provide it with the highest level of quality. Thus,

water could be regarded as the centre of development that is necessary for improving people's lives. According to Umzumbe IDP (2020/21) Ugu District Municipality is the water service provider for the four local municipalities in the entire Ugu District Municipality, including Umzumbe Local Municipality. The water supply zone supplying the community members of Umzumbe Local Municipality are Mtwalume, Kwa-Ndelu and Mhlabatshane.

Maake and Holtzhausen (2015:269) argue that in most of the district municipalities "water supply is erratic and unreliable with the highest level of water loss through leakages in the infrastructure." The assertion could be related to Ugu District Municipality as water challenges remain rampant in Umzumbe Local Municipality. In this context, Duma (2017:1) affirms, that in many parts of the rural areas under Umzumbe Local Municipality, people are still unable to access adequate or safe drinking water and are also walking a long distance to collect water, especially in time of extensive water supply interruption. Similarly, the IDP for Umzumbe Local Municipality (2020/2021) confirms that the majority of people residing in Umzumbe Local Municipality are still struggling to access safe water, while others are continuously experiencing long water supply interruption. People in Umzumbe Local Municipality are forced to use multiple sources including JoJo tanks and containers to store water due to the lack of stable water supply system by Ugu District Municipality. It could be argued that while community members resort to collecting water from alternative sources of unknown quality to meet their domestic water needs including water tankers, rivers, springs and boreholes, it poses a major threat to their health.

Mahama, Anaman and Akoto (2014:2) also confirmed that people living in rural areas are experiencing difficulties in accessing water supply as compared to people who are living in urban areas. However, Tadesse, Bosona and Gebresenbet (2013:208) point out that countries around the world are grappling with water scarcity which exacerbates the state of vulnerability to the general state of water accessibility. The scarcity of water has a severe impact on rural areas of developing countries as eight out of ten people do not have access to safe and reliable water supply. In rural areas of Ethiopia, for example, the sources of drinking water for a sizeable population are unprotected springs, ponds and rivers which are exposed to contamination caused by people livestock, wildlife and uncontrolled flooding (Tadesse *et al*. 2013:208).

The need for quality of water service highly demands work infrastructure system including reservoir, dam, well, pump stations, borehole, pumping installation and purification work need to escalate to cope with the increasing demand for water. The lack of capacity to operate and maintain the water infrastructure is a serious impediment that sets back the achievement of sustainable water provision (Maake and Holtzhausen, 2015:269). Duma (2017:71) notes that ageing infrastructure, load shedding and environmental stress, such as drought, are the prominent factors that continue to obstruct Ugu District Municipality in providing quality water services for the residents in Umzumbe Local Municipality. The existence of these prominent factors confirms that water supply at Umzumbe Local Municipality is disrupted. In turn, it negatively impacts the livelihoods of community members in terms of their domestic needs including industrial, commercial and agricultural.

2.7.3 Electricity

Owusu and Asumadu-Sarkodie (2016:3) state that meeting the daily basic human needs of households, including health, lighting, cooking and mobility, demands energy. It is, however, overwhelming that over a billion people around the world are, to date, lacking access to electricity. Additionally, a large portion of those people are located in rural areas. The majority of rural households are relying on wood fuel, paraffin and candles as their main daily energy supply for cooking and lighting (Owusu and Asumadu-Sarkodie, 2016:3). The world energy outlook (2009) cited in Vermaak, Kohler and Rhodes (2014:129) identified three levels of access to energy services as listed below:

Level 1: The minimum level of energy required by households to satisfy basic human needs;
Level 2: the energy access required by households to improve productivity, and
Level 3: the level of energy access required by households to satisfy modern society needs.

The above stated levels can, thus, be aligned with the different type of energy sources that are utilised in each level.

Table 2-7: Types of Energy Sources

Traditional	Firewood, candles, gel, and other energy
Transitional	Gas, paraffin, coal, batteries, and car batteries
Modern	Electricity, generators, and solar system.

Source: Adapted from Vermaak *et al*. (2014:134)

Based on Table 2-7 and the outlined levels of energy access, households steadily ascend an energy hierarchy from level 1 to 3 as their livelihoods gradually improve. In this context, Vermaak *et al*. (2014:128) affirm that at level 1, most of the households rely on traditional sources of energy as reflected on Table 2-7. While their livelihood gradually improves, they move to transitional sources until they eventually reach the modern level. Owusu and Asumadu-Sarkodie (2016:3) argue that the energy needs are necessary for satisfying human, social and economic development. Developing sustainable energy sources is essential for tackling future poverty as access to modern forms of energy as reflected in level 3 above facilitates and assist in providing warmth, shelter, security, food preparation, cooking and storage. This leads to better health, education and general well-being (Vermaak *et al*. 2014:128). It could be argued that access to reliable and affordable power supply to the unserved rural and remote areas have a positive contribution to sustainable rural livelihoods in general.

The IDP for Umzumbe Local Municipality (2020/21) affirm that electricity at Umzumbe Local Municipality is mainly provided by Eskom. Vermaak *et al*. (2014:128) points out that KZN and Eastern Cape are the least electrified provinces among others, which have recorded the highest electrification backlog in the entire country. The IDP for Umzumbe Local Municipality confirms that the majority of households still do not have access to electricity. This has seen the municipality initiating a number of electrification projects over the years, as shown in Table 2-8 and Table 2-9, in response to the electrification backlog. On one hand, the municipality rolls out electrification projects through grants received from the Integrated National Electrification Programme (INEP) to extend electricity connections to households without electricity. On the other hand, Eskom provides energy supply to those households connected by Umzumbe Local Municipality. The electrification projects are presented below:

Table 2-8: Past Electrification Projects at Umzumbe Local Municipality

Electrification Project name	Village	Ward	Budget (in Million Rands)	Financial year	No of connected households
Nkehlamandla Project – Phase 1	Nkehlamandla	16	7.5	2012/13	265
Nkehlamandla Project – Phase 2	Nkehlamandla	16	5	2014/15	92
Nkehlamandla Project – Phase 3	Nkehlamandla	16	1.265	2015/16	45
St Nivard Project – Phase 1	St Nivard	9	5	2013/14	220
St Nivard Project – Phase 2	St Nivard	9	2	2014/15	80
St Nivard Project – Phase 3	St Nivard	9	7.3	2015/16	290
Amen Creche Project	Amen Creche	9	6	2015/16	242
Mgai KaMoya	Kwa Mgai	9	2	2015/16	80
KwaMbiyane	Mbiyane	9	5.8	2016/16	192
Mahlaya Project	Mahlaya	8	2	2016/17	50
Ekubusisweni project	Ekubusisweni	9	2.73	2015/16	48

Source: Adapted from Umzumbe IDP (2020/2021:71)

Table 2-8 shows past successful electrification projects at Umzumbe Local Municipality which have led to many households being connected to electricity for the first time. Despite the well-known electricity crisis across South Africa, the electrification projects succeeded as a number of households benefited from the projects. The supply of electricity in this rural context must be able to improve the human and socio-economic activities that demands electricity. Table 2-9 further presents electrification projects for the period of 2018/2019.

Table 2-9: Electrification Projects at Umzumbe Local Municipality for 2018/19

Project name	Village	Ward	Budget (in Million Rands)	Financial year	No of connected households
Mthwalume – Phase 1	Mthwalume	8	4.9	2018/19	198
Magwaza – Phase 1	Magwaza	9	0	2018/19	116
Magwaza – Phase 2	Magwaza	8	9.9	2018/19	397
Mbiyama – Phase 1	Mbiyama	8	4.8	2018/19	232
KwaMbiyane	Mbiyane	9	5.8	2016/17	192

Source: Adapted from Umzumbe IDP (2020/2021:72)

Based on the above, the electrification projects implemented at Umzumbe Local Municipality are significant for sustainable rural livelihoods. It articulated that Umzumbe Local Municipality is capable to provide impressive projects that are sustainable and reliable for meeting the basic

electricity needs for people of Umzumbe Local Municipality. The expansion of access to electricity for the people of Umzumbe Local Municipality is a symbol of progress and modernity. In this respect, it provides light into their darkness for socio-economic prosperity.

2.8 Quality of Infrastructure Development: A Rural Perspective

Aizawa (2019:173) articulates that the quality in infrastructure entails a degree of excellence and innovation in infrastructure services from the community perspective. This suggests that infrastructural services are required to be an extraordinary fit for the intended purpose with the highest possible standard. Fourie (2007:3) describes quality of infrastructure as the improvement of performance for both new and existing infrastructure stock for efficiency, safety and economic sustainability. In this stance, the quality of infrastructure is determined by the availability of physical infrastructure and the service it provides. For instance, quality of transportation infrastructure is determined by the condition of roads while the quality of electricity is determined by reliability of electricity supply. The quality of telecommunication infrastructure is determined by the speed of connectivity (Fourie, 2007:3).

Quality of infrastructure including quantity is essential on new and existing infrastructure. The demand for quality infrastructure in South Africa at large exceeds existing proficiency of human capital (Qwabe and Ruffin, 2013:278). It is noted with great concern that the country is two decades into democracy but the prevalence of infrastructural gaps in South Africa and in rural areas in particular remain inescapable. Gaal and Afrah (2017:49) affirm that, in rural areas, the provision of infrastructural services is lagging behind with formidable challenges of quality and access to infrastructure. This is attributed to the lower success rate of infrastructure projects in rural areas which is subject to a number of factors including incompetent human resource, insufficient operation and maintenance capacity and inappropriate procurement strategy. In the same light, Chigwata *et al.* (2019:34) affirm that there is ample evidence of infrastructure failure in South Africa as a result of poor operation and maintenance of a new and existing infrastructure. In many cases, infrastructure has been found to not comply with the required quality control and is also far from predefined specification of quality assurance. The quality and reliability of basic municipal infrastructure becomes impractical while it erodes the value of infrastructure in the interest of socio-economic development.

According to Aizawa (2019:173), in infrastructure, quantity and quality can be complementary but emphasis is drawn on maximising quantity, while attention to quality is highly neglected. It could be argued that, in this case, most of the municipalities are primarily focused on increasing the quantity of infrastructure. For instance, it is noted in Table 2-5, 2-8 and 2-9 that Umzumbe Local Municipality has indeed implemented different infrastructural projects and related activities for positive impact on transportation, electricity and communication. The perception in this stance is that quality of infrastructure would emerge by default. The persistence of poor-quality results in infrastructure deteriorating and collapsing swiftly which leads to unnecessary replacement costs. Thus, it challenges livelihoods for the people and the business sector at large. At the business level, for example, continuous interruption in infrastructure services such as supply of electricity and water, causes firms and business sector to incur additional costs to invest in power generators and water disposal equipment.

2.9 Triple Challenges of Development

South Africa, in general, is entrusted with a mandate of ensuring high rates of social and economic development for sustainable livelihoods. In this context, South Africans are overwhelmed by the existence of pressing socio-economic issues namely poverty, unemployment and inequality. These are known as the triple constraints of development (Qwabe, 2013:21). The persistence of the triple constraints of development is a global phenomenon as people, especially in rural areas, are increasingly facing world-scale problems including tolerance of the brunt of poverty, overcrowding, hunger and poor infrastructure (Wang, 2018:2).

In rural areas of Zimbabwe, for example, Sajid *et al*. (2018:1) point out that socio-economic factors including poverty and unemployment, poor roads and infrastructure, poor water and sanitation and poor education and health facilities are among other factors that continue to cripple rural livelihoods. It could be argued that the consequence of these so-called triple constraint of development is further aggravated by other developmental issues that exacerbate vulnerability of rural people. Sustainable rural livelihoods depend on socio-economic conditions of households (Sajid *et al*. 2018:3). It is pivotal that the exercise of ending the yawning gap of poverty, unemployment and inequality be tackled in detail. Poverty, unemployment and inequality are subsequently discussed.

2.9.1 Poverty

In the academic and political arena, there are a variety of definitions attributed to poverty that are understood and interpreted in various viewpoints. In this context, Prastyanti, Subejo and Sulhan (2018:125) state that there is no universal accepted definition of poverty, but scholars have defined and described poverty from their ideological outlook. Keke and Okem (2016:8) contend that poverty is the "lack of social and cultural, as well as economic means necessary to procure a minimum level of nutrition, to participate in the everyday life of society, and to ensure economic and social reproduction". In the same line of reasoning, Bila (2013:8) describes poverty as a condition in which an individual is unable to afford and access the basic human needs essential for survival such as clean water, nutrition, health care, education, clothing and shelter. In addition, Prastyanti *et al.* (2018:125) are of the view that poverty can be categorised into two dimensions, namely income poverty and human poverty. On one hand, income poverty concerns the monetary inability of an individual to satisfy their own basic needs which is often a result of unemployment or deprivation in other sources of income. On the other hand, human poverty concerns the inability to access basic services such as malnutrition, lack of opportunity and empowerment, resulting in poor quality of life. It could be argued that the availability of human needs, which can be categorised under the availability of social resources and basic needs, would result in human decency.

Ukwanda (2015:170) outlines that, in Africa in particular, millions of people are trapped in abject poverty, penury and wretchedness as a massive global outrage. The IDP for Umzumbe Local Municipality (2016/2017) confirms the existence of high level of poverty at Umzumbe Local Municipality. It is believed that the existence of poverty is traditionally linked with rural-urban migration, high illiteracy rate, unemployment and lack of socio-economic opportunities. Schalkwyk (2015:78) affirms that economic and social decay in rural areas are results of urban migration. Furthermore, the low level of education and skills make it even harder to secure a decent employment. The majority of the population at Umzumbe Local Municipality is dominated by people with low income levels, whereas others rely on government social grants and pension as their main source of income for survival. Umzumbe Local Municipality is also grant-dependent, which is obtained from the national government. With no other source of revenue, it becomes difficult to roll out basic municipal services, given the limited financial resources (IDP for Umzumbe Local Municipality, 2016/2017).

In line with the above, Swanepoel and De Beer (2010:8) contend that poverty from a community perspective needs to be taken into consideration as poverty in rural areas affects masses, not just individuals. The authors describe community poverty as a multidimensional concept which is broadly associated with factors such as poor housing, lack of safe water, lack of sanitation services, poor educational and health facilities, poor road network infrastructure and inadequate employment opportunities, apart from the lack of financial resources or lacking commodities. In this regard, it is contended that community poverty manifests in several elements which results in deprivation traps with characteristics of weak, poor, isolated people with feelings of powerlessness and vulnerability (Swanepoel and De Beer, 2010:8). Figure 2-4 illustrates the interaction of deprivation elements that forms a trap.

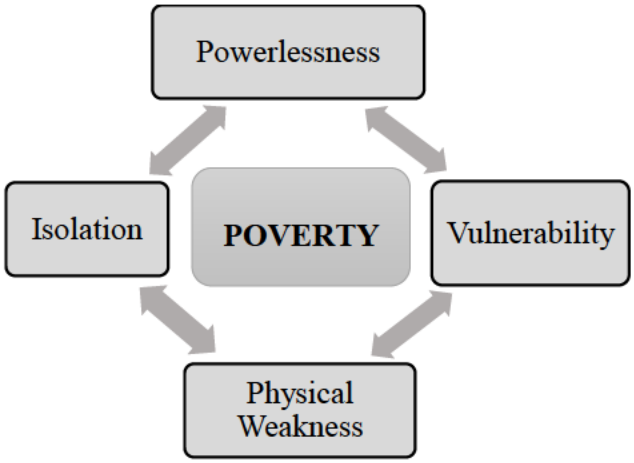


Figure 2-4: The Deprivation Traps

Source: Swanepoel and De Beer (2010:5)

The elements of deprivation traps are interrelated as each arrow points in two directions interchangeably, as depicted in Figure 2-4. While poverty is regarded as the main determinant of the elements of deprivation, it further extends to isolation, powerlessness, voice lessness, vulnerability and fears (Keke and Okem, 2016:7). The community of Umzumbe Local Municipality relates to the assertion. In relation to Figure 2-4, the isolation of rural areas from urban areas where social and economic infrastructure and service are available, it renders rural people voiceless which leads to physical weakness, thus making it difficult to break free from the trap (Swanepoel and De Beer, 2010:8). Srinivasu and Srinivasu-Rao (2013:88) state that lack of infrastructure is major structural weakness which leaves any country backwards. It allows people

to stagnate in poverty and poor quality of life. In a similar view, Prastyanti *et al.* (2018:124) contend that it appears to be a difficult task for poverty to be eradicated from rural areas despite numerous poverty reduction programmes implemented by various spheres of government. The authors further contend that poverty reduction in rural areas is not regarded as the main objective; rather, it is a consequence of the main objective which in turn reproduces rural poverty. In this case, the authors attest that the main objective is social transformation which neglects poverty reduction as the main objective in rural areas.

2.9.2 Unemployment

Poverty and unemployment are widely considered to be siblings with a direct connection to each other. Swanepoel and De Beer (2010:6) define unemployment as the proportion of people without any kind of formal or informal jobs that would normally provide remuneration. Similarly, Kingdon and Knight (2003) cited in Du Toit, Witte, Rothmann and Van den Broeck (2018:1) describe unemployment as "a 'beast' with an effect on economic welfare, production, erosion of human capital, social exclusion, crime and social instability." The state of being unemployed results in poverty as people cannot afford basic human needs and therefore rely on government for their survival. Equally, income poverty seems to be a key barrier for poor people to escape conditions of poverty, as they lack human capabilities to provide for their own basic needs. Thus, human suffering remains an extensive issue.

It could be argued that unemployment is a crippling socio-economic phenomenon that confines people of Umzumbe Local Municipality to mass poverty and inequality. Du Toit *et al.* (2018:1) argue that no studies were found to explore the qualitative findings that ascertain experience of unemployment in various countries. In addition, Ukwandu (2015:172) affirms that, across the globe, people are sinking in the ocean of poverty and unemployment. The concomitant effects of poverty spread to low self-esteem in families and individuals due to prolonged absence of job opportunities that is accompanied by feelings of hopelessness. Thus, it creates the culture of dependency and entitlement that poverty breeds. Fourie (2011) cited in Du Toit *et al.* (2018:1) argue that factors such as mobility barriers, marginalisation, and the characteristics of labour market facets cannot be overlooked when understanding unemployment in South Africa. Unemployment is, without doubt, a consequence of a number of factors that cannot be understated. Indeed, the factors highlighted by Fourie (2011) are of reference to Umzumbe Local Municipality

which gives rise to the phenomenon of rural-urban migration. It is generally accepted that job opportunities in rural areas are limited as compared to urban areas due to industrial state. It must, therefore, be accepted that rural municipalities and urban municipalities are never alike.

To this extent, Gumede (2010:20) cited in Qwabe (2013:29) argues that "catalyst to structural eradication of poverty and inequality is employment". It remains a concern that Umzumbe Local Municipality has no established town for economic activities that can potentially create employment opportunities, and it is worse in the municipal wards that are far from the municipal primary node (Turton) such as Hibberdene and Port Shepstone under Ray Nkonyeni Municipality. The IDP for Umzumbe Local Municipality (2020/21) confirms that majority of people are highly dependent on social grants, informal trading and substance farming. Furthermore, Umzumbe Local Municipality is characterised by low level of educational profile which in many instances encourages the unemployability of local people to remain in high numbers. Again, Schalkwyk (2015:78) affirms that rural areas in South Africa are plagued with the highest level of people with having a lack of education and skills which makes it difficult to find decent employment. It can be reasonably assumed that the high rate of illiteracy within the municipality is amongst the determinants of escalating unemployment rates.

2.9.3 Inequality

Inequality and poverty are entwined concepts as poor people remain with insufficient resources for their livelihoods to reach a socially acceptable level (Wesley and Peterson, 2017:2). While poverty is a serious social defect that coerces people to live under atrocious livelihoods, it goes beyond the lack of basic necessities but includes lack of dignity and self-respect. Bohler-Muller, Davids and Roberts (2016:4) point out that the large service delivery gap between rural and urban areas is apparent in the former homeland areas of Limpopo, Eastern Cape, North West and KwaZulu-Natal. Equally, Nkomo (2017:4) argues that it is over two decades into democracy but the urban-rural inequality is still evident with several structural differences to quality service delivery including infrastructure. For example, the minority including White South Africans residing in urban areas with full time jobs are likely to be receiving and enjoying quality services including infrastructure from local municipalities. On the other hand, the majority of South Africans including Blacks who are either unemployed or employed in an informal sector residing

in rural areas are likely to be receiving poor and inadequate service delivery (Nkomo 2017:4). This raises a question of competence for municipalities in ensuring equality of livelihoods of the people.

Turko (2010) cited in Qwabe (2013:32) proclaims that places of historical neglect, for instance rural areas, are plagued with the lack of basic services such as water, health and education. Mamabolo (2016:34) points out that the road infrastructure provision in South Africa is evident but the quality of the provided infrastructure varies considerably between urban and rural areas. In South Africa, for example, rural roads are mostly gravel roads as compared to urban areas, which threatens the economic advancement and livelihoods of the people in rural areas. This confirms that the notion of inequality still lives within the livelihoods of our communities. Inequality, which is of interest to this study, includes discrepancies in infrastructure development, socio-economic factors, income and livelihoods of the people. Wesley and Peterson (2017:2) state that Gini co-efficient is the main measures of inequality while South Africa's Gini co-efficient is estimated at 0.64 indicating the most unequal income distribution. The inequality of people residing in rural areas as compared to urban areas in terms of infrastructure development highlights that the democratic government has achieved minimal success in tackling inequality in rural municipalities, including Umzumbe Local Municipality.

2.10 The Impact of Covid-19 Pandemic in South Africa

Globally, the emergence of the Coronavirus in the late 2019, also famously known as Covid-19, has resulted in atrocious socio-economic status and livelihood consequences. It also further prolonged the progression of infrastructure-related projects. Buheji, Cunha and Beka (2020:213) assert that the deadly virus of Covid-19 has claimed the lives of many and subsequently presented devastating effect on livelihoods and socio-economic development across the globe. In response to the Covid-19 pandemic in South Africa, the lockdown and curfew measures were enforced to curb the spread of the virus. In adherence to the prescribed measures, various businesses, schools and community centres were forced to shut their doors (Buheji *et al*. 2020:213). The pandemic further introduced normalities that are may be seen as a disadvantage to people residing in rural areas.

Mapping from the features of government's response, Isbell (2020:2) found that during stricter lockdown periods most of the rural, poor and black South Africans in particular were extremely disadvantaged when it came to accessing basic and infrastructural services such as water, sewage

systems, sanitation, electricity and network connectivity for cell phone services. The disadvantage emerges as majority of rural households do not have piped or reliable water supply; communal toilets are still in existence in some places, supply of electricity is available in certain areas, while others do not have network connectivity in their places of residence (Isbell, 2020:2). This implies that for the majority of rural households accessing basic services such as water and sanitation means they must leave their houses and walk more than a kilometre to fetch water, to obtain network connectivity, for the supply of electricity, or for sanitation purposes. This subject those rural people at high risk of contracting or spreading the virus as they cannot comply with the 'stay-at-home' regulation.

According to Yoshino and Hendriyetty (2020: 4) Covid-19 has expanded the infrastructural gaps while putting more pressure on the existing infrastructure. As such, maintaining infrastructure development during the period of the Covid-19 pandemic is crucial yet challenging as the supply of infrastructure services has been exorbitantly interrupted by the pandemic (Clark-Ginsberg, Rueda, Monken, Liu and Chen, 2020). The lockdown period necessitated that all infrastructural projects come to a standstill, resulting in delayed project planning, lifecycle, implementation, and completion. The pandemic further impacted scope, cost, quality, and human resources of various infrastructural projects. In this context, the effects of the virus has manifested at the lens of many other avenues such as labour uncertainties, interruption on supply chain commodities and halt of economic activities. At the household level, the loss of employment and loss of life of household members have worsened poverty and inequality, especially for the vulnerable people (Mhlanga and Ndhlovu, 2020:1).

The pandemic has also brought into light the importance of the use of digital infrastructure for remote economic, education, and social activities. Isbell (2020:7) maintains that for people to continue to work or study remotely. It is critical that they have access to necessary infrastructure such as digital connectivity including smart phones, computers, and a strong internet signal. The rise in the use of digital infrastructure during Covid-19 period presented negative consequences on the rural people who are normally without access to digital infrastructure. This advocates that working and studying remotely, and conducting remote employment or commercial activities, would remain a challenge for rural people especially those in the informal sectors or whom depend on the day-to-day informal self-commercial. Rural people do not own smart phones, computers

nor have access to electricity supply while others have never used the internet before (Isbell, 2020:14). This pose the urgency to expand infrastructure delivery and access in rural areas where the need is most significant.

The pandemic has extensively resulted to socio-economic and infrastructural challenges. According to Mhlanga and Ndhlovu (2020:1), drastic changes are witnessed in the world's health care, social, economic, transportation and education systems as a result of the Covid-19 pandemic. Largely, the pandemic posed a serious threat to the attainment of Sustainable Development Goals (SDGs) particularly the ending of poverty by the year 2030. Whilst the virus is a public health catastrophe, negative implications are set to prevail on food pricing and food insecurity alike. It is anticipated that Covid-19 pandemic will increase pressure on the food price, putting more strain on vulnerable people who have issues with affordability (Buheji *et al*. 2020:213). It is most likely that unemployment and poverty rates will increase more than ever before. It is for these reasons that countries, including South Africa, will need to rethink possible strategies to build the livelihoods during and post Covid-19.

2.11 Rural Development Programmes

The end of the apartheid era has seen South Africa experiencing rural development programmes and strategies in pursuit of sustainable rural livelihoods. According to Obadire, Mudau, Sarfo-Mensah and Zuwarimwe (2013:277), the end of apartheid legislation marked a renewed focus for rural development in South Africa, envisaging an improvement in the general welfare of the majority previously marginalised people, especially those residing in rural areas. Programmes and policies pertaining to rural development were developed and implemented in development contexts across the globe, which intend to respond to the growing demands and diverse rural challenges. The series of rural development approaches were implemented in various stages with the intention of addressing challenges related to socio-economic growth and transformation. Moselane (2015:58) confirms that following the transition to democracy, several rural development programmes and strategies were introduced. These include:

- Phase 1: Reconstruction and Development Programme: 1994–2000;
- Phase 2: Integrated Sustainable Rural Development Strategy: 2000–2009 and
- Phase 3: Comprehensive Rural Development Programme: 2009–to date.

The three phases outlined above, confirms that the South African government has embarked on programmes of rural development. Across the globe, it could be argued that rural development programmes or approaches are battling to eradicate rural poverty amongst other issues, with a common shortfall for all the programmes. A discussion on these phases follows:

2.11.1 Reconstruction and Development Programme (RDP)

The inception of the Reconstruction and Development Programme (RDP) in 1994 raised hopes and service delivery aspirations for millions of South African citizens. According to the African National Congress (ANC) (1994) cited in Musiwalo (2013:30), RDP as a policy is described as "an integrated, coherent socio-economic policy framework that seeks to mobilise all people regardless of skin colour and combine resources to build a democratic South Africa". The RDP was established under five key focal elements including meeting basic needs, developing human resources, building the economy, democratising the state and society and rebuilding South Africa in general (RSA, 1994:7). The RDP was therefore considered as the social-economic policy which prioritised the redressing of social and economic basics of the country such as poverty and unemployment. According to Moselane (2015:59), various comprehensive rural development strategies were then grounded under the framework of the RDP policy. The strategies include, amongst others:

- Rural Development Strategy (1995);
- Growth, Employment and Redistribution Strategy (1996);
- Rural Development Framework (1997);
- White Paper on South African Land Policy (1997); and
- Agricultural Policy in South African (1998).

It is generally accepted that the RDP was the first democratic policy that identified the need for transformation in South Africa. The transformation emphasised the need to end the principles of racial segregations imposed by the white government, which encouraged rural deprivation of the rural dwellers. The RDP formed a major policy initiative of the ANC in attempt to integrate, reconstruct and reconcile service delivery. This included a priority of responding with solutions to national unemployment and poverty challenges.

2.11.2 Integrated Sustainable Rural-Development Strategy (ISRDP)

Moselane (2015:61) describes the ISRDS as a programme that integrated service delivery by co-ordinating planning, allocating of resources and co-ordinating implementation of development by government. The focus of the rural development saw the ushering of ISRDS which was later changed to Programme. In this perspective, the ISRDP identified local government as the key driver of the programme with the intention of co-ordinating existing development issues to achieve a greater impact (Ramovha, 2016:26).

The ISRDS was adopted to redress some of the pitfalls witnessed in the RDP, including the minimal stakeholder engagement. The ISRDS was a strategic plan that intended to transform rural areas into an economical viable and a socially stable and harmonious sector. The fundamental characteristics of the programme confirm that it was based on a decentralised approach by integrating programmes at the level of municipalities for synergistic rural development. It could be argued that the ISRDS was disparaged for the lack of implementation guidelines. Moreover, the programme failed to achieve its desired target because it was solely relying on existing intergovernmental fiscal allocation without a dedicated budget and executive capacity.

2.11.3 Comprehensive Rural Development Programme (CRDP)

The first term of office for the former President, Mr Jacob Zuma in 2009, resulted in the change of administration, among other things, which saw the establishment of the Department of Rural Development and Land Reform (DRDLR). The department introduced the CRDP as a cross-cutting initiative in 2009 considering the lessons learnt from the ISRDS as a predecessor (Ramovha, 2016:30). The central purpose of the CRDP is to expedite "integrated development and social cohesion through participatory approaches in partnership with all sectors of society." It puts emphasis on the need to respond to rural poverty and food insecurity by taking advantage of the natural resources with the view of creating vibrant, equitable and sustainable rural communities (CRDP Framework, 2009:1). In addition, the CRDP is entrusted with the mandate of attacking underdevelopment, hunger, poverty, unemployment, lack of service delivery and other social ills that seems to be a synonym to the state of rural areas in general (CRDP Framework, 2009:1). Bila (2013:26) asserts that the CRDP intends to achieve the ultimate vision of the CRDP using a three-pronged strategy as a holistic approach. Figure 2.5 denotes the three-pronged strategy as alluded below:

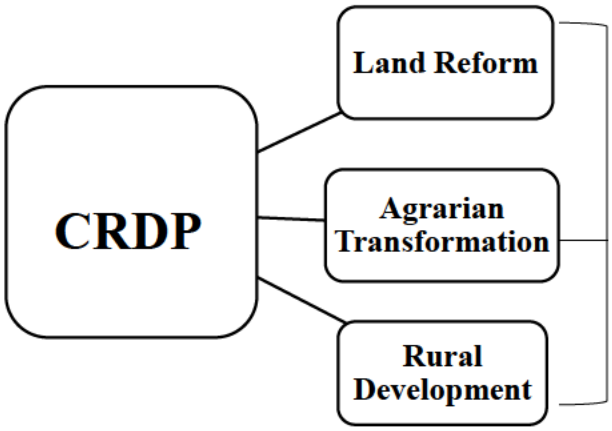


Figure 2-5: Three-Pronged Strategy of the CRDP

Source: CRDP Framework (2009:9)

Land Reform: the question of land reform is the constitutional mandate that binds the three-pronged strategy. In this stance, the land reform aspect aims at focusing on Restitution, Redistribution and Tenure Reform Programmes. This aspect will accelerate the process of settled claims and outstanding settlement claims while developing a less costly alternative model (CRDP Framework, 2009:9).

Agrarian Transformation: is the rapid fundamental change in relations to land, livestock, cropping and community. The rationale of this aspect includes the formation of rural business initiatives, agro-industries, co-operatives, cultural initiatives and vibrant local markets in rural settings and the empowerment of the rural community members (CRDP Framework, 2009:9).

Rural Development: this concept bears resemblance to the elucidation of rural development above. This implies that through community-led initiatives, rural people should take advantage of the natural resources for mitigating the impact of poverty and other socio-economic challenges (CRDP Framework, 2009:9).

Obadire *et al.* (2013: 278) explain that the element of rural livelihood embodies the advancement of social and economic infrastructure, whereas agrarian transformation entails an increasing production, sustainability in the use of natural resources, establishing and strengthening rural livelihood. and food security. Furthermore, land reform programmes bring about land

redistribution, land tenure reform and land restitution claims. Sebiloane (2015:85) argues that land reform, agricultural transformation and rural development are assumed to be intertwined with the development agenda, but the clarification of the relationship remains to be ill-defined for CRDP. In spite of such, the three-pronged strategy, as represented above, makes it clear that the CRDP intends to achieve its goals through agrarian transformation and strategic socio-economic investment that sought to benefit the entire rural population, including Umzumbe Local Municipality.

According to the CRDP Framework (2009:3) the key thrust of the programme is the endorsement of integrated rural development that covers an array of sectors including agriculture and food security. The IDP for Umzumbe Local Municipality (2017/2018) affirms that nearly 10 percent of land use accounts to agricultural activities, while 19 percent represents a potential commercial agriculture. The predominant emphasis of the CRDP is on agrarian reform that is interpreted to indicate 'a rapid and fundamental change in relation to land, livestock, crop and community.'

2.12 Role of Spheres of Government in Infrastructure Development in South Africa

The South African government is divided into three spheres of government, namely national, provincial and local government, with clearly defined roles and responsibilities in service delivery. The spheres are functioning within decentralised structures that are simultaneously dependent and interconnected, while infrastructure development focuses on several key national, provincial and local sectors. In this context, Section 40 (1) of the Constitution segregated the spheres of government to be distinctive, interdependent and interrelated (RSA,1996:25). Figure 2-6 depicts the relationship between the spheres of government.

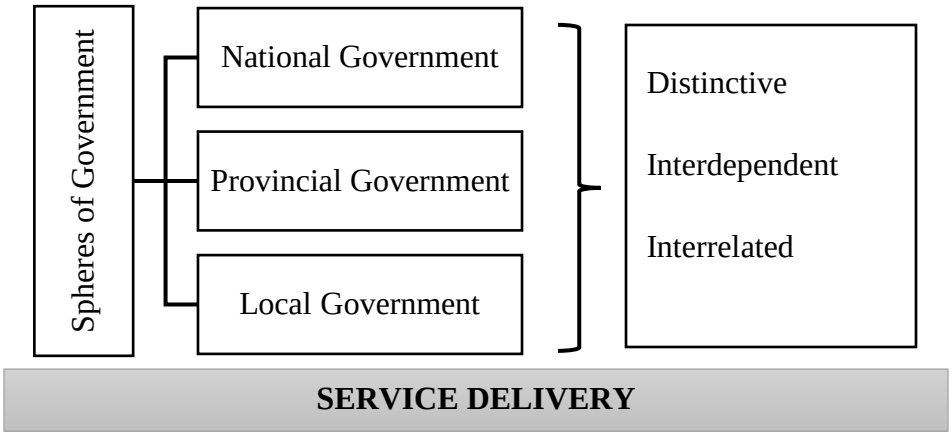


Figure 2-6: Spheres of Government

Source: RSA (1996)

The role and responsibilities of each sphere of government, particularly on infrastructure development and sustainable rural livelihood, is subsequently discussed.

2.12.1 National Government

Chapter 4 and 5 of the Constitution establish the national government that consists of parliament and national executive. According to Nzimakwe and Ntshakala (2015:828), the national government is primarily responsible for policy formulation, division of revenue for all spheres of government, monitoring and evaluation, support, and exercising oversight role in the entire country. This implies that national government is mandated to create enabling policies and financial and institutional support for the development of municipal infrastructure. While the national government is directly responsible for national policies that guides the provision of service delivery including infrastructure development in other spheres of government, the national allocations by the national treasury is also fundamental in enabling the rolling out of service delivery and infrastructure development. The IDP for Umzumbe Local Municipality (2020/21) affirms that Umzumbe Local Municipality, as a rural-serving municipality, is fully dependent on national allocations in terms of grants, such as Municipal Infrastructure Grant (MIG), to execute their municipal services.

In this context, the national government allowance becomes a fundamental instrument that empowers municipalities, including Umzumbe Local Municipality, to deliver on local infrastructure development for sustainable rural livelihoods. Makgamotho, Makhuru and Sebola

(2013:344) state that the MIG is the largest conditional grant allocated to municipalities to engage on projects and programmes that extend the provision of municipal infrastructure, which includes access to water and sanitation, electrification and public transport infrastructure. National government supports socio-economic development of municipalities through the allocation of funds for infrastructure investment, but also has a responsibility of providing oversight in ensuring that allocations are spent as anticipated on the ground. It is, however, a challenge that municipalities, as the closest sphere of government to people, continues to encounter massive backlog in infrastructure that prevents the ability to provide access to basic municipal services (Makgamoth *et al.* 2013:344).

2.12.2 Provincial Government

Section 103 of the Constitution establishes and demarcates nine provinces in South Africa including Eastern Cape, Western Cape, Northern Cape, KwaZulu Natal, North West, Free State, Gauteng, Limpopo and Mpumalanga with their own provincial legislature and provincial executive (RSA, 1996). In this context, Nzimakwe and Ntshakala (2015:829) outline that the provincial government is responsible for policy implementation from the national government and provincial legislation. It ought to further monitor, support, regulate and supervise local government. Similarly, Niekerk (2015:845) is of the view that provincial government is responsible for the implementation of national policies and the government performs the function of providing social infrastructure including education, health, human settlement and social development. In addition, the provincial government needs to ensure that the municipalities are providing effective and efficient service delivery by regulating the conduct of local government, monitoring their activities, providing support in their function and providing intervention where possible (Makoti and Odeku, 2018:99).

The department of Cooperative Governance and Traditional Affairs (COGTA) at national and provincial spheres is directly responsible for the functioning of local government. Precisely, the provincial department of COGTA has a role to directly support municipalities in the provision of new infrastructure, as well as operation, maintenance and upgrade of existing infrastructure. It is also responsible for strengthening the capacity of municipalities to efficiently deliver infrastructure services to the required standard. The key responsibilities of provincial COGTA, among others, are as follows:

- Strengthen and support municipalities
- Ensure that IDPs are properly prepared
- Develop the capacity of municipalities to effectively manage the infrastructure provided using MIG funds
- Monitor the financial performance of municipalities
- Provide technical advice on the MIG programme related to infrastructure

Despite the provision of social infrastructure as mentioned above, provincial government, in particular the department of COGTA, exercises a supervisory role to municipalities including Umzumbe Local Municipality and further provides intervention as stated in Section 139 of the Constitution. The infrastructural backlog across municipalities as stated by Makgamoth *et al.* (2013:344) raises question of capacity of provincial government in terms of their supervisory role.

2.12.3 Local Government

Chapter 7 of the Constitution establishes local government as a lower sphere of government that regards municipalities as custodian of the provision of basic needs to local communities. Niekerk (2015:845) states that the core function of local government entails the provision of basic services including municipal infrastructure, access roads, streets lights, refuse removal, electricity, water and sanitation. In the same vein, Nzimakwe and Ntshakala (2015:829) are of the view that municipalities are a focal point of delivery of government services as all development endeavours unfolds within local level. Section 152 of the Constitution outlines the key objectives that guides the functioning of local government in ensuring an acceptable and a reasonable life for their serving communities, including Umzumbe Local Municipality. As set out in the Constitution, the delivery of basic services falls primarily within the mandate of municipalities, although national and provincial spheres set regulatory frameworks. Municipalities have a responsibility for direct service provision including water supply, access roads, sanitation, drainage and waste management. While social service including health, education or transport are generally decided at national and provincial level, municipalities can influence the accessibility of some of these services at local level.

Despite the flow of responsibility among the spheres of government, it remains a concern that rural serving municipalities such as Umzumbe Local Municipality continue to battle with providing quality infrastructure development for sustainable livelihoods. Globally, Khoza (2009) cited in

Lawal (2014:139) indicates that countries around the world have placed the provision of infrastructure at the centre of development, particularly in the front line of local government for the improvement of the livelihoods of the citizens at the grassroot level. Zondi *et al.* (2017:629) argue that while spheres of government in general are entrusted with the responsibility of providing service delivery in a responsive and efficient manner including infrastructure development, the performance of the municipalities are dismissed. In Nigeria, for example, Lawal (2014:140) points out that the need to facilitate rural development led to the establishment of local government. In rural areas of Nigeria, however, challenges are evident and these include lack of adequate, affordable and reliable infrastructure services. The rural livelihoods are therefore confronted with unsafe water supply and insufficient, impassable roads and a lack of electricity (Lawal, 2014:139). South African local government is no exception. Municipalities needs to prioritise in their role in infrastructure development, otherwise livelihoods of the citizens will remain overwhelmed by recurring infrastructure backlogs.

2.13 Legislative Framework

Legislation provides an overarching role in guiding the rolling out of service delivery and infrastructure development in particular. This section provides a legislative context in relation to infrastructure development and sustainable rural livelihoods. For the purpose of this study, the key pieces of legislative guidelines are summarised as follows:

Table 2-10: Legislative Framework

Legislation or Policy	Main Purpose
Constitution of the Republic of South Africa (RSA) of 1996	As the supreme law of the country, it establishes local government in Chapter 7, Section 152 and derives objectives, powers and functions of local government for the enhancement of service delivery.
Municipal Structures Act 117 of 1998	Provides an establishment of municipalities in relation to the categories and types of municipalities. This stipulates the division of functions and powers of municipalities.
Municipal Systems Act 32 of 2000	Makes provision for the development of systems of governance in local government.
Infrastructure Development Act no 23 of 2014	Ensures that infrastructure development in South Africa is given priority

Source: Researcher's construct (2020)

2.13.1 Constitution of the Republic of South Africa of 1996

The Constitution is the supreme law of the country that bides all spheres of government in discharging their respective functions. Section 27 of the Constitution under the Bill of Rights states that "all citizens have the right to the access to basic needs such as health care, water, food and social security." The provision forms a constitutional mandate that compels all the spheres of government in their functions to ensure that these rights are achieved within its available resources. From a local government perspective, Section 152 (1) prescribes the basic objectives for local government in rendering good quality life for citizens in their respective municipalities (RSA, 1996:51). These basic objectives of local government include having to:

- Provide democratic and accountable government for local communities;
- Ensure the provision of services to communities in a sustainable manner;
- Promote a safe and healthy environment; and
- Encourage involvement of communities and community organisations in the matters of local government

In relation to this study, the objectives dictate that local government has a duty to ensure the provision of services including infrastructure development. While the Constitution affords every citizen with the right to basic and universally accepted bundle of needs for human survival including shelter, sanitation, clean water and food, the objective dictates that the basic needs must be provided in a sustainable manner. As mentioned by Olaseni and Alade (2012:64) earlier in the chapter, infrastructure is the vehicle that enables the provision of the basic needs. This implies that the development of infrastructure must be provided in the manner that is sustainable, fair and of a good standard. The notion of infrastructure development emphasises sustainable livelihoods as the provision of basic needs inspires the elimination of human deprivation.

2.13.2 Municipal Structures Act 117 of 1998

The Municipal Structure Act 117 of 1998 regulates the internal structure and processes within local government. The Act provides for the establishment of the local government framework that defines how local government should function. Moreover, Chapter 4 of the Act, Part 4 specifically, provides for the development of ward committees as a mechanism to assist in terms of the engagement with communities in the matters of local governance. To a large extent, the Act seeks to instil a new culture of governance that will encompass democratic practices.

2.13.3 Municipal Systems Act 32 of 2000

The Municipal Systems Act 32 of 2000 was promulgated with the intention of building a strong local government with a new vision. This was achieved through the regulation of core municipal organisation, planning, participatory and service delivery. The Act is positioning the municipalities to render progressive service delivery and to move towards achieving social and economic development as enshrined in the Constitution of RSA. Furthermore, the Act places an emphasis on the need for community participation to contribute to the capacity of local government. The Act complements the Municipal Structures Act with the collaborative approach in mobilising the capacity of local government of which underpins the renewed focus of development.

2.13.4 Infrastructure Development Act 23 of 2014

The Infrastructure Development Act 23 of 2014 seeks to ensure that infrastructure development in South Africa is given priority in the developmental affair. It encourages that the developmental goals of the country should be endorsed through the investment of infrastructure. The Act affirms that infrastructure is a significant economic or social importance for all South African citizens (RSA, 2014:2). Section 2 (i) as part of the objectives of the Act, stipulates that practices and procedures intended for infrastructure development should not be in a transactional manner, but in the manner that expedites the national development goals. This includes skills development, job creation, local industrialisation and co-operative development (RSA, 2014:8). This piece of legislation was promulgated to prioritise and speed up of infrastructure development because the apartheid government invested in infrastructure that catered for the minority.

2.14 Chapter Summary

This chapter presented insights into infrastructure development and sustainable rural livelihoods in general and Umzumbe Local Municipality in particular. Concepts and related ideologies with regards to infrastructure development and sustainable rural livelihoods were discussed. Furthermore, the nexus between infrastructure development and sustainable livelihoods were also elaborated. In this perspective and informed by the wider literature review, infrastructure development initiatives in general and on the basis of infrastructural projects at Umzumbe Local Municipality were uncovered and interrogated. However, infrastructure development seemed unsatisfactory and remain far below the expected standard.

CHAPTER 3
THEORETICAL FRAMEWORK UNDERPINNING THE STUDY

3.1 Chapter Introduction

This chapter presents a theoretical framework that underpins the study while providing analysis of the theoretical basis which contextualised the study. Udo-Akang and Faculty (2012:93) warn that an academic research project may not be undertaken if not based on a particular theory. Therefore, this study adopted a theory of infrastructure-led development together with Sustainable Livelihood Framework (SLF) under Sustainable Livelihood Approach (SLA) in exploring infrastructural development and sustainable rural livelihood at Umzumbe Local Municipality. This chapter begins by highlighting the importance of the theoretical framework in research to establish its need and relevance to a research study. Furthermore, it unpacks the theory of infrastructure-led development and SLF as chosen theory and framework. To this end, the discussion will tune into the alignment of infrastructural development and sustainable rural livelihoods at Umzumbe Local Municipality.

3.2 Theoretical Framework: The Need and Relevance in Research

The term theoretical framework embodies two concepts which are herein referred to as theory and framework. On the one hand, Du Plooy-Cilliers *et al.* (2014:37) define a theory as an array of interrelated constructs, definitions and relationships that shows a perspective of a phenomenon in a systematic manner. Based on this definition, a theory can be understood as the consolidation of ideas which are interconnected showing how and why a phenomenon transpires, leading to a specific event. Meanwhile, a framework is considered as a supportive structure to a theory. On the other hand, a framework is described as the supportive structure that is used to form a decision or judgement. The combination of a theory and framework is considered as a theoretical framework which forms a foundation on which a researcher constructs his/her own research inquiry. The research is grounded on the existing theory which further relates to and reflects the trends of the research problem (Adom, Hussein and Agyem, 2018:483).

Neuman (2011:85) describes a theoretical framework as an outline of developed theories with assumptions, concepts and specific social theories. Similarly, Adom *et al*. (2018:483) state that a theoretical framework presents a structure that shows how the researcher defines the study philosophically, epistemologically, methodologically and analytically. Furthermore, it guides the

choice of research design, data analysis and the type of data to be accumulated. Using the same line of reasoning, Grant and Osanloo (2014:13) are of the view that in the field of enquiry, a theoretical framework provides a common worldview that supports one's thinking about the research problem and analysis of data. In this instance, the presentation of a well-established theoretical framework convinces the research audiences that the study is not based on the personal instincts of the researcher, but that it is firmly grounded on an established theory or theories selected from credible academic sources (Grant and Osanloo, 2014:13). For this study, the theory of infrastructure-led development together with SLA were adopted to explore infrastructural development and sustainable rural livelihoods at Umzumbe Local Municipality.

The theoretical framework was essential for this study as it provided a theoretical basis, justifying the assumptions and existing clarifications in relation to the infrastructural development and sustainable rural livelihoods. It connected the researcher to the existing literature and provided assumptions that guided the research study. In addition, it located the study in a scholarly fashion as no academic research for any discipline may be undertaken without due consideration of a theoretical basis (Adom *et al*. 2018:483). Through the adopted theoretical framework, a link between the focus of the study and the research problem was better established which further guided the choice of research design and plan for data analysis. In this context, the findings of the study were meaningful and generalisable.

The theory of infrastructure-led development posited that infrastructural dearth or backlog weakens the South African development landscape as most of the rural areas bear the brunt of severe developmental challenges including the triple constraints of development such a poverty, unemployment, and inequality. Concurring, the SLA showed the complexity livelihood realities which reflected on what exactly underpins livelihoods in rural areas. This provided a myriad of explanations as to why and how rural areas remain underdeveloped with significant infrastructural backlog and hardship in their livelihoods. The adopted theoretical framework that underpins this study is discussed in detail hereunder.

3.3 Theory of Infrastructure-Led Development

This study adopted the theory of infrastructure-led development established by Pierre-Richard Agénor in 2006. According to Agénor (2010:2), the theoretical foundation claims that a lack of quality infrastructure development has seen several low-income countries, including Sub-Saharan Africa, struggling to achieve acceptable economic and social progress in a sustainable manner. In his analysis, Agénor argues that the impact of poor quality infrastructure development has most notably revealed socio-economic issues that continue to force people to live below the poverty lines. The theory, therefore, postulates that sustainable livelihoods depend directly on the availability of adequate and quality social and economic infrastructure, namely roads, electricity, telecommunication, sewage, water and sanitation, education and health care services (Agénor, 2010:2). Qwabe (2013:25) argues that the competence to provide health care, high-quality education, housing, water, sanitation and other basic services is mandatory to human development. Evidently, Section 26 and 27 of the Constitution of the Republic of South Africa spells out that shelter, sanitation, clean water and food are amongst the basic needs for human survival (RSA, 1997:11). The linkage between social and economic infrastructure is evident, with the provision of basic services that are fundamental to human existence.

According to Agénor (2010:2), development of infrastructure that is competently operated and consistently maintained underpins the basic condition for human development with several benefits to the quality of life, including economic growth, socio-economic development and poverty reduction. Thus, the theory advocates that access to clean water and sanitation directly improves the health conditions of the people which, in turn, increases productivity. Furthermore, access to electricity reduces cost of boiling water and spending time on collecting smoky traditional fuel for cooking. Proper road conditions enable accessibility of various areas while reducing transportation costs, resulting in business investment and tourism (Agénor, 2010:3). Similarly, Keke and Okem (2016:10) opine that quality infrastructure development has a great potential of enabling rural people to focus on socio-economic activities instead of performing mundane activities such as collecting water and smoky traditional fuel for domestic use. Thus, infrastructure is an umbrella of socio-economic activities. Figure 3-1 presents the constructs of the theory of infrastructure-led develeopment.

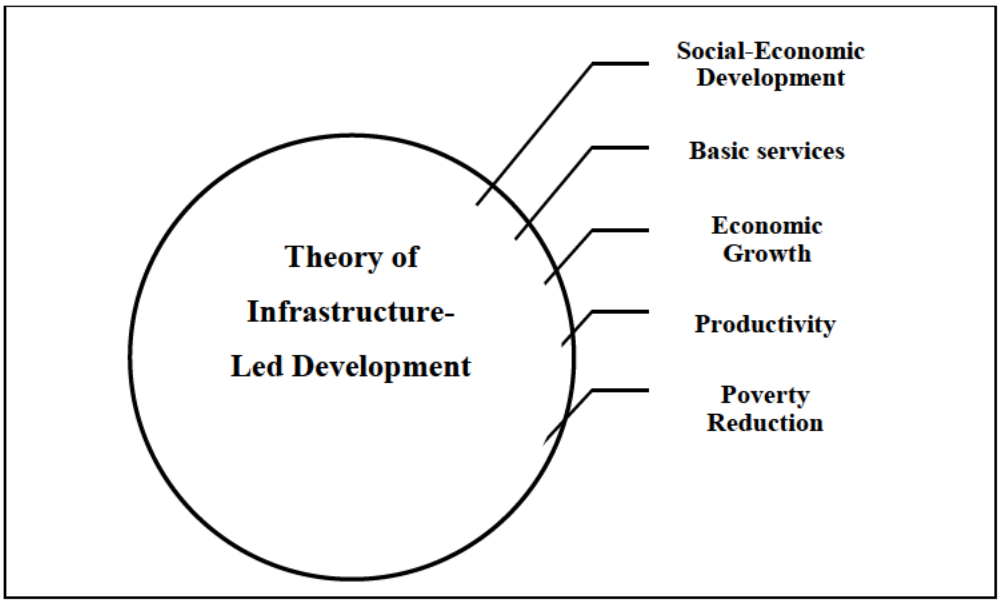


Figure 3-1: Theory of Infrastructure-Led Development

Source: Agénor (2010:2)

Figure 3-1 illustrates constructs that provides a theoretical understainding on the development of infrastructure. The development of quality infrastructure could be considered as the driving force and viable ingredient in achieving socio-economic development and sustainable livelihoods. It could be argued that both social and economic infrastructure become complementary factors that give impetus to the growth of the rural economy, poverty alleviation and community well-being which offer decent livelihoods. Oyedele (2012;5) concurs that adequacy of basic infrastucture delivery is directly related to the quality of life for the community. The author emphasises that the investment in both social and economic infrastructure has a direct and an indirect role in physical assets and social services. Schalkwyk (2015:73) points out that infrastructure development takes place in economically geographical spaces with effects and outcomes that are required to be achieved before the impact of development is assessed. The theory of infrastructure-led development presents a positive relationship; development efforts are influenced by several factors that capture the improvement in the standards of living.

The study by Agénor and Moreno-Dodson (2006:409) entitled 'Public infrastructure and growth: New channels and policy implication' has identified several channels that show how infrastructure development impacts growth as reflected in Figure 3-2. Thus, it complements the fundamental basis of the theory of infrastructure led-development.

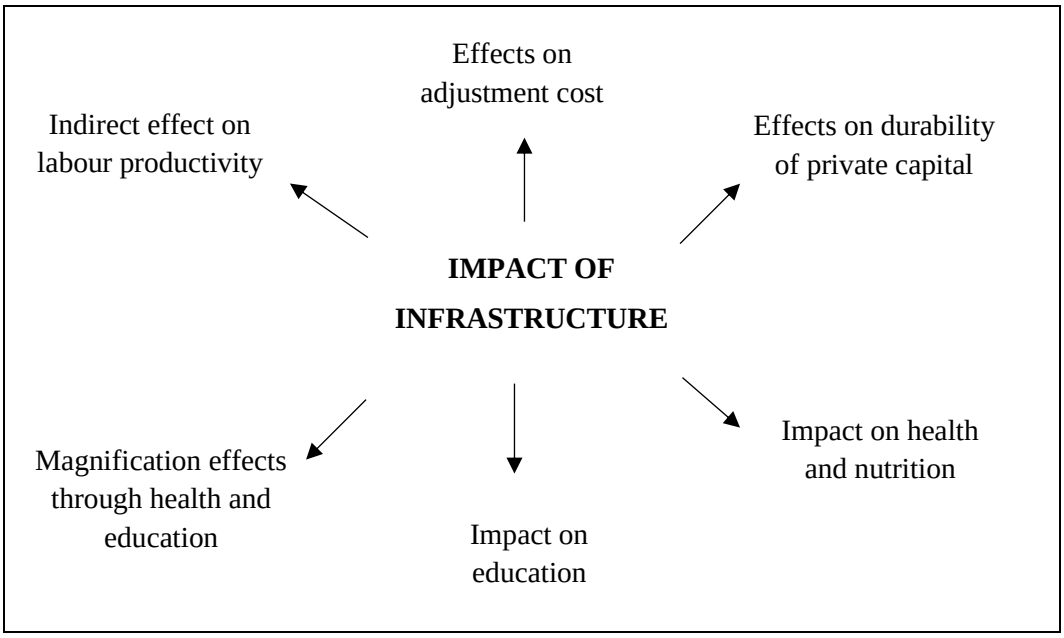


Figure 3-2: Impact of Infrastructure

Source: Agénor and Moreno-Dodson (2006:409)

The explanation of the channels in respect of infrastructure development is provided below:

Indirect effect on labour productivity – the avaialbility of public infrastructure in terms of better access to roads and transportation makes it easy for people travelling to work and reduces time spent in commuting from home or moving across different work locations; thus, there is less transportaion fee payable. In addition, the availability of and access to electricity and telecommunications enables the work tasks to be done effectively and rapidly with high productivity (Agénor and Moreno-Dodson, 2006:410).

Effect on adjustment costs – adjustment costs typically represent frictions that prevent firms from adjusting their capital stock. This implies that the expansion in the road network might not only reduce congestion on highways and facilitate the shipment of goods across the regions, but could also reduce expenses associated with the construction of a new factory or the transportation of

heavy equipment for installation to a new, remote production site (Agénor and Moreno-Dodson, 2006:410).

Effect on the durability of private capital – while infrastructure maintenance is problematic in the developing countries such as in South Africa, good public infrastructure has positive implications for spending on maintenance and the quality of public capital. For instance, infrastructure that is not regularly maintained deteriorates swiftly, causing frequent breakdowns and inconvenience. However, maintenance spending enhances productivity effects of public infrastructure on private production (Agénor and Moreno-Dodson, 2006:412).

Impact on health and nutrition – in developing countries including South Africa, infrastructure has a sizeable impact and influence on health outcomes. For instance, access to clean water and sanitation minimises the prevalence of diseases such as cholera and malaria and, in turn, stimulates positive health outcomes. Since access to electricity reduces the cost of boiling water as opposed to traditional sources of energy, such as smoky traditional fuel, the level of hygiene increases. Most importantly, access to and aviailability of electricity is essential for the functionality of hospitals including the speedy delivery of health services. To this extent, road infrastructure also contributes to ensuring speedy and accessible health care services for both patients and health care workers (Agénor and Moreno-Dodson, 2006:414).

Impact on education – the learning indicators on educational attaintment are also influenced by access to and availability of infrastructure services, notably water and sanitation, roads, electricity and telecomunication. As a result, road infrastructure including paved, well-gravelled roads and well-constructed bridges contribute towards the school attendance rate more particulary during rainy seasons. Thus, the quality of education improves as teachers and learners have greater accessibility to and from school at all times. Also, access to electricity improves teaching and learning and enables the learning process to be much easier with the use of electronic equipment such as photocopy machines and computers (Agénor and Moreno-Dodson, 2006:415).

Magnification effect through health and education – this suggests that interaction between education and health are interlinked. This is foregrounded on the basis that good health and nutrition are essential prerequisites for effective learning while higher level of education increases

the public health awareness. For example, investment in road infrastracture makes it easier for people to attend schools and seek health care services (Agénor and Moreno-Dodson, 2006:416).

Based on the channels reflecting the impact of infrastructure as discussed above, the component of infrastructure generates positive socio-economic development that are advantageous to the people. The provision of infrastructure connects different places, people and oppurtunities which draws people into greater development oppurtunities. The impact of infrastructure is seen to have direct and indirect impact on the people's lives. As mentioned earlier, the functionality of hospitals, for instance, needs electricity, water and sanitation, telecommunication and tarred roads so that optimal health care service is provided. Thus, the need to prioritise the construction of new infrastructure and maintenance of existing infrastructure cannot be overstated.

The theoretical analysis highlights that rural infrastructure development is fundamental for rural transformation. In order to realise rural transformation in the context of sustainable livelihoods, it demands that quantity, quality, and access to infrastructure is intensified. Srinivasu and Rao (2013:82) concur with Agénor (2010) by emphasising that poor quality or lack of infrastructure, in terms of roads, water, sanitation, electricity and health services, is the key obstacle to growth and development for any country or province. In the same vein, Olaseni and Alade (2012:65) affirm that sustainable livelihood is unlikely to occur in a country without infrastructural facilities and services, as commodities will be available at a very high price and cost.

To date, however, Ndevu and Muller (2017:16) point out that the state of performance in terms of delivery of infrastructure in South African rural municipalites remains unsatisfactory. Similarly, Calderon and Serven (2008:29) cited in Keke and Okem (2016:12) argue that "most of the African countries are lagging in terms of infrastructure quantity, quality and universality of access which makes it difficult to speed up poverty reduction in Sub-Saharan Africa." The impact comes with dire consequences to human development, poverty alleviation and economic growth. The theory maintains that, resulting from poor infrastructure development, majority of rural roads continue to be unpaved and communities still have poor access to electricity, while transportation cost remains extremely high, especially in Sub-Saharana Africa (Agénor, 2010:2).

Scholars including Aziz (2015), Oyedele (2012), Fizza (2014), Mustapha, Tukur and Ajayi (2018), and Ozurumba and Amadi (2019) have examined the impact of infrastructure development for the development of rural communities at the lens of the theory. Their studies have examined infrastructure development using case studies from India, Nigeria and Pakistan. Similarly, this study explored infrastracture development within the South African context using Umzumbe Local Municipality as a case study. Their findings confirm that sustainable development is attainable through the development of quality infrastructure which becomes a powerful tool for poverty reduction, while poor infrastructural project selection, dismal financial control and poor project implementations are amongst the major setbacks for infrastructure development. Oyedele (2012:5) further confirms that the state of infrastructure for any country is directly linked to the quality of life.

Nagesso *et al.* (2018:73) conducted a study that examined the possible effects of rural public infrastructure on rural households' livelihood strategies. In their study, attention is drawn to the perspective that access to rural public infrastructure allows diversification of livelihood strategies. Ethiopia as a case study, and in particular as a well-known, crowded and poor country in Africa, the level of public infrastructure was found to be extremely low. This raised the assumption that the unequal access to and low level of public infrastructure are predominant causes of poverty, isolation, powerlessness, vulnerability, unemployment and high-income inequality. It is for these reasons that the Ethiopian government is prioritising the improvement of access to and quality of infrastructure including education, health, water supply, rural road and electricity (Nagesso *et al*. 2018:75).

In line with the above assertion, there is a precise link with the main objective of this study, wherein it sought to explore the impact of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. For example, it has been eloquently suggested that for people to access clean water, proper sanitation and paved roads amongst other things, it requires the use and development of quality infrastructure projects. Chotia and Rao (2017:469) assert that infrastucture developmet expands the accessibility of productive opportunities for the poor which, as a result, increases the values of their assets. Equally, Nagesso *et al.* (2018:74) confirm that improved rural infrastructure stimulates the expansion of markets, improves food security, social and female participation and job opportunities. In addition, the level of factors of production and people's

productivity concurrently rise as development of rural infrastructure increases. Taking advantage of the key findings of scholars mentioned, this study is based on the argument that the persistence of inadequate infrastructural development at Umzumbe Local Municipality will continue to face inefficiencies with a high prevalence of socio-economic challenges keeping the people of Umzumbe marginalised.

Based on a wider body of literature on the significance of infrastructure development, it is evident that the theoretical claims presented are appropriate, thereby justifying the selection of theory for this study. The theory has met the general acceptance that investment in infrastructure, including access to public infrastructural facilities at Umzumbe Local Municipality, results in the ability of rural households expanding their means of survival. Therefore, it improves the outcomes of rural livelihoods. However, a lagging investment in infrastructure results in poor sustainable livelihood. It is due to this context that this study also adopted the SLA which is discussed in the following section.

3.4 Sustainble Livelihood Approach (SLA)

Development that is infrastructure-led, as explained above, has been established as a lifeblood of privileged circumstances and economic confidence. It is essential to understand the prevailing conditions under which people in particular areas build their lives through various strategies. Serrat (2017:21) defines SLA as the way of thinking with regards to objectives, scope and priorities for development activities, whereby the thinking is based in the manner in which poor and vulnerable people live. Similarly, Wang (2018:6) claims that the approach provides diverse ways and multiple activities through which people attain their livelihoods in rural areas in particular. The approach considers a wide range of factors including economic, political, cultural and environmental. The approach connects the vulnerable people with an environment that influences the outcomes of livelihood strategies. Again, Chambers and Conway (1992:1) provides a definition of livelihood flowing from a strong advocacy of sustainable livelihood:

> *Livelihood comprises of the capabilities, assets and activities required for a means of living. As such, a livelihood is sustainable when it is able to cope with and recover from stress and shocks, enhance its capabilities and assets, while not undermining environmental resources.*

The definition provided above reflects that the approach attempts to offer an understanding and foundation of community vulnerability including poverty challenges. Gambe (2015:53) describes SLA as one of the approaches that is suitable for analysing development and poverty-related challenges. It is used to analyse the lives of people experiencing poverty and vulnerability while offering a perspective on poverty; it further outlines possible strategies to improve the conditions of people in poverty. Thus, it sets a range of principles that can be adopted in order to achieve specific livelihood outcomes. To this extent, development practices and policy formulation are established under SLA to support the survival mechanisms of the people and further ensure the enhancement of livelihoods by reducing poverty and vulnerability. In this case, the approach relates with the analysis of infrastructure development as a poverty migration strategy for the rural areas and establishing sustainable livelihood thereafter. It could be assumed that the approach is holistic as it attempts to capture and offer a deeper understanding by providing essential causes and dimensions of poverty.

Khanya (2006) cited in Gambe (2015:53) states that "SLA has three key elements namely SLF with its elements; the sustainable livelihoods principles." This study, however, focused on the SLF to draw on the understanding of complexities in terms of livelihood in the rural areas. The next section discusses SLA as a framework.

3.4.1 Sustainable Livelihood Framework (SLF)

Taking from the description of SLA, Lisocka-Jaegermann (2015:15) described SLF as an analytical structure that facilitates a wide and systematic understanding of factors that constrain or enhance individual livelihoods. Adding to the notion, Gambe (2015:54) asserts that this framework is aimed at identifying people's strengths, assets, livelihood activities and opportunities that influence the livelihoods. In the same vein, Scoones (2009:177) states that the framework links the inputs (capital or assets) and outputs (livelihoods strategies), connected to outcomes, which combined familiar territory (poverty and employment). It could be argued that this framework is considered as offering a comprehensive framework for understanding how people live. The framework was relevant to this study as it highlighted issues related to capacity, resources and the activities. The SLF is depicted in Figure 3-3:

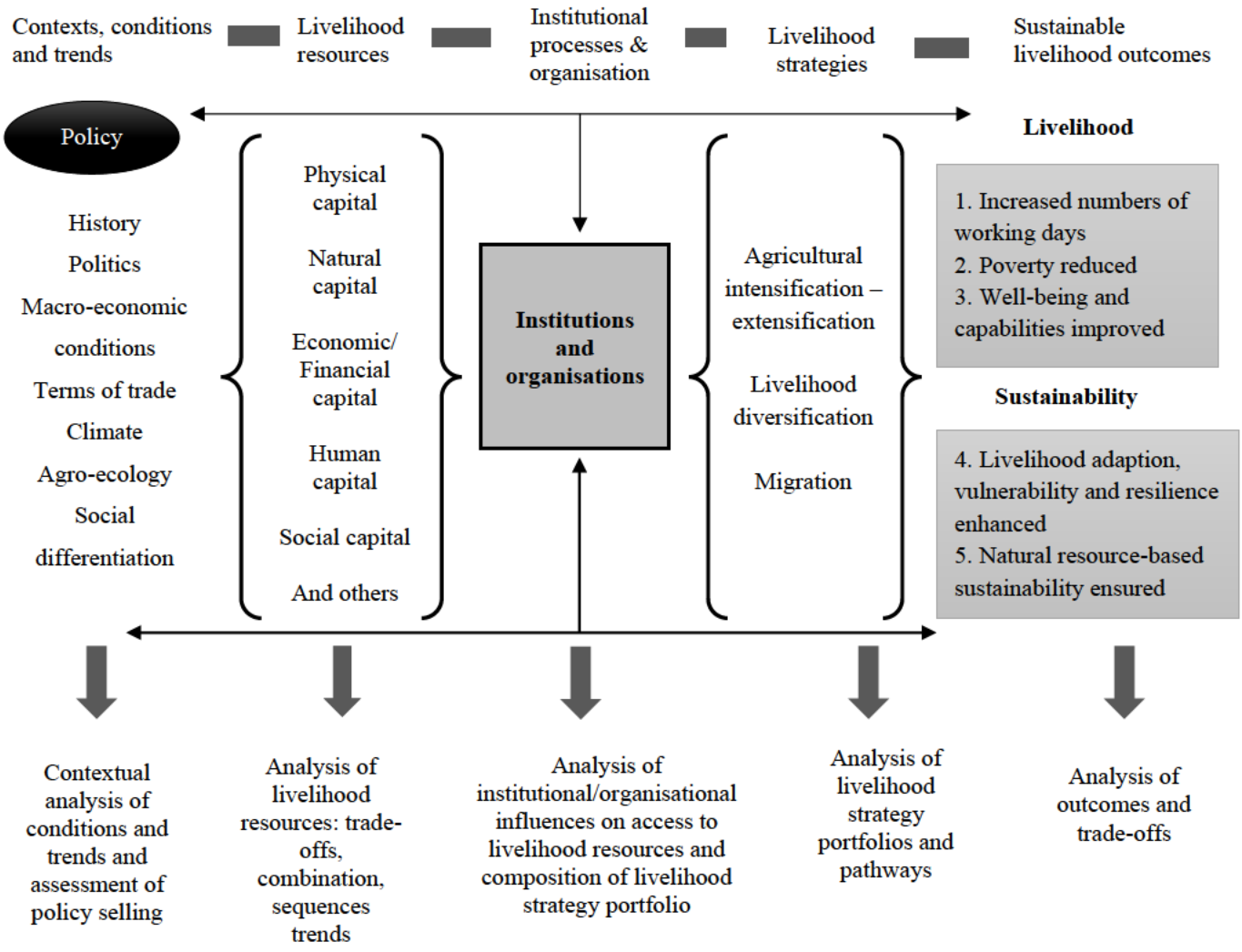


Figure 3-3: Sustainable Livelihood Framework

Sources: Scoones (2009:177)

The framework present insights on the understanding of livelihoods capitals or assets (physical, natural, social, and human), which requires necessary attention in planning livelihoods strategies within the broader structures and institutions including policies and processes. Gambe (2015:54) asserts that the core elements of the SLF are the people's assets or capitals that includes natural, physical, financial, social, and human. The assets are further viewed on people's vulnerabilities to stress and shocks including institutional processes, policy set up, and livelihood strategies and outcome.

Scoones (2009:178) explains that assets are a vehicle for instrumental action concerning making a meaningful living and challenging the structures under which one makes a living. The framework

draws much attention in the contributing into a decent livelihoods that ensures quality of people's lives by taking into consideration income and poor households' abilities to cope with risks and vulnerabilities.

3.4.1.1 Livelihoods Assets

The SLF as an integrative framework, places a range of livelihoods assets on the focus on the framework which in turn determine the ability of the people to escape out of poverty. In this sense, Bajwa (2015:7) indicates that livelihoods of rural people depend on their livelihoods assets which become a factor that reduces poverty while it gains value and meaning through a prevailing social, institutional and policy environment. It is critical to understand people's assets which are useful to strengthen the capacity to secure a positive and beneficial livelihood outcome. In pursuit for sustain livelihood, the livelihood assets are significant on how households cope and recover in the event of a shock, positive or negative outcomes. Namabanda (2019:13) and Serrat (2017:23) pronounce the livelihoods assets as follows:

- Physical capital – the physical resources that entails the basic infrastructure and producer goods (tools and equipment) used to function more effectively and essential to pursuit of any livelihood strategy.
- Natural capital – the natural resource stock (soil, water, air, and genetic resources) and environmental services (hydrological cycle, pollution sinks) from which resources flows and services useful for livelihoods are derive.
- Social capital – the social resources (networks, social claims, social relations, affiliations, and associations) upon which people draw when pursuing different livelihood strategies requiring coordinated actions.
- Human capital – the human resources (skills, knowledge, labour, and good health) which is an individual capacity.

The above-mentioned assets are at a heart of sustainable livelihoods. For a meaningful livelihood, it is paramount that people must combine the above-mentioned assets that they have access to and control over. This largely so as livelihoods are composed in complex way, therefore, people's

resources are crucial in translating assets into positive outcome to sustain and bring an improvement to their wellbeing.

3.4.1.2 Institutional Processes and Policies

The combination of the livelihood's resources is transformed by environment of structure, processes, and policies. Serrat (2017:24) explains that institutions are the public and private sector that set and implement a variety of policies and legislation that affects livelihoods of the people. In this regards, processes entail the laws, regulation, policies, operational arrangements, societal norms, and practices that determine the operational manner of the institutions. The appropriate institutional processes determine the policies that are implemented to stimulate people to make better choices as they further grant or deny access to assets (Namabanda, 2019:14 and Serrat, 2017:24). In the same vein, Gambe (2015:55) maintains that institutional processes and policies includes the inter-related issues of social relations, social and political organisations, and quality of government systems. The institutional processes and policies become the procedures that directs the interaction of people with government, environment and markets. The relationship between individuals and institutions has a direct influence in the use of, and access to, assets. It therefore allows various strategies to be adopted by the people to pursued livelihood outcomes.

3.4.1.3 Livelihood Strategies and Outcomes

Gambe (2015:55) describes livelihood strategies as the combination of activities that people choose to undertake in order to achieve their livelihood goals while livelihood outcome is the goal that people aspire the results of pursuing their strategies. In a similar view, Serrat (2017:24) affirms that livelihood strategies aim to achieve livelihood outcomes. The livelihoods of the people exist in a complex system that integrate various aspects such as economic, environmental, politics and social. In this context, households may gain livelihood outcome through a varied range of activities including agricultural activities, livestock, stable employment, formal or informal trading. The livelihood strategies are means of creating a living that is sustainable from various strategies in order to strengthen people potentials and survival mechanism. The outcomes which people envisage to encounter is increased food security, higher income, reduce vulnerability and improved well-being.

3.4.1.4 Vulnerability Context

According to Serrat (2017:23), the context of vulnerability is related with the occurrence of insecurity and sensitivity in the changing of environment that impacts on the well-being of individuals, households, and communities to respond to the associated risk and adverse changes of external environment. Similarly, Gai, Maghfirah, Poerwati and Sir (2020:213) point out that vulnerability context consists of two interrelated aspects, external and internal. The external aspect relates to trends, shocks, and seasonality whereas internal aspect relates to self-defence due to the inability to deal with trauma and stress. As such, the vulnerability affects human systems and ecology at several levels including people, institutions, and places human welfare and livelihood. The features of vulnerability context are depicted in table 3-1.

Table 3-1: Vulnerability Context

Trends	Shocks	Seasonality
• Population trends • Resource trends • National/ international economic trends • Trends in governance (including politics) • Technological trends	• Huma health shocks • Natural shocks • Economic shocks • Conflict • Crop/livestock health shocks	• Of prices • Of production • Of health • Of employment opportunities

Source: Namabanda (2019:14)

Table 3-1 outlines an array of related trends, shocks and seasonality that have direct and indirect impact on the livelihood outcome of the people. Bajwa (2015:7) is of the view that there is a close connection between livelihoods and vulnerability. It is significant to understand the context of vulnerability as it has adverse effect on the attainment of sustainable livelihoods. In this regard, Wubayehu (2020:108) points out that vulnerability context (internal and external) affects individual's assets portfolio and livelihoods outcome. As reflected on table 3-1, shocks have detrimental effect on livelihood assets through civil conflict, floods, or storms whereas trends have an influence on the rates of return based on the choice of livelihood strategies. Also, seasonality causes shifts in production, employment opportunities and prices, and are among the most enduring sources of hardship (Wubayehu, 2020:108). This implies that vulnerability causes people

to forfeit their valuable livelihood resources that result in people becoming poor and vulnerable to poverty and human suffering. The exposure to vulnerability and poverty can adversely undermine the livelihoods of the poor people.

3.4.2 The Covid- 19 Pandemic: A Theoretical Understanding

The SLF, as presented earlier in Figure 3-3, presents the concept of sustainable livelihoods that was established to harmonise development that offers a new way of thinking and serves as an analysis of ideal livelihoods. Mhlanga and Ndhlovu (2020:4) affirm that the definition of livelihood, provided earlier by Chamber and Conway (1992), offers a valuable lens in understanding the fragility of livelihoods. Equally, Jackson (2020:4) points out that the framework provides a range of livelihood resources essential for the basic livelihood needs including natural, social, human, physical and financial. These livelihoods are essential to be transformed into income, dignity, and agency to improve standard of living and withstand poverty. However, vulnerability context can directly influence the said livelihood assets. As presented in Table 3-1, the vulnerability context related to human vulnerabilities including trend, shocks and seasonality. The vulnerability may lead to people losing their valuable livelihoods resources and therefore be unable to cope and deal with shocks and stresses. The Covid-19 pandemic has been considered as one of the shocks that has, in recent time, shaken livelihoods across the globe.

Mubangizi and Mubangizi (2021:217) affirm that Covid-19 pandemic was an unfortunate add on to the disaster and further regarded as shock that continues to confront the rural communities. This pandemic caused livelihoods to be exposed to a massive and long-lasting impact and further disrupted the livelihoods strategies and outcome. Consequently, the people residing in rural areas which are deemed as less privileged, were likely to be the most affected and less likely to recover swiftly from the shock of the Covid-19 pandemic (Mubangizi and Mubangizi, 2021:218). The Covid-19 pandemic, presented unexpected disruption to human livelihoods and affected the greater availability of livelihoods resources, thus, becoming a major causes of and consequence of poverty in the rural populace (Jackson, 2020:4). The nature and impact of the Covid-19 pandemic as a global health emergency resulted in a global economy meltdown and further impacted on the delivery of government operations and procedures including lack of access to healthcare and poor communication infrastructure. The framework places emphasis on the importance of access to core

livelihood assets, more so to allow vulnerable people the ability to cope during the shocks period, for example, during the Covid-19 pandemic.

The relationship between stresses and livelihood became useful for understanding livelihoods under the condition of Covid-19. As such, the Covid-19 pandemic has expanded on the already prevailing infrastructural gaps and further placed more pressure on the existing infrastructure (Yoshino and Hendriyetty, 2020:4). This has resulted in the interruption of the delivery of government operations including maintenance of the existing infrastructural services (Clark-Ginsberg *et al*, 2020). The lockdown and curfew measures caused delays in project implementation, and completion of infrastructural including scope, cost, quality, and human resources of various infrastructural projects and labour uncertainties (Mhlanga and Ndhlovu, 2020:1). Furthermore, the pandemic has shown a great importance of digit infrastructure including internet connectivity and broadband access as people continue to work or study remotely. This poses a great concern and challenge as majority of rural populace do not to have access to smart phones, computers, and a strong internet signal given the sudden rise of the use of digital infrastructure. Ultimately, this has denied rural people from access to information.

The pandemic has presented hard-hitting restrictions on the ability of some people to satisfy their immediate basic needs as unnecessary face-to-face interactions was prohibited through social distancing and lockdown. Oruonye, Miftahu and Ahmed (2020:197) assert that the SLF reflects the ability of the vulnerable people to cope with external shocks or stresses related to Covid-19 and further recover from human vulnerability incurred during the period. In Nigeria, for instance, the direct and indirect impact as a result of the Covid-19 pandemic is evident. In this regard, the authors claim that direct impact includes morbidity and mortality while indirect impact relates to economic shutdown, job losses and unstable livelihoods (Oruonye *et al*. 2020:197). The disruption of the stable daily livelihood activities, especially for those in an informal sector, has exposed people to unstable income and poor health care system. In this context, the SLF offers a structure to alleviate holistic poverty where the focus is on a dynamic, human-centred program aimed at reducing poverty. It could be argued that massive and long-lasting impact is expected, which could enable vulnerable people to cope and recover from the condition of shocks of the Covid-19 pandemic and beyond.

3.5 Theoretical Perspective on Umzumbe Local Municipality

The adopted theoretical framework for this study established that infrastructure development is a significant tool that can open up ways for improving the provision of basic needs, expanding the livelihoods with respect to water supply and sanitation, electricity, road and telecommunications. Most importantly, it succinctly affirmed that the provision of quality of infrastructure enables people to become self-reliant and capable of meeting their basic needs. Within the context of infrastructure development and sustainable livelihoods, Umzumbe Local Municipality is battling with developing quality infrastructure. The IDP of Umzumbe Local Municipality under Key Performance Area number 2 that focuses on Basic Service delivery affirms that infrastructure is problematic; it remains a key challenge that confronts Umzumbe Local Municipality, resulting in poor access to basic services including water, sanitation, electricity and roads (Umzumbe IDP, 2020/21:100).

Scholars, such as Agénor (2010) and Agénor and Moreno-Dodson (2006) highlights in their studies that infrastructure development is an essential component in human life that affords change in socio-economic landscape. In their studies, it is maintained that infrastructure development relates to socio-economic development activities which are constructive headways in achieving sustainable livelihoods. Improvement in infrastructure is indeed likely to boost human and social well-being, productivity and reduction in the level of vulnerability. Thus, it remains an agent for development including in Umzumbe Local Municipality.

In relation to this study, it has now been shown that Umzumbe Local Municipality needs to prioritise the availability of quality infrastructure to have safe and dependable drinking water without people walking long distances to fetch water, thus improving their human health outcomes in return. Also, improved and better road infrastructure would link the areas of Umzumbe Local Municipality to the rest of the country in various perspectives. Furthermore, the availability of electricity would bring light and convenience that would give people ability to function using modern technologies, while telecommunication enhances day-to-day lives of the people making it easier to convey messages and use other internet-related activities.

The impact of infrastructure development on livelihoods implies that while rural people grapple with putting their lives together for sustainable rural livelihoods, the infrastructural gain needs to be escalated for reliable and convenient livelihood at the lens of providing quality roads, supply of

water, electricity and telecommunication. This implies that in rural areas, for example, the absence of infrastructure that provides reliable water supply coerces people to rely on rainfall for water sources which in return poses health hazards. Hence, the approach is centred on purpose of ensuring decent livelihoods that intends to contribute to the quality standard of life which is in line with the objective of the study at hand.

3.6 Chapter Summary

The chapter presented a theoretical framework that underpinned the study. The theory of infrastructure-led development together with the SLF was adopted and elaborated as the theoretical basis which the study was grounded upon. The discussion in the chapter commenced by highlighting the importance of a theoretical framework in an academic research study. Stemming from the adopted theoretical framework, this chapter outlined how rural infrastructure contributes to the improvement of rural livelihoods and socio-economic opportunities in general. The SLF provided a comprehensive framework that offered an understanding on how people live and how they further build their sustainable livelihoods using various strategies. Additionally, this chapter has further elaborated on the impact of the Covid-19 pandemic through the lens of the SLF. To this end, the chapter also discussed the relevance of the adopted theoretical framework from Umzumbe Local Municipality. The next chapter will present, in detail, the research design and methodology.

CHAPTER 4
RESEARCH DESIGN AND METHODS

4.1 Chapter Introduction

Linked to the preceding chapters on literature review and theoretical framework, this chapter presents the research design and methods that were adopted while undertaking the study. In its logistical sequence, the chapter outlines, in detail, the research design, methods and paradigms that were used to gather the primary and secondary data for this study. This includes the choices of methodological tools for data collection and analysis. Study limitations are unpacked, ethical considerations are discussed, and trustworthiness of the study is outlined. Umzumbe Local Municipality was chosen as the case study and study site to reflect on infrastructure development and sustainable rural livelihoods in KZN rural municipalities.

4.2 What is Research?

According to Leedy and Ormrod (2001) cited in Williams (2007:65), research is a process of collecting, analysing and interpreting data important for understanding a phenomenon being investigated. It occurs in an established framework and in accordance with existing guidelines in which it defines objectives, manages data and presents findings. Flowing from systematic inquiry, research includes a range of rigorous activities that entails the gathering of new and existing data with an intention to discover and expand new stock of knowledge (O'Leary, 2017:4). In this regard, the available literature and existing knowledge helps to determine the chain of assumptions for the production of knowledge and conclusions. Research is generally foregrounded on a broad scale of assumptions into a narrow key of assumptions notably philosophical, theoretical, and methodological assumptions (Du-Plooy-Cilliers *et al.* 2014:8). Simply put, research is a process of inquiry involving necessary steps to address a phenomenon in order to arrive at a conclusion that is based on data collected as evidence.

4.3 Research Paradigms and Traditions

Bryman (2012) cited in Du-Plooy-Cilliers *et al.* (2014:19) describe paradigms as "a cluster of beliefs and dictates which for scientists in a specific discipline influence what should be studied, how research should be done, and how results should be interpreted." In the same vein, Rahi (2017:1) perceives a research paradigm as a combination of beliefs shared by various scientists outlining an array of agreements about how problems are understood and how the world is viewed.

The research paradigm adopted therefore informs the methodological process of conducting a research in the field of interest. It could be reasonably assumed that the paradigms combine applicable conceptual views, variables and problems which are further aligned with the suitable methodological design and tools for studying infrastructure development and sustainable rural livelihoods (McMillan and Schumacher, 2014:14) In addition, Creswell (2009:6) is also of the view that paradigms relate to a philosophical worldview which he defines as the 'basic set of beliefs that guides action' as it provides a foundation for inquiry. It is generally accepted that paradigms are a remarkable feature in a research study that provide philosophical world views and that underpin a set of beliefs and theoretical framework in studying a phenomenon.

The adoption of a research paradigm for this study was essential in providing guidance on what the phenomenon was and how it was studied within a researchable area; it further outlined how the results were interpreted. In this context, Rehman and Alharthi (2016:51) state that there are three dominant paradigms, namely positivist, interpretivist and critical paradigms. These paradigms are underpinned by philosophical assumptions including ontology, epistemology, axiology and methodology. This study was therefore guided by the research paradigm in contextualising infrastructure development and sustainable rural livelihoods which ensured that the researcher did not tackle the phenomenon based on personal philosophical knowledge. The study was guided by philosophical assumptions and techniques to understand the world view.

Table 4-1 provides a reflection of the paradigms with the key functionalities.

Table 4-1: Paradigms and Key Functionalities

Paradigm	Definition and Source	Key Functionalities
Positivist Paradigm	Positivist paradigm is a doctrine which stipulates that true knowledge is mainly accomplished through observation and experiments that reflects a deterministic philosophy (Rehman and Alharthi, 2016:53).	• Determination • Reductionism • Empirical observation & measurement • Theory verification
Interpretive Paradigm/ Constructivism Paradigm	Interpretive paradigm is of the view that true knowledge is attainable through a deep interpretation of the subject with means of understanding the concepts while exploring the social world (Shah and Al-Bargi, 2013:256).	• Understanding • Multiple participant meaning • Social and historical construction • Theory generation
Critical Paradigm/ Advocacy Paradigm	Critical paradigm is believed to be concerned with "the questions of power, control and epistemology as social constructions with benefits to some and note others" (Shah and Al-Bargi, 2013:259).	• Political • Empowerment issue-oriented • Collaborative • Change-oriented
Pragmatism Paradigm	Pragmatism is a deconstructive paradigm that advocates that true knowledge can be obtained by the use of mix method approach (Rahi, 2017:1).	• Consequences of actions • Problem-oriented • Pluralistic • Real-world practice oriented

Source: Rahi (2017:2)

Informed by Table 4-1, the interpretivist paradigm was chosen as an appropriate paradigm to guide this study. Through the interpretivist paradigm, this study sought to understand and interpret the perceptions of people in relation to infrastructure development and sustainable rural livelihoods. The study was able to pursue knowledge creation on human and social reality of the study's participants. This was in line with the main objective of this study which intended to ascertain perceptions in respect to infrastructure development and sustainable rural livelihood as the main objective of this study. Positivist, critical and pragmatism paradigms were deemed not as appropriate to guide this study. It was based on the stance that the positivist paradigm involves the use of scientific methods for experimental processes, whereas critical paradigm tries to liberate people to change their social, political and cultural setting. Neither with less explanation nor understanding of society. Furthermore, the pragmatism paradigm encourages the use of mix method approach which is not suitable for this study. The paradigms will now be aligned with the philosophical assumptions of this study.

4.3 Philosophical Assumptions

Creswell (2013:18) outlines that philosophical assumptions are critical elements of the research paradigm which reflects the abstract of ideas and beliefs that informs the choices for research tools. Furthermore, the philosophical assumptions shape the style of formulating the research problem and questions to study and how we obtain information to answer the questions. It could be argued that the philosophical assumption is a central tenet that position the study, providing guidelines on how to explore the phenomenon. Rehi (2017:1) states that there are four dominant worldviews: ontology, epistemology, methodology and axiology. These philosophical worldviews are essential in research studies as they contain basic assumptions, beliefs, norms and values. Each paradigm, as outlined in Table 4-2, has its own philosophical worldview including ontology, epistemology, methodology, metatheory and axiology.

Ontology is described as a philosophical study concerning the nature of reality with the assumption that something makes sense or real in the natural existence. In this regard, the researcher has ontological questions that make assumptions about reality, which questions how it exists and what can be known (Rehman and Alharthi, 2016:51).

Epistemology is described as a theory of knowledge that concerns the branch of philosophy on how we perceive our world. It also distinguishes between vindicated belief and opinion. It draws attention on human knowledge to be able to extend, broaden and deepen understanding of the phenomenon (Kivunja and Kuyini, 2017:27).

Methodology is "an articulated, theoretically informed approach to the production of data." It is a broad term used to refer to the data production techniques which includes research design, methods, approaches and tools of investigation (Kivunja and Kuyini, 2017:28).

Metatheory explores the theoretical lenses in the field of study to offer a direction to the research study and build a solid theoretical foundation. It assists the researcher with underlying assumptions and implications of particular theories for a sophisticated description of the phenomena (Du-Plooy-Cilliers *et al.* 2014:24).

Axiology is described as study of values and value judgement. Put simply, it considers the value attributed to the different aspect of a research study and provides insight on the values that can be drawn within a particular paradigm (Du-Plooy-Cilliers *et al.* 2014:24).

In this context, Creswell (2009:8) relates ontology and epistemology with what he terms post-positivism and social constructivism, respectively. Table 4-2 below, provides an alignment of paradigms with the philosophical worldview.

Table 4-2: Alignment of Paradigms and Philosophical Worldview

	Positivism	Interpretivism	Critical
Reasons for Research	To discover casual relationships in order to predict and control events.	To understand and describe meaningful social action and experience.	To expose myths and empower people to transform society radically.
Ontology	Reality is external and objective and the laws that govern it can be discovered.	Reality is fluid and subjective and is created by human interaction	Reality changes over time and is governed by underlying structures.
Epistemology	The only valid knowledge is knowledge produced via empirical observation.	Something is seen as knowledge when it feels right to those being studied.	Knowledge should supply people with the tools needed to change their own world.
Metatheory	By establishing casual relationships, we can predict effects and therefore act to manipulate or control phenomena.	Theory should tell a story in order to create an in-depth understanding of other people's realities.	Theory should be a critique that reveals true social conditions and that helps people to see the way to a better world.
Methodology	Reliability is important. Objective, quantitative research is used.	Subjective, qualitative methods are used.	Mixed methods are used: quantitative and qualitative methods are combined.
Axiology	Objective research, truth and reason are valued.	Uniqueness is valued.	Freedom, equality and emancipation are valued.

Source: Adapted from Du Plooy- Cillier *et al*. (2014: 34)

This study was guided by the interpretivist paradigm to explore perceptions of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. The study considered participants' subjective experiences and also appreciated the secondary data. This was relevant as the study intended to understand and describe meaningful social action and experience relating to infrastructure development and sustainable rural livelihoods.

Using the position of interpretivism from the ontology standpoint, the researcher considered the reality of infrastructure development and livelihoods as not absolute. This philosophical assumption was used to assess the impact of the existing infrastructure to see whether the reality of meaningful livelihood was evolving. Furthermore, using the position of interpretivism from the epistemological perspective, the key informants of the study were assessed through their

experience, role and background on how infrastructure development impacts sustainable livelihoods. This formed an essential source of knowledge to enhance the understanding of the livelihoods of people in rural areas.

4.4 Research Design

Mouton (2011:55) outlines that a research design is a comprehensive plan that provides a detailed outline of the kind of the study to be conducted, including a clear outline of the methods for gathering the evidence, analysis of evidence and reports of the results. Equally, Creswell (2009:142) points out that research design is a formal plan of activities that provides a strategic framework for executing research objectives. Informed by the research problem, research design is a methodology that specifies a set of guidelines that focuses on strategic and operational decision. It is generally accepted that a well-grounded research design allows the study to provide acceptable answers to the research questions and practical overviews of the problem. Figure 4-1 below illustrates the research design framework that was adopted by this study, showing interconnection of the worldview, research strategy and tools. The interconnection reflected in the framework below brought into light that the research design connects the empirical data with the research questions in order to achieve the research objectives.

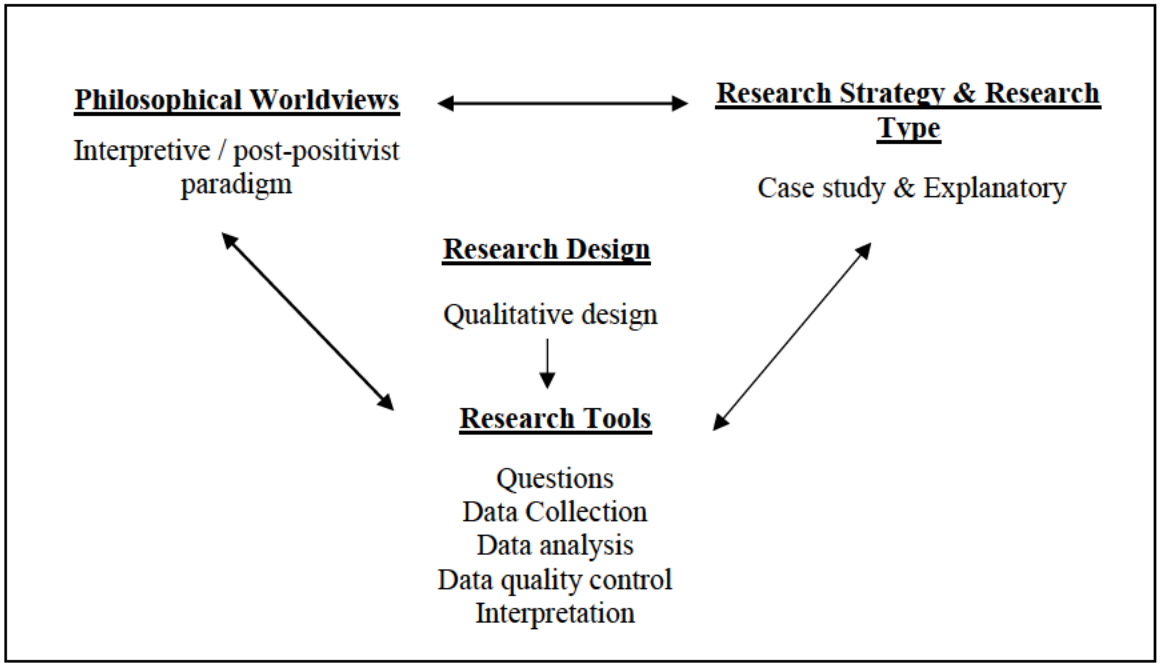


Figure 4-1: Research Design Framework

Source: Adapted from Creswell (2009:5)

The adopted research design framework enabled the researcher to appropriately address the research problem by collecting relevant data and providing the analysis that is connected with the worldview, research strategy and tools. The research design adopted, and as presented in Figure 4-1, served as a strategic framework for providing a practical view in developing research answers.

According to Rahi (2017:2), there are three broad research designs namely quantitative, qualitative and mixed method. These designs are the most dominant in the field of social science despite numerous classifications by various scholars and research practitioners (Creswell, 2009; Neuman, 2011 and Du Plooy-Cillier *et al.* 2014). The two designs viz. quantitative, qualitative are distinguished in Table 4-3 below.

Table 4-3: Qualitative Research vs Quantitative Research

Qualitative Research Design	Quantitative Research Design
Meaning is discovered and captured once data is obtained	Hypotheses are stated at the beginning of the research
Themes, generalisation, taxonomies and motifs concepts	Distinct variables from concepts
Inductive theory which can be causal and non-causal	Causal and deductive theory
Data is derived from documents, observations transcripts and is in words	Data is numerical and derived from measurements
Specific research procedures where replication is often done	Standard procedures where replication is rare
Measures are developed in an ad hoc manner to individual circumstance or the researcher	Measures are developed before data is collected and is generalised
Extracting of themes from analysed data to create a clear picture	Using of tables, charts and statistics and the linking them to the hypotheses

Source: Adapted from Neuman (2011:174)

The mixed method approach is the combination of both qualitative and quantitative methods and the advantage is that the two are utilised simultaneously.

4.4.1 Quantitative Research Design

According to Du Plooy-Cillier *et al.* (2014:148) quantitative design is a scientific method that quantifies data from a large population and further presents data in numerical format using diagrams and statistics. Similarly, as noted in Table 4-3, Askarzai and Unhelkar (2017:26) describe the quantitative approach as the process of collecting and analysing numerical data using statistical

analysis to translate the phenomenon with the rationale to find causal correlations that may be generalised. Quantitative research design was deemed unsuitable for this study, as the focus was on perception of infrastructure development and sustainable rural livelihoods which could not be measured using quantitative method.

4.4.2 Qualitative Research Design

Babbie (2008:25) describes qualitative research design as an interpretative data that tends to explore, understand, and observe social issues in their natural setting. In the same vein, Askarzai and Unhelkar (2017:27) define qualitative research as a process of collecting and analysing textual data including the use of words, images and sounds for interpreting a social phenomenon and human behaviour. Qualitative research is a systematic and subjective approach that aims to provide a proper meaning in relation to a daily life experiences of people. In addition, qualitative research design is a social action that puts emphasis on people's beliefs, interpretations and experiences.

Therefore, qualitative data relies significantly on human interpretation and evaluation, and it cannot be dispassionately measured (Mohajan, 2018:17). This study explored multiple meanings of individual experience with infrastructure development and further provided insights in a naturally occurring manner in their daily livelihoods. In this qualitative study, the data were collected through a consultation of a variety of sources of data including interviews and literature review relative to individual experience with infrastructure development. Thus, data collected are descriptive in character. This method of inquiry was appropriate for this qualitative research design.

4.4.3 Mixed Research Design

Mixed method is the combination of both quantitative and qualitative methods. Williams (2007:68) states that mixed methods is the approach that incorporates methods of collecting or analysing data from both quantitative and qualitative research design into a single research study. Similarly, Creswell (2014:32) asserts that a mixed method approach involves an integration of two forms of data and using designs that may involve philosophical assumptions and theoretical frameworks. In a mixed method approach, a mixture of numerical and narrative data is collected and analysed to provide a comprehensive understanding of the research problem.

The main purpose of choosing a mixed methods approach in research studies is to draw from the strengths and minimise the weaknesses associated with the quantitative and qualitative research approaches. In doing so, the mixed method approach advocates for the use of a wider range of available tools that incorporates the elements of both quantitative and qualitative research designs, as outlined in Table 4-3, to explore a research problem. Given the nature and context of this study, it explored the perceptions of participants viewpoint on infrastructure development and sustainable rural livelihoods which is customary for qualitative research design.

4.5 Research Type

It is important that research type connects with the research paradigm, philosophical worldview with that of strategy inquiry and the research design. In the social science field, there are three basic types of research, namely exploratory research, descriptive research and explanatory research. Rahi (2017:2) provides a description of the three basic types of research. First, the aim of the exploratory research is to seek new sights into current situations with an attempt to ask questions and assess phenomena in a new light. This type of research is relevant to a qualitative study. Second, descriptive research sought to obtain information on the current state of phenomenon. The rationale is to provide an accurate profile of situations, people or events. Lastly, explanatory research is viewed as the connection of ideas, opinions and views to understand the causes and effects of the phenomenon. This type of research intends to connect different ideas to understand different reasons, causes and their effects (Rahi, 2017:2).

This study employed explanatory research type. It explored respondents' opinions, experiences and feelings regarding infrastructure development and sustainable rural livelihoods. Creswell (2009:50) remarks that exploratory studies sought to explore critical factors relating to the phenomenon in an in-depth manner with the purpose of drawing a reliable explanation of the phenomenon. Based on this assertion, this explanatory research was suitable for this study as the focus was to draw participants' insights and more specifically their lived experiences regarding infrastructure development and sustainable rural livelihoods.

4.6 Research Strategy

In relation to the research paradigm and design, this study adopted a research strategy to derive the data. Ponce and Pagan-Maldonado (2015:128) state that research strategy is a comprehensive plan for a problem which comprises construction, anticipated results in terms of objectives of

research and framework of planned devices essential for implementing the approach. Equally, Rahi (2017:2) views a research strategy as the process of collecting and interpreting data with clear objectives and a decisive plan of action. This implies that research strategy is a plan that provides a direction for conducting logical research that yields quality results for detailed reporting of the outcome. In the field of social science, there are five main research strategies: experiments, surveys, archival analysis, histories and case study (Rahi, 2017:2). For this study, the choice of the research strategy was guided by the research questions, objectives and the overall purpose of the study. Therefore, this study adopted a case study as the research strategy, which is outlined below.

4.6.1 Case study

The study adopted a case study as the research strategy to derive comprehensive data. Yin (2009:18) views a case study as an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clear. In this stance, the distinguished characteristics of a case study as a research strategy is that it explores contemporary phenomena in their real-life contexts to study a unit of analysis using multiple sources of evidence. Similarly, Creswell (2009:13) describes a case study as a strategy for exploring an in-depth programme, an event, an activity, a process and cases that are bound by time and activities for collecting the information using a series of data collection methods and tools. It could be argued that case study accounts for a real-life situation by rigorously relating the situations in which the phenomenon occurs. Thus, it provides a detailed description of the social phenomenon. To this extent, a case study provides a unique and idiosyncratic nature of phenomenon in its complexity wherein it sought to understand the dynamics present within a single setting. The case study can, however, entail multiple cases using a variety of levels of analysis.

According to Miles, Huberman and Saldana (2013:486) case studies can involve either single or multiple cases, and numerous levels of analysis utilising an embedded design, that is multiple levels of analysis within a single study. Furthermore, the authors contend that unit of analysis is a phenomenon of some sort occurring in a bounded context and that the case is, in effect, your unit of analysis.

This study adopted a single case study strategy using multiple units of analysis. In this context, Umzumbe Local Municipality situated in KZN was selected as the case study to provide a case

context and to draw the unit of analysis. According to Yin (2009:29), individuals, groups, projects, programmes and organisations are considered as units of analysis. In this context, Umzumbe Local Municipality is an organisational unit of analysis for the study while councillors, municipal officials, traditional leadership and community members are considered as individual units of analysis. The main purpose was to ascertain perceptions in respect to infrastructure development and sustainable rural livelihood as the main objective of this study. Through, the multiple units of analysis, it enabled the researcher to draw a comparative analysis of data that established emerging themes from the participant's responses.

4.7 Data Collection Methods

Data collection is a well-defined process using certain instruments to outline a systematic method for gathering and measuring information on variables of interest, whether quantitative and qualitative design. The quantitative studies involve collecting data that can be quantified and subject to statistical treatment using mathematical models for data analysis. For qualitative studies, data is obtainable from the complex and multi-faceted phenomena in a specified social context for ensuring that the data is rich and in depth (Du Plooy- Cillier *et al*. 2014:136). Adding, Mouton (2011:104) stipulates that data collection method consists of an array of tools which can be grouped into four clusters: testing, observation, text analysis and interviewing. For this study, multiple data collection tools were used to gather both primary and secondary data as the lens of tools as outlined by Mouton (2011) above. The goal for using both primary and secondary data was to capture quality evidence that translates to rich data analysis for credible research outcomes.

As noted earlier, the data collection method for this study was both primary and secondary data. The primary data is the data that is directly collected by the researcher from first-hand sources, whereas secondary data is the data that is previously gathered by other researchers and is made available for consumption (Cassim, 2011:8). This study gathered the primary data through semi-structured virtual interviews and focus groups while the literature review in chapter two and the theoretical framework including the SLA underpinning the study in chapter three formed part of the secondary data. In this context, the secondary data was gathered from books, accredited academic journals, theses, dissertations and government publications. The use of literature review provided an alignment with the existing body of knowledge made available by other academics

while minimising the unnecessary duplication. The data collection tools used for this study to gather the primary data is unpacked as follows:

4.7.1 Interviews

The interviews were the primary data collection strategy that this study employed. An interview is a multi-dimensional concept which can be carried out in different ways for different purposes. Thornhill (2009:674) defines interviews as a face-to-face, telephonic and/or virtual conversation between the interviewer and respondent on a specific topic or issue. Similarly, Mouton (2011:108) points out that interviews are questioning sessions between individuals where the responses are captured and transcribed. The nature of the interviews can be categorised into structured, semi-structured and unstructured interviews with their own characteristics. Creswell (2009:100) is of the view that semi-structured interviews are a line of inquiry that allows for probing using open-ended questions to obtain answers on the specific topic. This study solicited the information from the participants using in-depth interviews within the framework of semi-structured interviews with open-ended questions. The use of open-ended questions in the interviews was believed to strengthen the quality of responses as it creates a room for freedom of expression and clarification of responses if required (Creswell, 2009:100).

Resulting from the Covid-19 pandemic, physical contact with study participants remained prohibited (Anjorin, 2020:199). Therefore, all interviews were conducted through online and social media platforms, notably Zoom video conferencing and WhatsApp voice notes. The interviews were semi-structured with open-ended questions for municipal officials, councillors and traditional leaders. The central purpose of the in-depth interviews was to obtain views, opinions and ideas in respect of infrastructure development and sustainable rural livelihoods. In this regard, the researcher used predetermined open-ended questions and respondents were free to answer in their own words. The interview schedule was prepared to guide the researcher in ensuring that respondents provided information on the same topic and in a systematic manner. The interview questions were emailed to all participants two weeks prior to ensure that the respondents familiarised and scrutinised the questions well in advance for enriched response and flexible virtual interview session. All participants were virtually interviewed with no objections.

The researcher ensured that the research purpose and objectives were explained to all participants and all the participations' clauses were highlighted, including the duration of the interview. The

duration of each interview session was a maximum of 60 minutes. All interviews were conducted in IsiZulu but the transcripts from the interviews were in English for report writing. For quality control purposes, virtual conversations on Zoom and WhatsApp voice notes were automatically recorded which provided a safety measure in terms of the process of the flow of information and accuracy of data analysis thereof. The letter of consent, gatekeeper's letter and ethical clearance was presented prior to the commencement of the interview to ensure that participants provided responses without fear. While part of the qualitative data was collected from municipal officials, councillors and traditional leaders data using semi-structured interviews, additional data were solicited from the community members using focus groups as discussed below.

4.7.2 Focus Groups

In line with the interviews as the data collection tool, this study also utilised focus groups as another method for acquiring primary data. Du Plooy-Cillier *et al*. (2014:145) state that a focus group is a group of individuals that assemble to participate in a discussion based on common interest. Focus group is a small group of people that comprises 6 to 12 people and the discussion is led by the researcher who is regarded as a facilitator. Equally, Dilshad and Latif (2013:192) describe a focus group as "a group comprised of individuals with certain characteristics who focus discussion on a given issue or topic." It could be argued that the focus group is an in-depth method that brings a small homogeneous group of people together to be simultaneously interviewed with the purpose of determining attitudes, expression of ideas, opinions and viewpoints pertaining to predetermined open-ended questions from a specific agenda. A focus group provides "a rich and detailed set of data about perception, thoughts, feelings and impressions of people in their own words" (Dilshad and Latif, 2013:192). The fundamental characteristics of a focus group are based on collecting high-quality data in a social context for understanding a social phenomenon.

Parallel to interviews, the researcher conducted focus groups using WhatsApp group chats with six members of the community, each representing their respective clusters (out of five clusters) at Umzumbe Local Municipality. The municipal wards are categorised into five clusters starting from cluster A to E wherein it represents collection of municipal wards as a group. Each cluster was represented by six community members which totalled 30 participants for the focus groups. The community members were purposefully chosen to participate as common characteristics were evident to define them as member of a target group. All participants were given an opportunity to

reflect on their own experiences on infrastructure development and sustainable rural livelihoods. Most importantly, the discussion was guided by a prepared guideline which entailed standardised questions for all the participants. Thus, it ensured that the discussion proceeded within the relevancy of the topic and with good coverage of response throughout.

4.7.3 Documentary Evidence

For this study, the researcher made use of various and credible literature sources such as the government gazettes, the legislation and the municipal IDP. These documents provided data available on infrastructure development and sustainable rural livelihoods.

4.7.4 Field Observation

According to McMillan and Schumacher (2014:376) field observation is an essential data collection strategy that enables the collection of data by observing events or behaviour that occurs naturally in the research site for many hours or days for a deep understanding of the context and participant's behaviour. Furthermore, field observation includes on-site observation, prolonged data collection, corroboration of field observations, salient observations, field notes and reflex records. Similarly, Queiros, Faria and Almeida (2017:376) maintain that field observation is essential way of collecting data simultaneously with occurrence of events, but without interfering with the occurrence of the event. In this study, field observation has been used to capture the visuals of the state of infrastructure and livelihoods of the people of Umzumbe Local Municipality. The visual data were part of the field observation which were collected through photographs during the fieldwork. In this regard, field observation became an important tool in observing the state of infrastructure and livelihoods which was orientated to the discover the knowledge surrounding infrastructure and livelihoods in their natural environment.

4.8 Target Population and Sampling

Du Plooy-Cillier *et al*. (2014:132) define target population as "the total group of people or entities whom the information is required from." In general terms, target population is viewed as the aggregation of units or people with specific characteristics which are targeted by the researcher to conduct a study. Similarly, Rensburg (2010:50) sees target population as the entire group of people that encompasses all the elements of units from which the sample can be drawn for generalising findings. This implies that the target population is the totality of people or items that the researcher

aims to understand using their specific characteristics. Target population entails the elements that comprise of units of analysis forming a large pool where the sampling elements are drawn as reflected in Figure 4-2.

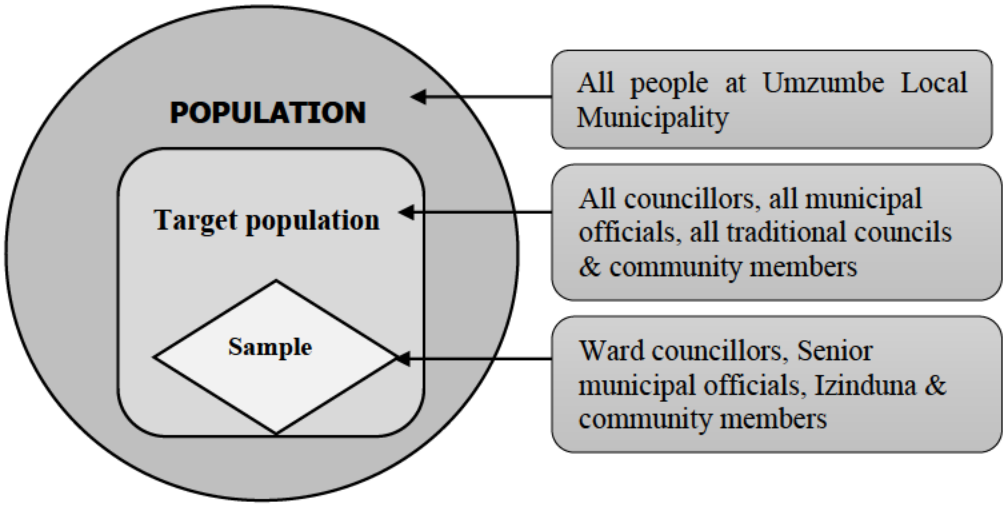


Figure 4-2: Population Sampling

Source: Adapted from Williaman (2011:94)

Taken from the entire population and further to the target population, the sample for this study stemmed as shown in Figure 4-2. The population for this study was all the people located within the jurisdiction of Umzumbe Local Municipality as the study site. However, the researcher was unable to include the whole population as a result of capacity, lack of reseources and time constraints, but a sample was drawn from a target population to represent the entire population. For a qualitative study, Creswell (2009:99) confirms that it is often impossible or time-consuming to include all the target population in a study. This means that certain elements and characteristics of participants are considered to determine inclusion and further represent the whole population using a narrowed scale (Ranjit, 2005:24).

As asserted by Creswell (2009:99), the entire target population cannot be examined but the participants needed to meet the eligibility condition to be included. The eligibility conditions are described as a criterion focusing on specific characteristics to select participants in a sub-group from the target population (Creswell, 2009:99). The eligibility conditions mirror the target population to a smaller scale at the lens of specific characteristics. The eligibility condition for this study was assessed on the basis of language, age, gender, employment status, work experience or term of office, and home ownership.

The main objective of the study was to examine infrastructure development and sustainable rural livelihoods. In this context, Nzimakwe (2010:501) outlines that in the affairs of local government, the administration and governance structures are responsible for discharging both tangible or intangible municipal services to the community members as the end users and beneficiaries. Relative to this study, actors involved in infrastructure development for Umzumbe Local Municipality are councillors, officials, traditional leaders and general community members, thus forming a target population for the study.

Rahi (2017:3) defines sampling as the process of selecting a segment of the population for investigation. Sampling could be regarded as the selection of cases or elements that represents the whole rather than as a whole in itself. Mouton (2012:132) argues that the sample selection is appropriate where it is impossible to reach the entire population due to the infinity of the population and their scattered geography. Evidently, Umzumbe Local Municipality consists of wide geographical space with people scattered. Therefore, it was going to be a problematic exercise to include all the people residing within the municipality. It could be argued that the utility of sampling was to reduce the large number of the target population to a manageable number, to easily generalise the population and for increased element of accuracy for the quality of data.

Linked with the above, study utilised the sampling technique as outlined below:

4.8.1 Sampling Technique

The selection of people or cases to participate in a study is achieved using different techniques which is guided by the type of study being conducted. According to Yates (2004:25), sampling techniques are characterised under two broad categories namely probability and non-probability sampling techniques. Mouton (2011:133) defines probability sampling as a technique that utilises a method based on the theory of probability for choosing a sample from a large population. This technique comprises sub-categories namely random sampling, cluster sampling, systematic sampling and stratified sampling. On the other hand, the author describes non-probability as a technique that gathers a sample that is based on the judgement of the researcher which does not guarantee an equal chance of selection. This technique is widely considered as appropriate when it is impossible to reach the entire population due to the difficult access of the population. This technique consists of sub-categories namely purposive sampling, accidental sampling, quota

sampling and snowball sampling (Mouton, 2011:133). Table 4-4 below distinguishes between probability and non-probability.

Table 4-4: Probability versus Non-Probability

Probability	Non-Probability
Informed by mathematical theory: Rigorous rules and procedures	Judgemental theory
Selection is by chance: Principle of random selection	Selection is by choice: Principle of judgement
Detailed sampling frame	Works without a sampling frame
Chance is known in advance	Chance is greater but not known
Equal chance	Dependent on the researcher
True representative sample	Reliable
Results generalised	Insight info
Needs a lot of resources	Needs a little resource
Large samples	Small group

Source: Mouton (2011:133)

Based on the definitions of two broad categories, together with the comparison presented by Table 4-3 above, the study favoured the selection of non-probability as a suitable sampling technique. Du Plooy-Cillier *et al*. (2014:136) affirm that probability sampling is suitable for quantitative and mixed method design, whereas non-probability sampling is suitable for qualitative design. The study, therefore, adopted the use of non-probability sampling to select the participants which was solely based on the judgement of the researcher. The adoption of the non-probability sampling was relevant in selecting meaningful participants including municipal officials, councillors and traditional leaders who have infrastructure delivery related mandate to the community. In selecting the population of interest, the non-probability technique enabled the researcher to focus on participants who hold necessary knowledge regarding infrastructure development and sustainable rural livelihoods which is based on assumption and judgement of the researcher.

4.9 Sampling strategy and Sample Size

In relation to non-probability technique, the study employed a purposive sampling method to select participants. Mathenjwa (2010:56) defines purposive sampling as the selection of participants by the researcher with the purpose in mind. For this study, purposive sampling was adopted and applied as an appropriate sampling strategy for this study as it allowed the researcher to select

participants with a specific purpose in mind. This means that the researcher purposefully selects the participants whom he/she believes to be knowledgeable and possess relevant experience concerning the phenomenon under investigation. The decision to purposely select participants was entirely vested to the researcher's judgement. Purposive sampling was applied in this study to ensure that the selected participants held the relevant knowledge which ensured that the researcher could collect, analyse, and interpret data. It was necessary to purposely identify key participants to solicit information as it was going to be impracticable to select all the target population in Umzumbe Local Municipality. The central purpose of the study sought to gain profound understanding of the fundamental reasons, perceptions, and opinions of the participants regarding infrastructure development and rural livelihoods in Umzumbe Local Municipality.

In selecting the key participants of the study, the researcher purposely selected municipal officials, ward councillors, traditional leaders, and community members. As indicated in figure 1-1 in chapter one, Umzumbe Local Municipality has five administrative departments namely Office of the Municipal Manager, Finance, Technical Services, Social & Community Services and Corporate Services. The Municipal Manager is the Accounting Officer and Head of Administration at Umzumbe Local Municipality. Subsequently, the technical service department especially Project Management Unit is directly mandated with infrastructural services including infrastructural projects that should translate to a better livelihoods for the people of Umzumbe Local Municipality. In addition, the Office of Municipal Manager also comprise of units or sections such as Development Planning, Public Participation and LED which were purposely targeted and selected.

The ward councillors, traditional leaders and community members were purposely identified and selected from the clusters. In this context, Umzumbe Local Municipality is comprised of 20 municipal wards which are categorised into five clusters from cluster A to E. Each cluster consist of group of municipal wards as shown below:

- Cluster A – ward 10, 11, 17, 18, 19 and 20
- Cluster B – ward 5, 13, 14 and 16
- Cluster C – ward 8, 9 and 15
- Cluster D – ward 1, 2, 3 and 4
- Cluster E – ward 6, 7 and 12

The SDP for Umzumbe Local Municipality (2020/21) explain that all the clusters have myriad challenges related to infrastructure provision. Out of the five clusters, cluster A is a largest populated cluster, and it is an administrative centre for Umzumbe Local Municipality which is strategically located with a huge developmental potential. The ward councillor's inclusion criteria were from each cluster but for cluster A as the largest cluster with development potential was selected to be represented by two ward councillors. As for the community members, each cluster was represented by six community members which totalled 30 participants for the focus groups. The community members were randomly identified during the Mayoral Imbizo which was held in all clusters in the Month of April. The identifies participants were therefore requested to participate in a focus group that was scheduled in a latest stage.

Rensburg (2010:134) defines a sample size as the total number of units or people selected to participate in the study. The participants of this study were purposefully selected to represent the entire population as it is not practical to include the entire population. The sample size of the study was guided by the research purpose, design and population size. Briefly, the original sample size comprised of 42 participants. However, 4 participants agreed to participate while the other 8 identified participants refused to participate, and the other 30 participants agreed to participate in a focus group. In line with the target population, 4 participants that were interviewed included the 3 municipal officials and 1 ward councillors while the 30 participants were general members of the community that were interviewed in the focus groups. The breakdown of sample size is provided in Table 4-5:

Table 4-5: Sample Size

Target Population	Stakeholder segments	Data Collection Tool	Sample size
Municipal Officials	Municipal Manager Project Management Unit Manager Public Participation Manager Development Planner LED Officer	In-Depth Interviews	5
Councillors	Ward 17, 5, 9, 11 and 12	In-Depth Interviews	5
Traditional Leaders	Izinduna zeNkosi	In- Depth Interviews	2
Community Members	Ward 17, 5, 9, 11 and 12	Focus groups	30
Total Respondents			**42**

Source: Researcher's Construct (2020)

In addition to the sampling strategy, Table 4-5 shows the sample size that reflect on the precise list of participants that were identified to participate including those that refused to participate. From the sample size of 42 participants all inclusive, 4 participants including 3 municipal officials and 1 ward councillor agreed to participate while the other 8 participants refused to participate including the traditional leaders. Furthermore, 30 community members participated in the focus groups. Those participants that refused to participate did not suffer any negative consequence. All participants were Africans with the balance representation being males and females.

4.10 Data Quality Control

Data quality control refers to the efforts by the researcher that aim to control, monitor and maintain quality standards in data collection for attainment of accurate data. Thus, a set of activities related to quality control depends on methodologies adopted for the study (Lietz and Zayas, 2010:191). For this particular study, the researcher upheld data quality control measures to ensure that the data was accurate and of high quality. For qualitative research, Du-Plooy-Cilliers *et al.* (2014:258) state that the term 'trustworthiness' refers to credibility, transferability, dependability and confirmability. Similarly, Anney (2014:276) affirms that trustworthiness criteria are mainly about demonstrating the true value of the research data as a framework that appraises the rigour of a qualitative study. The trustworthiness strategies suggested by Anney (2014:276) were sustained in this study to ensure that credible, dependable and transferable concepts were maintained. The

strategies included prolonged and varied field experience, well-defined interview techniques, structural coherence, audit trail, data coding strategy, triangulation and peer examination.

In line with the above, the strategies required the researcher to spend extended time in the research field with established data collection tools which enabled the researcher to account for all the research decisions and activities. In addition, it required the analysis of data to be grouped by themes and that the use of multiple, different methods were applied to validate the data. For this study, the primary data was collected using clearly defined interview techniques and focus group strategies which resulted in the flow of information being validated. The use of a recording device ensured accuracy. The interview questions and guidelines for the focus groups were established and applied continuously for all the participants. It was further checked and approved by the research supervisor and research office of the University of KwaZulu-Natal (UKZN). Primary data was manually analysed using Word by utilising thematic analysis and matrix structure that arranged the data into categories and patterns. In terms of secondary data, the researcher ensured that the literature cited was obtained from reliable sources such as books, academic journals, theses, dissertations, online resources and government publications.

Table 4-6 below provides description and a strategy of implementation trustworthiness criteria for the study.

Table 4-6: Trustworthiness Criteria

	Description	**Strategy of implementation**
Credibility	• Data collection and analysis follow consistent procedures • Integrity and application of the methods • Reflection of data with findings	• Operationalise concepts of the study • Meticulous record keeping – a recording device • Data triangulation – methods, theories and secondary data • Prolonged involvement
Dependability	• Consistency within the employed analytical procedures	• Computer-Assisted Qualitative Data Analysis Software (CAQDAS) – Nvivo version 10 is highly dependable
Confirmability	• Support of the findings and interpretation from the data collected	• Date triangulation for less contradictions • Alignment with research objectives

Source: Lietz and Zayas (2010:191) and Neuman (2011:218)

Table 4-6 above outlined trustworthiness criteria that were applied to maintain the accuracy and quality of the study. The criteria offered efforts that ensured that the data of the study was of quality. These criteria included credibility, dependability and confirmability. It was paramount to establish quality data control measures for the research outcomes to be dependable and credible.

4.11 Data Analysis

The process of data collection generated a large volume of raw data that needed to be analysed and interpreted, and later transformed into findings. In qualitative studies, De Vos, Strydom, Fouche and Delport (2011:397) state that data analysis is the process of bringing order, structure and meaning to data. Basically, the generic process of data analysis entails the process of "reducing the volume of raw information, sifting significance from trivia, identifying significant patterns and constructing a framework for communicating the essence of what the data reveals" (De Vos *et al*. 2011:397). For this study, the qualitative data generated through virtual interviews and focus groups were presented as a whole but later reduced into meaningful segments. Through careful data preparation, coding and interpretation, the data of this study was summarised, organised and reported using data analysis techniques such as matrix analysis. In this context, the process of data analysis consists of preparing and organising data, reducing data into themes using the coding technique and, finally, present the data in figures, tables and/or paragraphs (De Vos,2005:35).

A combination of content, thematic analysis and matrix structure as a popular model of analysis in qualitative research was adopted for this study to analyse, organise and summarise the primary data (De Vos, 2005:35). Equally, Creswell (2009:20) describes thematic analysis as the grouping of themes into a conceptual framework by observing the recurring themes in the analysis of data. Furthermore, the author describes a matrix structure as a table that consists of crossing of more than two lists which sets up a series of rows and columns (Creswell, 2009:20). Interviews were held virtually and recorded for accurate transcription. The transcription of interviews was analysed using thematic analysis wherein all emerging themes were grouped together in a matrix table and coded line-by-line to easily notice emerging themes. This assisted the researcher in identifying commonalities and differences which were grouped together to form categories.

This study took into consideration the data analysis as proposed by Gale, Heath, Cameron, Rashid and Redwood (2013:4). The data analysis stages are as follows:

Stage 1: Transcription

Stage 2: Familiarisation with the interview and focus groups

Stage 3: Coding

Stage 4: Developing a working analytical framework

Stage 5: Applying the analytical framework

Stage 6: Charting data into the analytical framework

Stage 7: Interpreting the data

The aforesaid steps are further discussed in the next section and linked to the study.

4.11.1 Stages of Interview Data Analysis

The discussion on the stages of data analysis is presented next.

4.11.1.1 Transcription

Transcription is a practice central to qualitative studies that reflects the process of representational interaction between individuals to meet specific goals of qualitative studies. Thus, transcription is described as the process of translating or transforming of sound/image from a recording to text (Davidson, 2009:38). Similarly, Du Plooy-Cillier *et al*. (2014:145) affirm that transcribing data implies that a researcher copies and converts raw information into a written or visual format so that it can be analysed and interpreted using an acceptable systematic approach. Transcription remains significant in qualitative studies as the content of textual data foregrounds data collection such as interviews and focus groups. In this study, in particular, the interviews and focus groups were virtually recorded and further transcribed. The recordings of the interview and focus groups were transcribed using the Pro Transcriber Software.

4.11.1.2 Stages of Coding Data

Following the process of the transcribing of data, the next step was the stage of coding data in the interest of re-arranging and reducing raw data. According to Linneberg and Korsgaard (2019:6), coding is an analytical process of identifying segments of meaning in your data and labelling them with codes. In their analysis, they explain that in qualitative studies, coding can be done in various ways, but the most prominent ways are by coding the data, dividing the text into small units and labelling accordingly. Adding to the notion, Du Plooy-Cillier *et al*. (2014:235) remark that coding is the process of grouping data into categories making the process of analysis manageable. In this

regard, coding can be applied to all texts notably interviews, focus group notes, observations, written text and visual images.

In this study, coding was done by observing the most prominent themes by isolating phrases, sentences and paragraphs and further coding emerging themes. This process involved cutting and sorting of the most important content which brought the distinct line between what is known and what this study offered, whilst identifying the contribution of new knowledge. The precise stages of coding adopted for this study are illustrated in Figure 4-3 below.

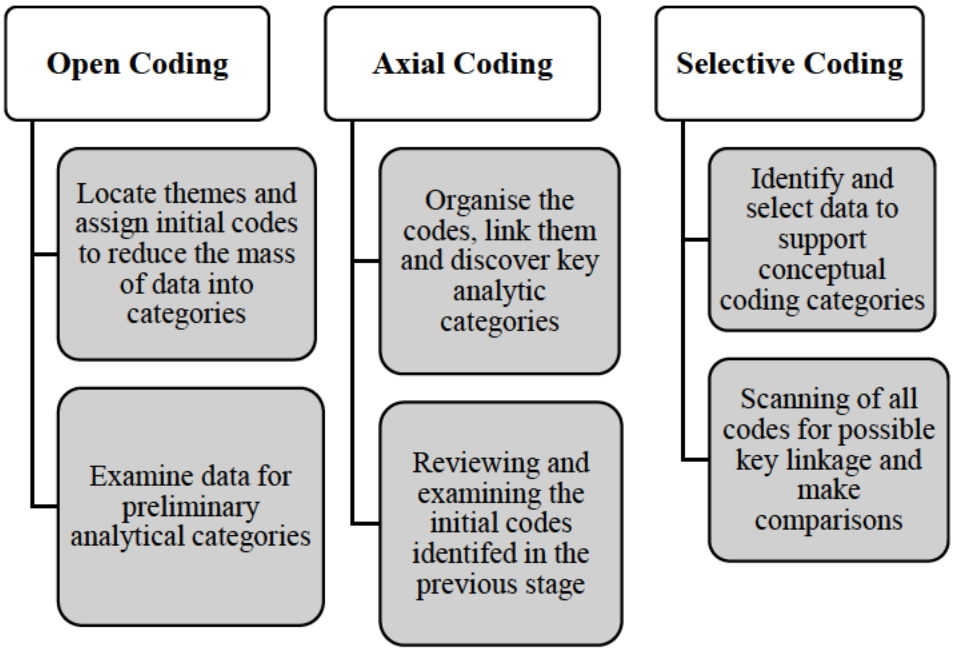


Figure 4-3: Stages of Coding

Source: Neuman (2011:480-484)

As presented in Figure 4-3, the three stages of coding allowed this study to organise raw data into conceptual categories and further identified prominent themes for analysis. The first stage dealt with the actual data to identify words, phrases, context, consistency and frequency related to infrastructure development and sustainable rural livelihoods. At this stage, it was possible to surface from deep inside the actual data. The second stage focused on categories and patterns that were identified for it to be organised in terms of causality, context and coherence. The third stage focused on scanning all the codes for prominent themes.

4.12 Matrix Analysis

According to Averill (2002:856) a matrix is defined as a set of numbers or terms arranged in rows and columns; that within which, or within and from which, something originates, takes form, or develops. In qualitative studies, and data analysis in particular, a matrix analysis involves "crossing of two lists, set up as a series of rows and columns" to reflect on how the data interact (Averill, 2002:856). In the same vein, Gale *et al*. (2013:2) point out that matrix analysis is embedded in the broad family of content and thematic analysis. As such, the matrix is used to identify commonalities and differences in qualitative data so that a relationship is clearly outlined between different parts of the data in order to draw conclusions clustered around the identified themes. The matrix, as explained by Gale *et al*. (2013:2), is constituted by rows (cases), columns (codes) and cells of summarised data that offer structured and reduced data so that the analysis is based on cases and codes.

For the purpose of this study, the matrix analysis was adopted along the content and thematic analysis as suggested by the authors above. The choice for this analysis was encouraged by the research design of this study that foregrounded for research findings to be qualitative. The matrix analysis, therefore, ensured the streamlining of the processes for systematically identifying of commonalities and differences in individuals' responses. Through the use of matrix analysis, the individual responses remain connected with other aspects within the matrix so that the context of the individual's view is not lost (Gale *et al.* 2013:2). Coding and categorising data according to their similarities and trends was done and depicted in the matrix structure. While the themes that emerged were coded, the matrix depicted the comparison of data for effective analysis within the reduced framework.

4.13 Ethical Considerations

Ethical considerations in research were critical to consider as this study entailed the use of human subjects which were prioritised at highest level to ensure that their human rights were not violated in any form. Section 10 of the Constitution guarantees every citizen with the right of human dignity which should be well respected and protected in all aspects. This right bears resemblance to research studies in general as they contain ethical and moral dilemmas which, to some extent, may be harmful to the people either physically or psychologically, and further compromises their human privacy. The study required a set of moral principles as a guideline for ensuring that the

researcher strictly adhered to confidentiality, anonymity, legality, professionalism and privacy (Du Plooy-Cillier *et al*. 2014:269).

In reference to Appendix 1 attached, the researcher observed the requirements of the ethical clearance policies and procedures as stipulated by the ERC of the UKZN. In this regard, the researcher was granted an approved ethical clearance from UKZN's research office and further granted two gatekeeper's letters from Umzumbe Local Municipality and KZN-COGTA. The rationale was to ensure that the rules and regulations determined by the University's code of ethics embodies a range of good research practice and conduct. In so doing, the researcher adhered to the ethical issues as set out below:

4.13.1 Informed Consents

The researcher obtained an informed consent from all the participants to authenticate participation to the study and further requested permission to use a tape recorder for the interviews and focus groups sessions. The letter of consent unequivocally outlined the confidentiality and anonymity clauses for participation. Most importantly, the informed consent was clear that participation was voluntary with no monetary gains, which further emphasised the right to withdraw from participation at any time without suffering any negative consequences. For this study, consent letter is included in Appendix 1 attached.

4.13.2 Confidentiality and Anonymity

The researcher presented a signed covering letter to the participants that provided a brief outline of the study tapping into the aim and objectives of the study. It was numerously reiterated to participants as most of the participants are from rural areas, especially for the focus groups, that the researcher will not, under any circumstances, reveal the identity of the participants. For report writing, the researcher referred to a person as respondent 1, 2, 3 and so forth. The rationale was not to divulge any name of participants which guaranteed that respondents remained unknown. The aim was to ensure that human dignity and well-being were respected as enshrined in Section 10 of the Constitution.

4.13.3 No Harm to Participants

The researcher affirmed that this study had no intention of either causing any physical or mental harm to any of its participants. More importantly, the researcher also ensured that the use of

language did not cause any psychological harm or any form of embarrassment. Therefore, the interview questions and discussion guidelines were prepared in advance by the researcher and submitted to the University ERC for approval as part of the EC procedure.

Traditionally, the data collection for research studies are carried out in face-to-face interaction with study's participants but, during the course of this particular study the covid-19 pandemic was declared in South Africa. In response to the pandemic, the national government enforced covid-19 regulations and protocols including prohibition of gathering, social distance, curfew, and lockdown. The regulations were enforced as the virus is swiftly transmitted through coughing, sneezing, touching or in congested space. Given the high risk of infection, this study protected the health risk of the participants by adopting the remote method of collecting data such as virtual interviews and focus groups. This remote way of participating ensured that participants are safeguarded from contracting the virus as the result of participating in the study.

4.14 Limitations of the Study

Mouton (2011:152) states that the limitations of the study are the characteristics of methodology that creates a restriction to the researcher from obtaining various forms of information and analysing data. The limitations are as a result of shortcomings, conditions, factors and influences that are beyond the control of the researcher. Thus, it presents restriction on the methodology and research findings. Equally, Askarzai and Unhelkar (2017:29) affirm that the qualitative design suffers from a variety of limitations that are likely to impact or influence the interpretation of the research findings. In their assertion, they argued that the analysis of qualitative research heavily depends on the meaning and information conveyed by the participants which cannot be generalised to a large population as the design is not suitable for statistical testing. Furthermore, the qualitative research design depends on the researcher's skills and experience and it is likely to be influenced by personal biases and characteristics, which is presented as a limitation of the study.

The limitations could not, however, be ruled out totally for this study as limitations were evident and experienced by the researcher. First, this study was not intended to be a longitudinal study. Therefore, the timeframes that were attached to this study entailed limitation. In addition, the scope of research was limited to Umzumbe Local Municipality as a rural, community-based municipality with a sampled representation of population from selected wards for participation. The study was limited to one municipality excluding the other municipalities in KZN and South Africa at large.

As such, the scope limitation for this research has limited the research findings from other rural municipalities and the recommendations presented might not be applicable nor relevant to other rural municipalities.

The researcher is a former employee of Umzumbe Local Municipality who was based at the Office of the Mayor and resigned in the course of the study. While working exposure in such an office provided the researcher with a practical knowledge of the research problem and the research environment, it posed a great potential of researcher's personal bias and partiality. The researcher was strictly guided by the interview and focus group schedules in collecting data. Subsequently, the collected data was analysed using the clearly defined data analysis techniques, including data preparation, coding and interpretation to ensure that the data was a true reflection of the participants' views. This greatly assisted in guarding against personal bias and partiality.

Furthermore, community members and councillors somehow associated this study with political interests as the said participants were at first reluctant to and resisted participation. This was likely to result in participants giving dishonest and politically motivated answers. To ensure that this limitation was overcome, the researcher presented an EC letter from UKZN together with the covering letter confirming that the study was authentic and approved by the relevant authority which is purely grounded on academic purposes and interests.

4.15 Chapter Summary

This chapter presented the research design and methodology as well as tools applied in undertaking the research study. It presented that this study was carried out under the features of an interpretivist paradigm under the philosophical worldview and qualitative research design. This chapter provided detailed methodological tools used to collect qualitative data and discussed how the results were obtained and further analysed. Furthermore, the chapter presented a detailed discussion on the target population, sampling, data collection and analysis techniques and the criteria used to ensure trustworthiness and ethical considerations. The sample size and sampled population of the study was presented, and reasons for choice was substantiated thereof. The primary data for this study was gathered through interviews and focus groups and the results were obtained. The results of the interviews and focus groups will be presented and discussed in Chapter 5, presented next.

CHAPTER 5

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

5.1 Chapter Introduction

This chapter presents and elaborates on the qualitative data gathered for analysis and interpretation. It begins by restating the research objectives and research questions. The qualitative data were collected through virtual interviews and focus groups to solicit participants' perception on infrastructure development and sustainable rural livelihood from Umzumbe Local Municipality. In doing so, this chapter outlines the demographics of the study's participants and subsequently provides a detailed discussion of the qualitative data in response to the research objectives and research questions. Themes that emerged from the data are presented in matrix structures.

5.2 Recapitulation of Research Objectives and Research Questions

Table 5-1 below offers a recapitulation of the research objectives and questions presented in chapter one of this dissertation.

Table 5-1: Recapitulation of Research Questions and Research Objectives

Research Objectives	Research Questions
1. To ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods.	1. To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihood?
2. To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihoods.	2. What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?
3. To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.	3. What are the salient contributing factors impacting on poor and inadequate infrastructure development and sustainable rural livelihoods?
4. To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.	4. What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?
5. To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.	5. In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?
6. To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.	6. What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?

Source: Researcher's Construct (2020)

5.3 Interconnection Between the Research Question, Research Objectives and Interview Questions

Table 5-2 presents the interconnection between the research questions, research objectives and interview questions. The research instruments marked as Appendix 2 were used to conduct interviews and focus groups. The research instrument consisted 44 interview questions and 10 focus group questions. Combined, this amounted to 54 questions. Table 5-2, however, only reflects the interview questions for municipal officials as most of the interview questions allocated for councillors and izinduna were deemed to be a repetition. Precisely, the Table 5-2 excluded questions from councillors, izinduna and focus groups including questions related to biographical information. The table is presented next:

Table 5-2: Interconnection Between the Research Questions, Research Objectives and Interview Questions

Research Questions	Research Objectives	Interview questions
Main Question: To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihoods?	**Main Objective:** To ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods.	**Question 1** To what extent has Umzumbe Local Municipality in recent years established and implemented measures to enhance infrastructural development and sustainable rural livelihood? **Question 2:** How does Umzumbe Local Municipality identify and prioritise infrastructural development projects and rural development programs in all municipal wards?
Sub-question 1: What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?	**Sub-objective 1:** To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihood.	**Question 3:** What are your perceptions in terms of quality of the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality? **Question 4:** What are your perceptions in terms community accessibility to the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality? **Question 5:** What are your perceptions in terms of reliability of the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality? **Question 6:** To what extent does infrastructure development initiatives support the opportunities of sustainable rural livelihood in Umzumbe Local Municipality?
Sub-question 2: What are the salient contributing factors impacting poor and inadequate infrastructure development and sustainable rural livelihoods?	**Sub-objective 2:** To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.	**Question 7:** What are the salient contributing factors that hinder quality infrastructure development in Umzumbe Local Municipality? **Question 8:** What is the impact of these factors on the attainment of sustainable rural livelihood in Umzumbe Local Municipality?
Sub-question 3: What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?	**Sub-objective 3:** To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.	**Question 9:** What are the recent infrastructural rural development programmes adopted by Umzumbe Local Municipality to enhance sustainable rural livelihood? **Question 10:** How are the delivery of infrastructural programmes promoting socio-economic development for Umzumbe Local Municipality at large?

		Question 11: What are the recent infrastructural projects adopted by Umzumbe Local Municipality to enhance sustainable rural livelihood? **Question 12:** How are the delivery of infrastructural projects promoting socio-economic development for Umzumbe Local Municipality at large?
Sub-question 4: In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?	**Sub-objective 4:** To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.	**Question 13:** In what way is the national sphere of government performing the supervisory and monitoring role for Umzumbe Local Municipality? **Question 14:** In what way is the provincial sphere of government performing the supervisory and monitoring role for Umzumbe Local Municipality? **Question 15:** What is the efficacy of the collaborative mechanisms between spheres of government to facilitate infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
Sub-question 5: What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?	**Sub-objective 5:** To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.	**Question 16:** What are future plans, goals and/or turnaround strategies that Umzumbe Local Municipality hopes to achieve in the interest of infrastructure development and sustainable rural livelihood? **Questions 17:** Finally, what strategies can you recommend for Umzumbe Local Municipality to improve on infrastructural development and sustainable rural livelihood?

Source: Fieldwork enquiry (2020)

The ensuing discussion presents the interconnection between the theoretical framework, research objective and interview questions as adopted for the study.

5.4 Alignment Theoretical Framework, Research Objectives and Interview Questions

As presented and discussed in chapter 3 of this dissertation, this study adopted the theory of infrastructure-led development and sustainable livelihood framework. The interaction between the adopted theory, framework and the collected qualitative data is presented in Table 5-3.

Table 5-3: Interaction between Theoretical Framework and Collected Data

Theory and framework	Theory Constructs	Qualitative data
Theory of infrastructure led development	Socio-economic development	Infrastructure development initiatives are of high importance when it comes to sustainable rural livelihoods because they advocate for social cohesion, economic development and community development. They lately contribute to decreased rural to urban migration (UMZM005).
	Basic services	The availability of quality infrastructure is key to the provision of basic services in the community space. The community's needs for their residential areas demands the availability of proper roads, bridges, electricity, housing, water, and sanitation (UMZC104)
	Productivity	Infrastructure development as a key that ensures economic opportunities. It further enhances productivity for the standard of living of the people. For example, the provision of electricity allows households to be able to have access to other opportunities as well in their areas that require electricity to be implemented such as water pump stations (UMZM004).
	Economic growth	It is no secret that Umzumbe Local Municipality needs to consider extending the out-boundaries to incorporate Mtwalume River and Umzumbe River so that the already developed areas such as Koelwaters, Mtwalume, Hibberdene and Phumula will be under the jurisdiction of Umzumbe Local Municipality for more robust economic growth and job creation (UMZM001).
Sustainable livelihood framework	Livelihoods activities	KwaQoloQolo is a deep rural area that is neglected by Umzumbe Local Municipality owing to the huge infrastructural backlog which makes it very difficult to engage on the daily livelihood activities as most of the residential areas are reliant on technical and vocational abilities to generate an income such as raising livestock, farming and small business (FG002).
	Livelihoods resources	The pursuit of livelihoods depends on multiple livelihood activities including cheap labour and self-employment activities to achieve livelihood outcome. Furthermore, social grants are also a main source of income (FG001).

Source: Fieldwork Enquiry (2020)

Table 5-3 offers an interaction between the adopted theoretical framework, including theory of infrastructure-led development and sustainable livelihood framework, with the collected data. As presented in chapter 3 of this dissertation, the theory of infrastructure-led development presented development of infrastructure as the key driving force to achieve socio-economic development and sustainable livelihoods, thus improving productivity. Furthermore, the SLF provided a diverse way of multiple activities that people use to attain their livelihoods in rural areas. Subsequently, the linkage is observed with the theoretical assumptions and collected data.

5.5 Presentation of Primary Qualitative Data and Analysis

This section presents the primary qualitative data collected through interviews and focus groups on the state of infrastructure development and sustainable rural livelihoods in Umzumbe Local Municipality. The interviews and focus groups data are presented and analysed using the theoretical framework adopted for the study and relevant literature on the subject. Emerging themes are arranged in matrix structures for the purpose of analysis. Table 5-4 and 5-5 below outline participants details including gender, race and assigned codes.

Table 5-4: Interview Participant's Demographic Data

Participant	Research Participant	Gender	Race	No of participants	Respondent's code
Municipal Officials	Municipal official 1	Male	African	1	UMZM001
	Municipal official 2	Male	African	1	UMZM002
	Municipal official 3	Female	African	1	UMZM003
	Municipal official 4	Male	African	1	UMZM004
	Municipal official 5	Female	African	1	UMZM005
Ward Councillors	Councillor 1	Male	African	1	UMZC101
	Councillor 2	Male	African	1	UMZC102
	Councillor 3	Female	African	1	UMZC103
	Councillor 4	Male	African	1	UMZC104
	Councillor 5	Female	African	1	UMZC105
Traditional Leaders	Induna 1	Male	African	1	UMZI201
	Induna 2	Male	African	1	UMZI202

Source: Participant's demographic data (2020)

Table 5-4 displays the participants demographic data of the municipal officials, councillors and izinduna from Umzumbe Local Municipality. The table includes the gender, race and assigned codes that identify them. However, out of the 12 participants depicted in Table 5-4 above, 4 participants agreed to participate while the other 8 participants refused to participate.

Table 5-5: Focus Group Participant's Demographic Data

Participants	Ward of residence	Race	No of participants	Gender	Age range	Group code
Community Members	Ward 5	Africans	6	4 males & 2 females	30–65 years	FG001
	Ward 9	Africans	6	1 males & 5 females	30–65 years	FG002
	Ward 11	Africans	6	2 males & 4 females	30–65 years	FG003
	Ward 12	Africans	6	3 males & 3 females	30–65 years	FG004
	Ward 17	Africans	6	4 males & 2 females	30–65 years	FG005

Source: Participant's demographic data (2020)

Table 5-5 depicts the participants' demographic data for the focus groups that were held with the community members of Umzumbe Local Municipality. All the participants reflected in Table 5-5 above participated in the focus groups. Table 5- 4 and Table 5-5 both illustrated the demographic data of the participants of the study for the interviews and focus groups. As such, study participants were assigned codes that identify them. The study identified a total of 42 participants, however, 34 participants participated in the study whilst the 8 participants refused to participate. All participants were Africans with the balance representation being males and females.

5.5.1 Data Presentation, Analysis and Discussion

The primary data of this study was interpreted and discussed using data matrices. The study adopted thematic analysis. Thematic analysis is the exercise of discovering recurring patterns and developing themes for analysis (Creswell 2009:20). In this case, themes were identified from an array of categories that were grouped together to formulate patterns of combined responses from the participants in relation to infrastructure development and sustainable rural livelihoods from Umzumbe Local Municipality.

5.5.2 Emerging Themes in Relation to Research Objectives and Research Questions

This section presents themes and sub-themes that emerged from the qualitative data in relation to research objectives and research questions as reflected in Table 5-4. Arranged into matrix, research objectives and its corresponding research questions are in the same column with the emerging themes and sub-themes that align with the research objective and research question.

The emerging themes and sub-themes are presented next and discussed in subsequent subsections of the dissertation.

Table 5-6: Interaction between the Emerging Themes of the Study with Research Objectives and Research Questions

Research objective 1	**Research objective 2**	**Research objective 3**	**Research objective 4**	**Research objective 5**	**Research objective 6**
To ascertain the extent to which Umzumbe Local Municipality enhance infrastructural development and sustainable rural livelihoods.	To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihood.	To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.	To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.	To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.	To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.
Research Question 1	**Research Question 2**	**Research Question 3**	**Research Question 4**	**Research Question 5**	**Research Question 6**
To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihoods?	What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?	What are salient contributing factors impacting poor and inadequate infrastructure development and sustainable rural livelihoods?	What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?	In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?	What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?
Emerging theme 1	**Emerging theme 2**	**Emerging theme 3**	**Emerging theme 4**	**Emerging theme 5**	**Emerging theme 6**
Deficient supply of infrastructure	Backlog in delivery of basic services	Institutional incapacity	Infrastructural projects and programmes	Co-operative governance	Recommendations and improvement strategies
Emerging Sub-Themes	**Emerging Sub-Themes**	**Emerging Sub-Themes**	**Emerging Sub-Themes**	**Emerging Sub-Themes**	**Emerging Sub-Themes**

• Poor road conditions • Unstable water supply • Poor electricity • Poor network connectivity • Adoption of Spatial Development Framework • Infrastructure Master plan	• Poor access to basic services • Devastating livelihoods • Poor quality of rural infrastructural initiatives	• Limited financial resources • Corrupt tendering system • Poor maintenance of infrastructural services • Incompetent human resource	• Poor project management • Socio-economic development • Poverty & unemployment	• District Development Model (DDM) • Operation Sukuma Sakhe (OSS)	• Land acquisition • Tendering system • Revenue collection • Investment attractions

Source: Fieldwork Enquiry (2020)

Table 5-6 presented the interaction between the emerging themes of the study in relation to research objectives and research questions. The table gives insight into infrastructure development and sustainable rural livelihoods in Umzumbe Local Municipality. In line with the reviewed literature review presented in Chapter 2 of this dissertation, the emerging themes confirmed that infrastructure development is indeed a cross-cutting issue globally and among South African municipalities, including Umzumbe Local Municipality.

Qwabe (2013:28) explained that the nature and complexity of developmental challenges include inadequate delivery of infrastructure which has detrimental effects in the provision of quality basic services such as water, roads, housing and electricity, especially in the rural space. The reality of infrastructural backlog has resulted in poor access to basic services at Umzumbe Local Municipality resulting in instable and fragmented rural livelihoods.

The emerging themes affirm that rural livelihoods are engulfed with vicious socio-economic realities rooted in poor infrastructural access, quality and reliability. For example, atrocious road conditions and road network, lack of bridges, depressing water supply and poor network connectivity are not uncommon in rural communities including Umzumbe Local Municipality. The rural livelihoods remain to be disadvantaged and marginalised as deprivation continues to manifest in poorly resourced rural municipalities, spatial inequalities and decaying of existing infrastructural services. It is for these reasons that the main objective of this study was to ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods. The next section unpacks and elaborates on the emerging themes and sub-themes that were identified using thematic analysis.

The next section presents and analyses data relative to the first objective of the study.

5.5.2.1 Deficient Supply of Infrastructure

The main objective of this study was to ascertain the extent to which Umzumbe Local Municipality enhances infrastructure development and sustainable rural livelihoods. The study found out that supply of infrastructure remains a critical challenge that continues to negatively impact the rural livelihoods. Drawing from the interviews and focus groups with the research participants, as outlined in Table 5-4 and Table 5-5, the study was able to ascertain that infrastructure is an

essential component for basic livelihoods that provide a safe drinking water, accessible transportation, stable electricity and reliable telecommunication.

One of the participants affirmed that:

> *Infrastructure development that communities mostly require are usually adequate roads, water infrastructure, social services such as educational facilities, health facilities, institutional facilities and other community facilities* (UMZM004).

Again, the availability of infrastructure makes people self-reliant and capable of meeting their own basic needs. The need for the provision of quality and reliable infrastructure cannot be overstated as it has the potential to produce vibrant basic services that can transform the rural landscape into sustainable rural livelihoods.

Keke and Okem (2016:5) found that good quality road infrastructure can link and connect people in their different geographical spaces, allowing the economy to move. Moreover, the availability of safe running water reduces the exposure to common diseases, saves time when fetching water in long destinations and increases agricultural production. Also, telecommunications further links rural people with other people around the world. This study also confirmed the assertion by Oleseni and Alade (2012:64) that the availability of quality infrastructure indirectly leads to poverty reduction as it offers better standards of living and human capital formulation. In essence, infrastructure is a fundamental element of human life. This study revealed the positive impact of having infrastructure and negative impact of the unavailability of infrastructure in the study area as outlined in Matrix 5-1:

Matrix 5-1: Impact of Infrastructural Development in the Study Area

Infrastructure	Positive impact	Source	Negative impact	Source
Road conditions	Enhanced accessibility and mobility to various destinations such as clinics, schools, malls and police stations.	UMZC101 FG001	High accident rate and damage to vehicles of the community member. High transport costs and long walking distances.	UMZC101 FG001
Water supply	Provides convenient access to safe drinking water and also saves time to fetch water.	FG003 UMZC101 FG001 FG004	The alternative distribution mechanisms are not convenient as the community members wait for lengthy durations to be provided with alternative water supply.	FG003 UMZC101 FG001 FG004
Electricity	Easy lighting, cooking, food storage and the use of gadgets.	FG001 FG005	Decreases productivity during night work, and work that requires power becomes impossible.	FG001 FG005
Telecommunication	The relations that connect other people increases such as Information Technology (IT).	FG004 FG001 FG005	Decreases public participation and productivity, especially during the time of Covid-19.	FG004 FG001 FG005

Source: Fieldwork Enquiry (2020)

Matrix 5-1 confirms that infrastructural services are a hybrid model that shapes the manner in which the livelihoods roll-out. The study found that the deficient supply of infrastructure at Umzumbe Local Municipality is an overarching burden that has created human and socio-economic related challenges such as poor access to health care facilities and educational services. The fragmented infrastructural services result in the inability of citizens to enjoy the provision of running water, good quality of roads, electricity and other basic services which negatively confronts their daily livelihoods. In this context, the supply of infrastructure suffers from a wide range of shortfalls, specifically provision of quality rural infrastructural initiatives.

One of the participants from the focus groups shared that:

> *The quality of access roads is dismal with extreme potholes because the ward has moving soil. This is eminent as most of the access roads are gravel roads which makes it difficult to use especially during rainy seasons. Furthermore, it was mentioned that the current infrastructure suffers from the lack of quality check measures in material and it was also specified that Mashazini Access road is broken down as if it was never fixed in the first*

place. Therefore, the work of surveyor and engineers in ensuring quality remains highly criticised (FG005).

In spite of the backlog in infrastructure development, the study found out that in certain areas of Umzumbe Local Municipality physical and social infrastructures are present, but the quality of the infrastructure remains contested. The majority of the participants pointed out that Umzumbe Local Municipality is mostly operating under ageing infrastructure.

One of the participants from the focus group stated that:

The existing infrastructure was developed many years ago as far as in the 90s and early 2000s. As such, Umzumbe Local Municipality together with Ugu District Municipality are operating under ageing and old infrastructure which makes it difficult to render quality service delivery with positive impact on the livelihoods of the people (FG001).

In line with the above assertions, it can be articulated that the availability of well-maintained infrastructure offers fundamental changes in geographical structures, social phenomenon, status of the people and environmental conditions. It is noted that Umzumbe Local Municipality together with other counterparts such as Ugu District Municipality and Eskom have implemented sizeable physical infrastructure projects but poor quality in the rolling of infrastructural projects has exacerbated pressure on the existing infrastructure including ageing infrastructure. Thus, it becomes difficult to meet the increasing demand with the unserviceable ageing infrastructure.

The sub-themes that emerged from the study will be discussed next.

(a) Poor Road Conditions

Poor road conditions in the rural space has been identified as a key restraint in the attainment of sustainable rural livelihoods. According to most of the study participants, Umzumbe Local Municipality is highly challenged revealing an inadequacy in terms of providing quality and sustainable road infrastructure in many access roads and other transportation networks. The poor state of roads at Umzumbe Local Municipality remains alarming.

This study confirmed that most of the access roads within Umzumbe Local Municipality are either narrowed, unpaved and/or are gravel with huge potholes. Moreover, the issue of maintenance and re-gravelling of existing access roads were also said to be unsatisfactory and below the acceptable standard.

One of the participants in the focus groups pointed out that:

> *Roads are not in good state. We only utilize main road, even that main road is just a gravel and is not good for latest cars. Unfortunately, we hardly get a grader and a bridge near Mtwalume High School is a troublesome when there are heavy rains. Tar road is a solution* (FG002).

The rationale is that quality road infrastructure links people in their different geographical space. In this context, the direct impact of poor road conditions affects the socio-economic networks. In any geographical area, for instance, poor road infrastructure deprives the community members, resulting in exploiting all the opportunities and benefits attached to it. Gbadomosi and Olorunfemi (2016:35) found that the absence of road transport infrastructures in most of the rural areas have been the greatest challenge that limits rural dwellers from accessing the healthcare facilities and economic activities. The challenges include long distances to facilities, bad road conditions, inadequate and unaffordable transport cost, and are key hindrances for accessing healthcare and educational services. Furthermore, people are deprived from receiving emergency services such as ambulance and police services. This poses restrictions on the livelihoods of the people in terms of general human activities that are necessary for their daily livelihoods.

One of the participants alluded that:

> *The is huge outcry from the community members for infrastructural development to enhance their daily livelihoods. Most recently the state of access roads is in a very bad condition that prevent vehicle movement and the community members have been battling with this for many years* (UMZC101).

The development of road infrastructure is an important factor that enables rural accessibility (Manggat *et al*. 2018:651). However, the above indicates that the impassibility of rural people in their rural access roads do not only impede on the delivery of basic services including health and

educational services but also affect sustainability and growth of local enterprise. For example, the people of Umzumbe Local Municipality cannot strive for self-reliance in the place with immobility and unaccessible destinations.

The images reflect a sample of both provincial and access roads within Umzumbe Local Municipality.

Image 5-1: Ward 19 – Mnafu area

Source: Researcher's field observation (2020)

Image 5-2: Ward 20 – Makhoso area

Source: Researcher's field observation (2020)

Image 5-2: Ward 19 – Mnafu area

Source: Researcher's field observation (2020)

Image 5-1: Ward 10 – Sipofu

Source: Researcher's field observation (2020)

The available rural road infrastructure at Umzumbe Local Municipality are dilapidated and some are impassable especially during heavy rain season. As the result, this put more strain to the motor vehicle drivers as they struggle to drive in such road conditions.

(b) Unstable Water Supply

General livelihoods also depend on the availability of clean water for drinking, domestic use and hygiene purposes. Water provision in this regard is considered as a fundamental human right as espoused in the Constitution. As indicated earlier, Ugu District Municipality is the water service authority and water service provider that supplies water and sanitation for the entire communities of Umzumbe Local Municipality and other local municipalities within the district. This implies that water provision is not a core function of Umzumbe Local Municipality, but it is vested in Ugu District Municipality. Through the IGR mechanisms, Umzumbe Local Municipality has a role of ensuring that water and sanitation delivery is indeed provided for their communities.

The IDP of Umzumbe Local Municipality (2020/2021) confirmed that the water supply zones for Umzumbe Local Municipality are Mtwalume, Ndelu and Mhlabatshane water supply zones including Phungashe, Ndelu and Assisi as stand-alone rural schemes. In spite of the existing water supply zones but unstable water supply remains to be cross-cutting issue at Umzumbe Local Municipality with growing frustration to the people due to a high level of water shortage. To confirm this assertion, this study found that community of Umzumbe Local Municipality do not have access to safe, reliable, affordable and sustainable water services. The study participants from the focus groups bemoaned that continuing water supply problems in their residences remain a challenge.

One of the participants bemoaned that:

> *Water crisis is the major issue that creates extreme hardship in our daily living conditions as we consistently experiencing long lasting water cut for a duration up to days, weeks and possible months. Therefore, we really struggle to do domestic chores that requires the use of water* (FG001).

Another participant pointed out that:

> *In the amidst of the Covid-19 pandemic which requires regular washing of hands with clean water and soap, but we really struggle to get single drop of water in our place of residence for the longest duration* (FG004).

Image 5-6 and 5-7 below depicts a communal tap and Mhlabatshane water supply scheme as water infrastructure and water resources that supply communities of Umzumbe Local Municipality. The images show the conditions and nature of the water infrastructure and water resource.

Image 5-5: Ward 11 – MthiniOwomile Area

Source: Researcher's field observation (2020)

Image 5-6: Mhlabatshane Dam

Source: Researcher's field observation (2020)

The images 5-5 and 5-6 affirm that there is a high prevalence of unstable water supply which is keeping the community of Umzumbe Local Municipality fragile. The unavailability of reliable water supply forces people to walk or travel several kilometres to find available clean water, while others are sourcing water from unprotected springs, ponds and rivers which are exposed to livestock and wildlife (Edokpayi, Rogawski, and Kahler, 2018:2). This poses a major threat to their human health including the risks and consequences associated with the Covid-19 pandemic. Also, this study found that with the long-lasting water cuts in the entire district, households have opted for the use of other multi-sources to store water including JoJo tanks and various containers

to cope with the pervasive water cuts. It could not be ruled out that unstable water supply in rural setting including Umzumbe Local Municipality has been affected by a number of challenges ranging from the inadequate capacity to operate, to constantly maintaining ageing water service infrastructure.

(c) Poor Electricity

According to Owusu and Asumadu-Sarkodie (2016:1), the availability of electricity is a prime requirement that influences key components associated with human and socio-economic development in general. In rural areas in particular, the requirement of electricity is a necessity that improves the daily productivity and further reduces time consumption on collection of wood and candles for cooking and lighting (Anandan and Ramaswamy, 2016:18). The theory of infrastructure development as proposed by Agénor (2010) affirms that access to electricity reduces cost of boiling water and spending time on collecting smoky traditional fuel for cooking. This study noted that the rural electrification programmes at Umzumbe Local Municipality, as outlined in Chapter 2 of this dissertation, are significant in improving the living conditions of the people and further promote sustainable development. Contrary, empirical findings reveal a persistent lack of access to electricity in some areas of Umzumbe Local Municipality. People in such areas are still using paraffin and wood as sources of energy.

One participant pointed out that:

> *Not all households in our ward have access to electricity. In some areas, there is non-existence of electricity infrastructure whereas in other part of the ward there is installed infrastructure but yet households are not connected at all* (FG004).

Another participant added that:

> *Electricity has become part of our daily lives. Households which were not electrified were deprived opportunities of a better standard of living and quality of life. It is for that reason that the municipality had to provide these households with access to electricity. This allows households to be able to have access to other opportunities such as social services that require power generated from electricity such as water pump stations* (UMZM004).

The highlights of some of the electrification projects within Umzumbe Local Municipality are outlined in Table 5-7.

Table 5-7: Electricity Projects at Umzumbe Local Municipality

Project Name	Annual Target	Annual Actual
Mthwalume Phase 1	Mthwalume Phase 1: 150 household connection	150 household connected
Magwaza Phase 2	Magwaza phase 2: 397 household connection	397 household connected
Isiphofu Phase 2	Isiphofu Phase 2: 334 household connection	334 household connected
Isiphofu Phase 1	Isiphofu Phase 1: 500 household connection	500 household connected

Source: Fieldwork Enquiry (2020)

The implementation of the electrification projects could be regarded as having a positive impact on the livelihoods of the people, especially on those that are connecting for the first time. The study found that electricity is one of the basic energy sources for most kind of infrastructures such as pump stations for water supply and network towers for network connectivity, among other things. It could be argued that electricity alone as a basic human requirement cannot entirely create all the conditions for sustainable rural livelihood, but it requires the availability of other infrastructural services such as network connectivity.

(d) Poor Network Connectivity

The telecommunication infrastructure is the main tool that connects the society with the rest of the world. However, network connectivity continues to be a major challenge at Umzumbe Local Municipality (Umzumbe Local Municipality IDP, 2020/2021). It is observed that rural areas are unable to process, gather and transfer information as limited by the network connectivity. Rural people, for example, are compelled to travel long distances to access network connectivity or internet.

According to Jackson (2020:2), the Covid-19 pandemic has resulted in the extensive use of technology to communicate through internet, telephone services and computers as the most essential tools that prevent physical contact. In response to the outbreak of Covid-19 across most countries including South Africa, people were required to adopt health safety measures to prevent further spread of the virus including social distancing and complete lockdown with the exception of travelling for essential needs. As such, most of the rural areas continue to face the unprecedented challenge over poor network connectivity. One needs to take into cognizance the rising need for

the use of the network and internet as it places rural people in the most disadvantaged state of well-being.

One participant commented that:

> *Network connectivity is an issue as it also goes off during load shedding and windy seasons which shows that the available cell phone tower does not have sufficient capacity* (FG003).

Another participant also bemoaned that:

> *Every day after 18:00 there is no network connectivity and you cannot do anything that requires internet connectivity* (FG001).

(e) Adoption of Spatial Development Framework

As part of the institutional arrangement, Umzumbe Local Municipality has considered the adoption of the SDF as a strategic mapping for the municipality. It is anticipated that SDF will facilitate development over time by increasing the level of access to upgrade infrastructure, social facilities and supportive institutions.

One of the participants indicated that:

> *The municipality has adopted an SDF that sets out a long term municipal spatial vision that is aligned with the municipal IDP. The SDF realised that it would be easier to accelerate development if it is rolled out per cluster through nodal development. The adoption of this strategy has been followed by prioritisation and construction of projects such as roads, sports complexes, community halls and working with Human Settlements Department and contractors to roll out low income housing developments in all clusters* (UMZM004).

(f) Infrastructure Master Plan

In line with the above, the Infrastructure Master Plan adopted in 2019 is another plan which the Umzumbe Local Municipality is considering for strategic mapping of infrastructural related challenges:

One of the participants stated that:

> *The municipality has adopted the municipal capital investment framework and infrastructure master plan, aligned to the municipal Integrated Development Plan which follows a bottom up approach towards the provision of services to the community* (UMZM004).

Matrix 5-2 presents the summary of qualitative findings in relations to the deficient supply of infrastructure within Umzumbe Local Municipality.

Matrix 5-2: Deficient supply of infrastructure

Inductive categories	Participant Responses	Source
Poor road conditions	They have not been any infrastructural initiatives implemented by Umzumbe Local Municipality in recent years, yet issues related to the water supply crisis and poor conditions of access roads need urgent attention across the entire jurisdiction of Umzumbe Local Municipality.	FG001
Unstable water supply	Water supply is a huge problem in our residential areas wherein severe water supply cuts are experienced from time to time. Currently, it is more than three weeks without running water. As a result, surrounding people needs to fetch water from long distance.	FG003
Poor Electricity	The capacity of the energy supply and network connectivity remains a critical challenge.	FG001
Poor network connectivity	Network connectivity is an issue especially during load shedding which shows that the available cell phone towers do not have sufficient capacity.	FG003
Adoption of Spatial Development Framework	The municipality has adopted a Spatial Development Framework (SDF) that sets out a long term municipal spatial vision that is aligned with the municipal Integrated Development Plan (IDP). The SDF realised that it would easier to accelerate development if it is rolled out per cluster through nodal development. The adoption of this strategy has been followed by prioritisation and construction of projects such as roads, sports complexes, community halls and working with Human Settlements department and contractors to roll out low income housing developments in all clusters.	UMZM004
Infrastructure Master plan	The municipality has adopted the municipal capital investment framework and infrastructure master plan, aligned to the municipal integrated development plan which follows a bottom up approach towards the provision of services to the community.	UMZM004

Source: Fieldwork Enquiry (2020)

The participants responses presented in matrix 5-2 affirms that people of Umzumbe Local Municipality are confronted with a deficient supply of infrastructure that prevents them from receiving quality basic services. In line with the presented literature in chapter 2 of this dissertation,

a significant relationship is noted between literature and qualitative data of this study on the notion that supply of infrastructure remains a critical challenge at Umzumbe Local Municipality. Gaal and Afrah (2017:54) confirm that lack of infrastructure holds back economic development, raises unemployment, and promotes poor standard of living. It further prevents people from accessing other social infrastructure such as education and health facilities. This affirms that the wide range of challenges related to infrastructure has negative consequences on the quality of life and livelihoods in general. Many rural areas are inaccessible due to poor road conditions while also experiencing long water supply cuts and opting for unhealthy water sources. Furthermore, the majority of people are unable to share or communicate over a distance due to poor rural network connectivity including the lack of electricity.

The next section presents and analyses data relative to the second objective of the study.

5.5.2.2 Backlog in Delivery of Basic Services

In relation to the preceding discussion, the study noted a significant relationship that exists between infrastructure development and delivery of basic services. The availability of infrastructure is the basic tool for the provision of health care, high-quality education, housing, water, sanitation and other basic services as enshrined in the Constitution of South Africa of 1996. Mapping from Matrix 5-2, the unavailability of adequate and quality infrastructure at Umzumbe Local Municipality has presented service delivery challenges. This has led to enduring inefficiencies in delivery of basic services that continues to devastate rural livelihoods.

The above assertion confirms the argument by Chigwata *et al*. (2019:34) that delivery of infrastructure is not concluded by the installation of any infrastructure project nor a ribbon cutting ceremony to celebrate the inauguration of the service. However, delivery of infrastructure is when people have access to infrastructure projects that have been delivered including, for example, sustainable safe drinking water. It is believed that access to quality infrastructure offers an ability to promote the quality of service delivery which provides livelihood choices. This sentiment was shared by one participant when making the following comments:

> *Infrastructural development is very poor and undeveloped because the livelihoods of the people are still confronted by hardship with the absence of quality of infrastructure* (UMZC001).

Another participant remarked that:

> *Quality of infrastructure is highly complementary to a well maintenance endeavours for effective results. In this stance, Umzumbe Local Municipality has failed to uphold this exercise leaving a high demand for basic services* (FG001).

Access to and use of infrastructure services such as telecommunications, electricity, roads, safe water and sanitation are the essential development needs. However, the rural people of Umzumbe Local Municipality are still living without access to water, sanitation, housing and electricity as basic services.

The sub-themes that emerged relative to objective two of the study are discussed next.

(a) Poor Access to Basic Services

Umzumbe Local Municipality is beset with poor access to basic services that insufficiently satisfies the fundamental human needs. For instance, the majority of the community members are still facing hardship in accessing running, water while others are either walking long distance or waiting for long periods of time for public transport to the cities and surrounding areas. This comes as a result of deficient infrastructure as a major structural weakness that presents barriers when it comes to providing basic services for the people. Consequently, the community gains access to water using other unhealthy and untreated alternative sources including river streams, and wells.

Furthermore, various households are still using latrines and other insanitary types of toilets as noted by one study participant.

> *Most of the people in this area are getting water from a standpipe that is more than 200m using bucket system to store water. Furthermore, most of the access roads are gravel that requires regular maintenance of a grades from the municipality which is very hard to access. Also, they are still people using candles for lighting and paraffin and gas store for cooking* (FG004).

The infrastructural services have little value unless it translates into provision of quality basic services that improves people's lives. This confirms that the shortages of infrastructure at Umzumbe Local Municipality is severely impeding on the municipality's ability to provide basic services which weakens the livelihoods.

(b) Devastating Livelihoods

The unavailability of quality infrastructure as outlined in the preceding discussion is traditionally linked with poor access to basic services which has a further impact on the general livelihoods. While, the majority of people in rural areas are involved in an array of livelihood diversification strategies including farming and non-farming activities (Nagesso *et al.* 2018:85). This study has found out that lack of access to electricity has a negative impact on the association with livelihood diversification strategies. Also, considering that agricultural activities are common in the rural space, but that unreliable water supply challenges makes the agricultural productivity extremely difficult, the attainment of food security becomes unlikely. Moreover, the poor road conditions prevent movement that impacts on the daily livelihood's activities within households which is a setback to households in terms of earning greater opportunities.

One of the participants stated that:

> *The livelihood of the people of Umzumbe Municipality are disastrous* (FG001).

In line with the above, another participant raised concerns that:

> *While the community members are battling with the existing infrastructure, but the outbreak of Covid-19 has made their struggle to be far worse as people are forced to practice social distancing and staying indoors without basic services such as water, electricity and network connectivity* (FG001).

(c) Poor Quality of Rural Infrastructural Initiatives

Rural infrastructural initiatives at the lens of projects and programmes are a baseline for production and distribution of basic services including roads, electricity, telecommunication, water and sanitation. In this regard, Umzumbe Local Municipality, with its counterpart such as Ugu District Municipality and, have formulated and implemented various types of infrastructural development projects such as construction of Mfazazane access road, Mthwalume phase 1 electrification project and Mhlabatshane dam. The implementation of rural infrastructural initiatives is expected to serve the communities for over a long period of time and perform its intended purpose. However, considering the impact of quality infrastructure as broadly defined, Umzumbe Local Municipality is not doing well with the implementation of rural infrastructural initiatives in terms of quality,

cost and time as measures of a successful delivery of projects. This has been perpetually manifested by a number of factors as established in both primary and second data of this study.

One participant indicated that:

> *Umzumbe Local Municipality is in dire need of competent engineering experts for quality projects management* (FG004).

Another participant commented that:

> *The project of Mthini-owomile access road was recently completed with millions of Rands spent yet the road has faded away very easily. Furthermore, the bridge within Mthini-owomile access road has also collapsed forcing the cars to drive in deep water. Therefore, quality of infrastructural initiatives is very poor and causing hardship in the livelihoods of the community* (FG003).

Matrix 5-3 further presents the summary of qualitative findings in relation to the deficient supply of infrastructure within Umzumbe Local Municipality.

Matrix 5-3: Backlog in delivery of basic services

Inductive categories	Participant Responses	Sources
Poor access to basic services	Umzumbe municipality is struggling to ensure that the available infrastructure is convenient for sustainable livelihoods as people are really struggling in terms of water provision and movement in access roads, amongst other things.	FG001
Devastating livelihoods	The unavailability of reliable water supply makes the living conditions extremely difficult for the people of ward 17. As such, the area of Esibekulwandle has survived three years without running water and people walk a long distance to fetch water for domestic use.	FG005
Poor quality of rural infrastructural initiatives	Umzumbe Municipality is constantly maintaining the same access roads which get damaged very easily during heavy rains due to poor quality by hiring cheap and inexperienced service providers, citing the example of Mthiniowomile access road.	FG003

Source: Fieldwork Enquiry (2020)

The participants' responses presented in Matrix 5-3 depict that the backlog in the delivery of basic services is the greatest development challenge that continues to confront different demographic segments of the population at Umzumbe Local Municipality. Gaal and Afrah (2017:49) attest that the lack of basic rural infrastructure is the main culprit for the poor delivery of basic services that

provokes the livelihoods of the people. In this context, the qualitative data confirms that infrastructure is an essential tool and asset that provides people with effective and efficient service delivery. The development of infrastructure in pursuit of the better provision of basic services is necessary for quality of life, well-being, and human dignity (Lawal, 2014:139). This implies that infrastructure and provision of basic services are interlinked. Therefore, it is essential that necessary infrastructure is made available to tackle the backlog in the delivery of basic services at Umzumbe Local Municipality.

The next section presents and analyses data relative to the third objective of the study.

5.5.2.3 Institutional Incapacity

The predicament of infrastructure development in many municipalities including Umzumbe Local Municipality is seemingly caused by a series of institutional shortcomings. Drawing from the primary data, this study singled out factors in Umzumbe Local Municipality that resulted in institutional incapacity to deliver quality infrastructure for better access to basic services. These factors include incompetent human resource, corruption, limited financial resources and poor maintenance of the existing infrastructure, which impact negatively on sustainable rural livelihoods. One of the participants noted that:

> *Umzumbe Local Municipality still have a long and challenging journey to embark on before they can be classified as sustainable and functional municipality* (FG004).

Khambule and Mtapuri (2018:32) advocate that the failure of municipalities is largely attributed to internal and external factors. On one hand, internal factors entail the level of incompetency and the fragile financial stance, including the lack of capacity to generate and collect revenue. On the other hand, external factors including lack of compliance amongst citizens and the business sector and includes issues of vandalism (Khambule and Mtapuri, 2018:32). Similarly, the IDP of Umzumbe Local Municipality (2020/21) affirms the existence of escalating vacancy rate and weak financial position as the operation of the municipality is entirely dependent on allocation of grants.

The research findings revealed that:

> *Financial constraints, lack of revenue collection, corruption and inability to employ qualified engineers are the key factors that translate into capacity constraints and performance failure from the municipality in question* (FG004).

The sub-themes that emerged relative to objective three of the study are discussed next.

(a) Limited Financial Resources

According to Agrawal (2020:120), financial resources are a lifeblood in the operation of South African government; thus, it becomes a prerequisite for the provision of basic services and realisation of sustainable rural livelihoods. The operational capacity demands the availability of adequate financial resources to provide infrastructure that enables access to basic services such as water, roads, electricity and telecommunication (Agrawal, 2020:111). In practice, however, municipalities across the country including Umzumbe Local Municipality are experiencing financial constraints that impede the delivery of services with respect to the needs of the growing population. Again, the IDP for Umzumbe Local Municipality confirms that the municipality is heavily dependent on grants to fund the execution of municipal services including infrastructural projects. This financial situation is widening the gap between available financial resources against the expenditure requirements on the rising demand for new infrastructure and the associated maintenance of the existing infrastructure.

One of the participants stated that:

> *Other factors hindering infrastructure development is the fact that the municipality is heavily reliant of conditional and unconditional grants especially the equitable share and Municipal Infrastructure Grant (MIG). This results to a need for prioritisation of projects which then leads to some of the catalytic projects unbudgeted for and left out. Having insufficient budget makes the communities doubt the pace that the development is being rolled out* (UMZM004).

While Umzumbe Local Municipality has an administrative duty to delivery municipal services, the municipality is suffering from limited financial resources. One of the most prominent barriers to Umzumbe Local Municipality is the inability to collect and generate revenue to maximise its

cash flow. This challenge is presented by the fact that the municipality is completely rural with no single town and other amenities to raise taxes, and rural communities are unable to pay for any municipal services.

(b) Corrupt Tendering System

In South Africa, in general, the existence of corrupt activities has been in the spotlight especially in the tendering system. In developing countries, Oyedele (2016:3) points out that the cost of infrastructure development is outrageously high owing to the persistence of corruption. In Nigeria, for example, the development of infrastructure has found itself in the present financial difficulties due to procurement irregularities. Corruptive activities in the tendering system remains a wide-spreading disease that puts pressure on limited government financial resources and negatively affects service delivery, such as the delivery of basic infrastructure. The study results reveal that Umzumbe Local Municipality also suffers from the problem associated with incompetence and inexperienced service providers that are awarded tenders in major infrastructure projects. These service providers are said to be appointed through corrupt tendering processes and at the expense of quality performance in infrastructure projects.

Study participants pointed out that:

> *corruption and self-enrichment tendencies in the tendering of infrastructural related projects is a major setback for the people of Umzumbe* (FG001).
>
> *Tenders related to major infrastructure projects are awarded through personal interests and favours. In most cases, unqualified service providers are appointed at an inflated price that results in the project outcomes not lasting at least a decade* (FG004).

The persistence of corruption in the tendering processes for infrastructure-related projects increases cost price to procure and it further reduces the quality and the economic return from the infrastructure investment (Pooe, Mafini and Makhubele, 2015:74; Oyedele, 2016:3). Thus, it becomes the silent trigger that allows incompetent hands to handle the infrastructure contracts.

(c) Poor Maintenance of Infrastructural Services

Infrastructure demands a firm maintenance to upkeep the infrastructure in a functional condition including the retainment of its value. For infrastructure to retain its value and effectiveness and further serve its purpose, the implementation of proper maintenance is non-negotiable (Oyedele, 2015:1). However, most of the infrastructure at Umzumbe Local Municipality remains to be un-serviced while others are incomplete. As result, they cannot function properly which precipitate faults that limits the valuable lifecycle of infrastructure. The prevalent of poor maintenance on rural infrastructure has ripple effect in meeting future development demands (Lawal, 2014:143).

One of the participants affirmed that:

> *Poor maintenance of infrastructure is evident at Ward 17. For example, poor maintenance at Multi-Purpose Community Centre (MPCC) hall has had broken toilets and the roof has been damaged by the heavy rain and storm for long now* (FG005).

Resulting from poor maintenance, a majority of the infrastructure is left to decay while others need major repairs or replacement. Physical infrastructures such as buildings, roads, water pumping stations and bridges need effective maintenance activities to ensure that they perform to their expectations. This study highlights that proper maintenance is an ongoing and regular exercise that does not happen once the infrastructure has already failed.

(d) Incompetent Human Resource

Human resource quality is considered a critical factor in enhancing the capacity of government to deliver on the constitutional mandate. Thus, it becomes a compulsory tool that enables proper identification and implementation of infrastructural projects. In South Africa, for example, Qwabe and Ruffin (2013:283) explained that capacity constraint includes scarce and critical skills required to effectively oversee and deliver infrastructure projects. As a result, incompetent human resource on infrastructure development results in project failures. The IDP of Umzumbe Local Municipality (2020/21) confirms that the municipality has a high vacancy rate especially in the critical positions. The inability to attract and retain highly skilled personnel is also a challenge.

One of the participants noted that:

> *Incompetent human resource at the municipality is a major contributing factor* (FG003).

Infrastructure development requires competent human resources with the necessary skills, expertise and experience required to handle technical, financial and management duties of infrastructural related projects.

Matrix 5-4 presents the summary of qualitative findings in relation to institutional incapacity of Umzumbe Local Municipality regarding the delivery and management of infrastructure projects.

Matrix 5-4: Institutional incapacity

Inductive categories	Participant Responses	Sources
Limited financial resources	Financial constraints, lack of revenue collection, corruption and inability to employ engineers are the key factors.	FG001
Corrupt tendering system	Corruptive activities especially in tendering system is the major contributing factor in poor quality infrastructure development.	FG003
Poor maintenance of infrastructural services	Poor maintenance of infrastructure is evident at ward 17 at large, citing an example of poor maintenance at MPCC hall with broken toilets for a long time. The roof was also damaged by heavy rain and storm.	FG005
Incompetent human resource	Incompetent human resource at the municipality is a major contributing factor.	FG003

Source: Fieldwork Enquiry (2020)

The participants' responses presented in Matrix 5-4 show that Umzumbe Local Municipality is challenged by institutional incapacity that affects the delivery of infrastructure. The Matrix above reveals that the lack of institutional capacity is underpinned by factors such as limited financial resources, incompetent human resources, poor maintenance of infrastructural services and corrupt tendering system. The existence of institutional incapacity results in Umzumbe Local Municipality grappling with meeting the expectations of the communities for infrastructure development. Therefore, the communities of Umzumbe Local Municipality become overwhelmed by a widespread of dissatisfaction with the status of infrastructure development and the general livelihood.

The next section presents and analyses data relative to the fourth objective of the study.

5.5.2.4 Infrastructural Projects and Programmes

As noted earlier, Umzumbe Local Municipality is characterised by poor quality of rural infrastructure initiatives. These initiatives are provided through projects and programmes in line with the constitutional duties to delivery basic services. Oyedele (2018:3) affirms that infrastructure development in developing countries is more challenging due to the inability to identify right projects, carry out feasibility and validity studies and embark on the physical development of projects. In comparison to countries like Namibia and Morocco, the project failure rate is high in South Africa (Qwabe and Ruffin, 2013:283). This study postulates that projects and programmes on infrastructure development at Umzumbe Local Municipality is lagging behind owing to incompetent project management systems, poor infrastructure design and project immaturity.

One of the participants alluded that:

> *Umzumbe Local Municipality is struggling to complete the project of Inkanini indoor Sport centre dating back to 2014. To date the project has not been finalised while millions of Rands have been spent towards the project* (FG004).

Images 5-7 present Inkanini Indoor Sport Centre as one of the incomplete projects implemented by Umzumbe Local Municipality. The below images display incomplete nature of infrastructural projects at Umzumbe Local Municipality.

Image 5-3: Inkanini Indoor Sport Centre – Phase 3: Incomplete Project

Source: Researcher's field observation (2021)

In line with the above assertion, it can be concluded that infrastructural projects and programmes are not delivered within projected timeframes, budgets and set standards which results in projects not reaching their outcomes. Furthermore, the already existing infrastructural projects are suffering from a range of factors including efficacy of intended operation, weather conditions and level of maintenance.

The sub-themes that emerged relative to objective four of the study are discussed next.

(a) Poor Project Management

Projects and programmes are considered as service delivery tools and should translate into substantial socio-economic development outcomes. Within municipal environment, the IDP identifies key developmental objectives that provide strategic alignment to projects and programmes to be implemented. While socio-economic development highly depends on infrastructural projects, high deficit of project management skills remains a critical challenge within Umzumbe Local Municipality.

One of the participants articulated that:

> *Infrastructural projects have indeed been financed and implemented at Umzumbe Local Municipality but somehow most of the projects have failed to meet it intended goals and objectives owing to a range factors including the delay in time completion, cost overruns and quality issues* (UMZC104).

Image 5-8 presents a Malikhakhe access road and bridge project at Umzumbe Local Municipality. The below project has been instrumental to rural infrastructural provision for road access as indicated below.

Image 5- 4: Malikhakhe Access Road and Bridge

Source: Researcher's field observation (2020)

This study found out that infrastructural projects are not executed within the prescribed timeframe, within a confined budget and at the minimum level of communities' satisfaction. Qwabe and Ruffin (2013:283) and Van der Waldt (2010:3) found out that other most prominent characteristics that encourage high rate of project failures are knowledge, skills, tools, scope, and techniques which are applied in project management. This has led to infrastructure projects not being sustainable in economic terms while others are left incomplete. As such, the project failure weakens the economic returns and social benefits envisaged from the projects which spells out service delivery failures in many municipalities.

(b) Socio-Economic Development

The availability of infrastructure has an indispensable role that directly and indirectly influences socio-economic development (Gnade, 2013:4). The study found out that the development of infrastructure underpins the quality of life. For example, good and quality roads have a potential of reducing road accidents and fatalities, while clean water supply systems can reduce water borne diseases. Gaal and Afrah (2017:49) explained that adequate support of infrastructure supply enhances the quality and speeds up service delivery, which directly benefits households. Furthermore, quality education and health care services also depend on the availability of infrastructural services such as water and sanitation, electricity and quality road conditions. It is generally understood that the availability of infrastructure becomes the major source of productivity and improvement in welfare in general (Gaal and Afrah, 2017: 50). This confirms the theory of infrastructure-led development presented in chapter three of this dissertation.

One of the participants highlighted that:

> *Infrastructure development initiatives promote sustainable rural livelihoods through social cohesion and socio-economic development* (UMZM005).

Another participant indicated that:

> *The availability of infrastructure empowers environmental concentration towards the available economic resources and employment opportunities which further relate to human development* (UMZM001).

Olaseni and Alade (2012:65) proclaimed that access to and use of infrastructure services, as outlined above, is widely analysed and considered as a significant role player into social and economic life for the households and business sector. It is for this reason that this study has observed a relationship between infrastructure development and socio-economic upliftment. The link further enhances the livelihoods of the people, as their productive opportunities and asset value are said to concurrently increase with infrastructure development (Keke and Okem, 2016:9). Thus, sufficient infrastructural provision is essential for the general well-being of the population.

(c) Poverty and Unemployment

People residing in rural areas are usually linked to poverty which is traditionally associated with the existence of unemployment. Informed by the primary data of this study, households residing in rural areas with high infrastructural backlog are likely to be prone to poverty and unemployment situations. Keke and Okem (2016:10) explained that poor access to infrastructure, that provides essential public services, presents barriers to productive economic activities. Again, the availability of quality infrastructure allows people to focus on core economic activities instead of wasting their time on unproductive and mundane activities such as fetching water and firewood for cooking and other household chores.

One of the participants asserted that:

> *Majority of people at Umzumbe Local Municipality are perpetually disadvantaged and caught up in a vicious cycle of undervelopment that is characterisezed by poverty, unemployment and high economical dependent* (UMZM001).

The existence of unemployment causes people to be unable to meet their basic human requirements including health, nutrition, literacy, shelter, food, health services, water, education, housing and infrastructure which results in unfavourable patterns of poverty and hunger (Oyedele, 2012:5; Keke and Okem, 2016:10).

Matrix 5-5 presents the summary of qualitative findings in relation to infrastructure projects and programmes delivered by Umzumbe Local Municipality in order to promote rural livelihoods.

Matrix 5-5: Infrastructural projects and programmes

Inductive categories	Participant Responses	Sources
Poor project management	The under-quotation on infrastructure projects by service providers and insufficient research on project specifications by the Municipal project managers.	UMZM005
Socio-economic development	The projects allow for the community to be in access and obtain their basic needs. They further contribute to employment opportunities and SMME establishment.	UMZM005
Poverty reduction & Employment	It creates job opportunities during construction and attracts investors who create opportunities that will also generate jobs whether temporary or permanent. When communities are economically active, they are automatically eligible for access to social services and environmental protection.	UMZM004

Source: Fieldwork Enquiry (2020)

The participants' responses presented in Matrix 5-5 reflect the infrastructural projects and programmes. In this perspective, Van der Waldt (2014:845) explained that municipal projects play an essential role in socio-economic development as it provides physical infrastructure and is the backbone of economic activities. The research findings by Van der Waldt (2014:860) reveals that delivery and implementation of municipal infrastructural projects suffers from technical, administrative, financial, and political obstacles. As a result, the obstacles impede the ability of the municipalities to create employment, tackle poverty and provide basic services. This study has also uncovered that poor project management in infrastructural initiatives have all worked against the ability to develop successful sustainable rural livelihoods at Umzumbe Local Municipality.

The next section presents and analyses data relative to the fifth objective of the study.

5.5.2.5 Co-Operative Governance

South African government has a constitutional mandate to provide life-impacting service delivery that brings about the desired sustainable livelihoods. From this perspective, municipalities including Umzumbe Local Municipality rely on co-operative governance mechanisms to support and monitor service delivery within their areas of competency. In this framework of assertion, Mubangizi (2019:558) affirms that municipalities directly benefit from the oversight role of the national and provincial spheres including financial transfers from the national sphere. Furthermore, provision of housing, delivery of water and sanitation and formulation of IDPs are considered as a snapshot of areas where municipalities engage on partnership.

One of the participants confirmed that:

> *Both the national and provincial spheres of government are largely providing support to Umzumbe Local Municipality in terms of grants allocations including Integrated INEP and MIG to name a few* (UMZM001).

Moreover, the provincial government, especially the KZN Department of COGTA, oversees the rolling out of functions and activities of municipalities. They provide a supervisory role to municipalities and offer support where deemed necessary in order for municipalities to discharge their municipal services at an acceptable standard with an impact to the quality of life.

Another participant pointed out that:

> *The supervisory and monitoring role is done through assessment of the municipal annual report, annual financial statement by the Auditor-General as per section 188 of the constitution. They participate in municipal stake holder engagement and IGR structures as per chapter 3 of the Constitution. This includes Operation Sukuma Sakhe (OSS), IDP Rep Forum, Local Labour Forum, Municipal Managers Forum and Mayors Forums* (UMZM005).

The sub-themes that emerged relative to objective five of the study are discussed next.

(a) District Development Model (DDM)

In 2019, the President of the Republic of South Africa, Mr Cyril Ramaphosa, introduced and launched the District Development Model (DDM) as a new game-changer in the development landscape of the country. The model is focusing on accelerating and integrating service delivery at a district level with the coordination of all spheres of government. In addition, the model aims to ensure that municipalities are adequately supported and resourced to discharge their municipal services to the people they served (Levin, 2019:1). The DDM is fundamentally foregrounded on improving co-operative governance within and between the three spheres of government aimed at ensuring a capable and developmental-oriented state.

One of the participants commented:

> *The newly launched DDM is also one of the games changing programmes that seeks to strengthen the intergovernmental relations between all stakeholders in all spheres of government. The DDM is facilitated by the UGU District Municipality which develops one plan one budget model that is implemented by all stakeholders including Umzumbe Local Municipality* (UMZM004).

This finding affirms that the DDM is the newly established model that entails long-term vision with the intent to tackle persistent service delivery challenges experienced by municipalities.

(b) Operation Sukuma Sakhe (OSS)

In 2011, the Flagship programme of KZN was retitled to Operation Sukuma Sakhe (OSS) in the spirit of collaborative effort on issues of service delivery. Ndlovu and Msweli (2016:162) affirm that OSS model intended to integrate, co-ordinate and facilitate the delivery of transversal services to the communities. The cross-functional teams ranging from provincial, district, local to ward level were established to support the OSS initiatives.

One of the participants stated that:

> *Umzumbe Local Municipality has adopted the OSS approach that is facilitated through Local Task Team (LTT) and War Rooms structures to provide critical support to the OSS activities* (UMZM001).

Matrix 5-6 presents the summary of qualitative findings regarding co-operative governance in order to promote rural livelihoods through infrastructure projects within Umzumbe Local Municipality.

Matrix 5-6: Co-operative governance

Inductive categories	Participant Responses	Sources
District Development Model (DDM)	The new District Development Model (DDM) is also one of the game-changing programmes that seeks to strengthen the Intergovernmental Relations between all stakeholders in all spheres of government.	UMZM004
Operation Sukuma Sakhe (OSS)	They participate in municipal stakeholder engagement and IGR structures as per chapter 3 of the Constitution (Operation Sukuma Sakhe, IDP Rep Forum, Local Labour Forum, Municipal Managers Forum and Mayors Forums).	UMZM005

Source: Fieldwork Enquiry (2020)

The participants' responses presented in Matrix 5-6 show that co-operative governance amongst the spheres of government is indispensable and pivotal. Again, Section 40 (1) of the Constitution proclaims that all spheres of government are distinctive, interdependent and interrelated (RSA,1996). This implies that all spheres of government must mutually co-operate and support each other on service delivery related issues including infrastructure development. More hopes are drawn into the newly launched DDM that the much-needed efforts and endeavours in the improvement of infrastructure development and sustainable rural livelihoods would be brought into a reality and collectively championed by all spheres of government.

The next section presents and analyses data relative to the sixth objective of the study.

5.5.2.6 Recommendations and Improvement Strategies

Objective six, as stated in chapter one of this dissertation, seeks to provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural development. While other objectives have rightfully observed at critical aspect of infrastructural development and sustainable rural development at Umzumbe Local Municipality, this section provides recommendation and strategies as accentuated and suggested by the study participants.

The sub-themes that emerged relative to objective six of the study are discussed next.

(a) Land Acquisition

Land is the most significant and crucial resource in the development prospects, yet the South African government has been grappling with the difficulties in the land question. In South Africa in general and elsewhere around the country, the issue of land ownership is a multifaceted issue that continues to be highly contested in the political space (Thwala, 2015:2). This study revealed that Umzumbe Local Municipality functions under no land ownership which has impacted the effectiveness of land use, planning and management.

One of the participants indicated that:

> *The major factors that hinder development in Umzumbe Local Municipality is the lack of land that is owned by Umzumbe local Municipality. The land under Umzumbe local Municipality is owned privately, Ingonyama Trust Board and other government departments. This factor makes it difficult to roll out development in the areas such as privately-owned properties* (UMZM004).

Whilst there is a great deal of emphasis for land acquisition in many rural municipalities like Umzumbe Local Municipality, it demands a methodological approach to navigate the task of land acquisition. This study found out that Umzumbe Local Municipality needs to undertake the exercise of land audit as a steppingstone. In this perspective, Stephenson, Donaldson, Du Plessis and Niekerk (2015:32) are adamant that land audits are useful in policy formulation and for land acquisition in post-reform countries. Rural areas are falling under traditional leadership and many municipalities do not have access to recent and accurate land use.

Another participant suggested that:

> *Umzumbe Local Municipality needs to commission a land audit to ascertain the land owned by the government so that the municipality can identify the available land that can be utilised for future development endeavours such as catalytic projects. This includes the possibility of extending boundaries of Umzumbe Local Municipality through the Demarcation Board for more robust economic growth and job creation* (UMZM001).

Land availability is central for development magnitude. For Umzumbe Local Municipality, the land audit mapping exercise is highly commendable. It could be argued that the land acquisition would have little value unless it is translated to the broader socio-economic development including essential features of infrastructure development that improve the livelihoods of the people.

(b) Tendering System

Procurement in South African government including Umzumbe Local Municipality fulfils a substantial role in public expenditure providing an indication for a level of effectiveness in government spending for service delivery initiatives. However, Pooe *et al*. (2015:69) affirm that procurement systems and processes in terms of tendering and outsourcing of goods and services in municipalities is confronted with serious challenges and it continues to be strongly criticised in the public space. The occurrence of these challenges has been associated with political interference, the appointment of inexperienced and unqualified contractors in various municipal projects and programmes (Fourie and Malan, 2020:12). It is for these reasons that corruption cases in municipalities are linked to procurement process, thus procurement in municipalities is vulnerable to corrupt and fraudulent activities.

One of the participants suggested that:

> *Umzumbe Local Municipality must strive to promote the integrity of and fairness in the procurement processes in outsourcing good and services, project and programmes with the highest possible level of transparency* (FG003).

Another participant advised that:

> *Consequence management should be enforced without fear or favour in cases of non-compliance with Supply Chain Management (SCM) related legislative framework in procurement processes* (FG004).

It is noted that SCM is critical function that offers a fundamental role in the procurement of good and services. Thus, the study supports the proposal that the municipality must consider the cognizance of efficiency and transparency in municipal tenders.

(c) Revenue Collection

This study found out that Umzumbe Local Municipality is fully dependent on the intergovernmental fiscal transfers in terms of allocation of grants for their municipal services. Therefore, study participants recommend that Umzumbe Local Municipality finds alternative strategies to stimulate their own revenue base. The creation of the sustainable revenue collection will supplement the municipal cash flow for additional funding for service delivery initiative.

One of the participants recommended that:

> *Umzumbe Local Municipality needs to come up with a comprehensive proposal to the Demarcation Board to consider extending the out-boundaries of Umzumbe Local Municipality to incorporate Mtwalume River and Umzumbe River so that the already developed areas such as Koelwaters, Mtwalume, Hibberdene and Phumula will be under the jurisdiction of Umzumbe Local Municipality therefore allowing the municipality to collect revenue in terms of rates* (UMZM001).

(d) Investment Attractions

Umzumbe Local Municipality is unable to generate their own revenue. Research findings suggest that the municipality should explore the possibilities for expanding and attracting investors for a robust economic outlook.

One of the participants advised that:

> *Attracting investment is another possible strategy to be adopted by the municipality in order to curb rural to urban migration, improve job creation and increase revenue collection* (UMZM005).

Matrix 5-7 presents the summary of qualitative findings based on recommendations solicited from study participants on improvement strategies needed to promote rural livelihoods through infrastructure projects within Umzumbe Local Municipality.

Matrix 5-7: Recommendations and improvement strategies

Inductive categories	Participant Responses	Sources
Land acquisition	The municipality seeks to acquire land in hope to create sustainable rural areas as well as addressing past apartheid imbalances.	UMZM005
Tendering system	The government at large including municipalities must do away with the tendering system.	FG001
Investment attractions	Attracting investment is another possible strategy to be adopted by the municipality in order to curb rural to urban migration, improve job creation and increase revenue collection.	UMZM005
Revenue Collection	The municipality must speedily consider strategic ways for revenue collection.	UMZM001

Source: Fieldwork Enquiry (2020)

Recommendations and improvement strategies as suggested by the study participants are presented in Matrix 5-7. The recommendations and improvement strategies emanated from the primary data as participants suggested their innovative best practices that can be adopted by the municipality to improve on infrastructure development and sustainable rural development.

5.6 Triangulation

This study was undertaken by means of a body of evidence including primary data, secondary data and documentary evidence. According to Yin (2009:114), triangulation of data is the use of multiple sources of evidence to draw conclusions in terms of research findings. Similarly, Neuman (2011:164) classifies the triangulation in a "form of measure, of observers, theory and of method." Combined, as reflected in Figure 5-2, the study triangulated qualitative data using four data sources namely virtual interviews, virtual focus groups, field observation and documentary evidence from available and current documentation on the research subject reported in this study.

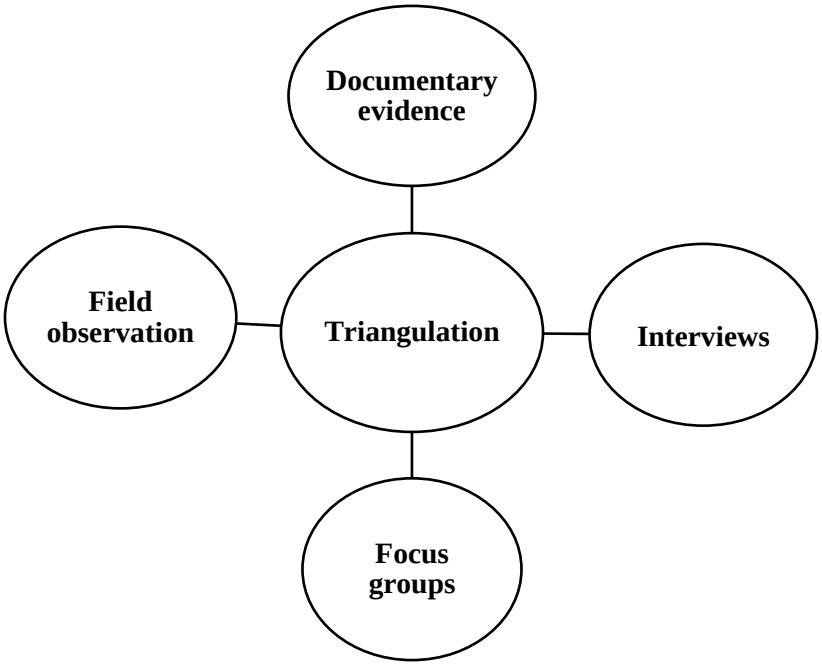


Figure 5-1: Triangulation of Data

Source: Lauri (2011:2)

In this study, the triangulation strategy contributed as an important role in enabling the researcher to draw a conclusion to the research problem at the lens of multiple perspectives to address the research questions while achieving the research objectives. This was done through bringing all the qualitative data together to incorporate different views and methods in understating the status quo of infrastructure development and sustainable rural development at Umzumbe Local Municipality.

The data triangulation assisted the researcher to understand the reality of infrastructure development and sustainable rural livelihoods. Matrix 5-8 below presents qualitative data that emerged from the interviews, focus groups and documentary evidence as reflected in Figure 5-2.

Table 5-8: The Convergence and/or Divergence of Qualitative Data

Themes	Literature Inference	Qualitative Inference
Deficient supply of infrastructure	Majority of poor people are located in rural areas where the level of public infrastructure especially road seems low (Gall and Afrah, 2017:49).	There is huge outcry from the community members of Ward 5 for infrastructural development to enhance their livelihoods in terms of water supply, road construction, bridges, network connectivity and electricity supply (UMZC104). Livelihoods with poor water supply, bad road conditions and poor network connectivity are extreme difficult (FG004).
Backlog in delivery of basic services	Lack of access to electricity, inadequate supply of water and impassable roads are major developmental challenges that confront people residing in rural areas (Lawal, 2014:140).	The state of access roads is dismal with dangerous potholes and long water cuts are a reality at ward 17 (FG005). The state of infrastructure is a disaster at Ward 9. Most of the residential areas are experiencing water supply cuts that last for months. Access roads are all gravel, and proper bridges are not constructed. For example, the bridge at kwaVuka is impassable and hazardous during rainy seasons (FG002).
Institutional incapacity	Institutional capacity for municipalities to deliver service demands competent and capacitated officials, financial resources and non-acceptance of corruption (Khambule and Mtapuri, 2018:31).	Umzumbe Local Municipality is beset by a variety of institutional shortcomings including incompetent workforce and political interference (FG004) Umzumbe Local Municipality is financially dependent on national and provincial government in terms of grants allocation to execute municipal activities (UMZM001).
Infrastructural projects and programmes	Infrastructural projects are utilised by municipalities to render services (Van Der Waldt, 2014:844).	Umzumbe Local Municipality is failing to provide the acceptable quality standard of infrastructure development especially in the construction and maintenance of access roads that are constructed at a high price, yet it is damaged easily and puts the lives of the residences at high risks (FG003). Infrastructural projects are awarded to inexperienced service providers. In most cases, the projects not completed on time, within budget and with the required quality (FG004).

Co-operative governance	The concept of cooperative governance is based on the belief that the three spheres of government ought to work together within their areas of competency to delivered services that benefits all citizens (Makoti and Odeku, 2018:99).	The collaborative importance ensures that there is integration and eliminates working in silos by sector departments and municipality (UMZM005). The efficiency in the collaborative mechanisms in spheres of government at strategic level is commendable, however, the gaps are in the implementation of these strategies where there are fragmented approaches in the rolling out of development especially by provincial and national spheres (UMZM004).

Source: Fieldwork Enquiry (2020)

Matrix 5-8 above presents the convergence and divergence of qualitative data of the study. Substantially, the collected data is evident to be consistent with the literature of the study. In relation to the main objective of the study, it can be deduced that infrastructure development is an essential tool that promotes social and economic development for the betterment of rural livelihoods. Based on these deductions and using qualitative research design methods, the qualitative data was triangulated to enable the researcher to analyse, compare and draw up recommendations and conclusions of the study. The recommendations and conclusion of the study are presented further in the final chapter of the dissertation.

5.7 Chapter Summary

This chapter presented and elaborated on qualitative data that was gathered through semi-structured virtual interviews and focus groups with selected municipal officials, councillors and community members at Umzumbe Local Municipality. In this chapter, the primary data converge with the literature review presented in chapter two and three of this dissertation. Moreover, the qualitative data was reduced through the analysis process and was further interpreted in relation to the research objectives and research questions of the study. The primary data was analysed using thematic analysis and the sub-themes that emerged were presented in matrix structure. This chapter also offered visual data to reflect on the reality of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. To this end, this chapter offered recommendations as enunciated by the study participants. Data triangulation was also presented.

CHAPTER 6

FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.1 Chapter Introduction

This final chapter offers the overall findings, recommendations and conclusions stemming from the entire dissertation. It begins by presenting a recapitulation of the research objectives and questions and overview of all chapters. Then, the main research findings and conclusion of this study will be noted. The findings and conclusions derived will be discussed in relation to the research objectives and questions. In addition, the chapter will reiterate the significance of the study while highlighting its contribution and submission to the body of knowledge. Finally, this chapter will provide overarching recommendations, possible future policy considerations and possible areas for future research.

6.2 Recapitulation of Research Questions and Research Objectives

Table 6-1 offers a recapitulation of the research objectives and questions presented in chapter one.

Table 6-1: Recapitulation of Research Questions and Research Objectives

Research Objectives	Research Questions
1. To ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods.	1. To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihood?
2. To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihoods.	2. What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?
3. To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.	3. What are the salient contributing factors impacting poor and inadequate infrastructure development and sustainable rural livelihoods?
4. To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.	4. What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?
5. To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.	5. In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?
6. To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.	6. What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?

Source: Researcher's Construct (2020)

The ensuing section of the chapter presents a summary of each of the chapter in the study.

6.3 Summary of the chapters

This section will indicate the outcome of each chapter relative to research objectives and research questions as reflected in Table 6-1 above.

Chapter One: This chapter provided an introduction and overview of the study. The chapter detailed the study background, research problem statement, main question and sub-questions, main research objective and sub-objectives, significance of the study, preliminary literature review and theoretical approach of the study. In addition, the chapter also provided a summary of the research design and methodology, research paradigms, philosophical worldview adopted, study sites, targets population and sampling method and strategy. Data collection, data quality-control techniques, data analysis, ethical considerations and limitations of the study were also discussed.

Chapter Two: This chapter presented a comprehensive literature review on infrastructure development and sustainable rural livelihoods. In this chapter, the relationship between infrastructure development and sustainable rural livelihoods and other fundamental concepts such as infrastructure, livelihoods, socio-economic development, and basic services were established and elaborated upon. The chapter was able to provide historical and unique characteristics of infrastructure development and livelihoods in general at Umzumbe Local Municipality. The discussion in this chapter was on the basis of the available literature that outlined the findings and gaps presented by other scholars. The literature revealed that infrastructure development suffers from a wide range of shortcomings including poor project management, limited human and financial capacity, inadequate maintenance, and quality outcome of projects. It was argued in this chapter that the infrastructure development is a prerequisite for the improvement of general livelihoods of the people. Furthermore, perspective relating to consequences of unavailability of quality of infrastructure was also highlighted.

Chapter Three: In this chapter, details on theory of infrastructure-led development and sustainable livelihood Approach as theoretical framework that underpinned the study were presented. On the one hand, the theory of infrastructure-led development suggested that lack of infrastructure weakens the development landscape as most of the rural areas bear the brunt of severe developmental challenges including the triple constraints of development such a poverty,

unemployment, and inequality. On the other hand, the SLA presented the complexity livelihood realities that reflects on what exactly underpins livelihoods in rural areas. This provided a myriad of explanations as to why and how rural areas remain underdeveloped with massive infrastructural backlog and hardship in their livelihoods. In this context, this chapter located the study in the theoretical realm with reference to the wider literature together with the gaps identified in the literature thereof.

Chapter Four: A presentation of the research design and methodology that guided the research process. This chapter elaborated, in detail, the research paradigms, philosophical worldview adopted, study sites, target population, sampling method and strategy, data collection, data quality-control techniques, data analysis, ethical considerations adhered to and limitations of this study.

Chapter Five: Elaboration of the qualitative data gathered from the virtual interviews, focus groups and documentary evidence. Furthermore, this chapter provided analysis and interpretation of the primary data that provided categories and emerging themes from the empirical investigation. All emerging themes were presented in the matrix structure and were analysed using thematic analyses. Relevant literature also presented in chapter two was used to analyse qualitative data. The chapter was concluded with data triangulation.

Chapter Six: Outline of the overall recommendations and conclusions drawn from the entire study as informed by the finding of this study. This chapter presented, in detail, the research findings, necessary policy recommendations and possible areas of future studies.

6.4 The Main Research Findings and Conclusions

In relation to the main objective of the study as set out in chapter one was to ascertain the extent to which Umzumbe Local Municipality enhance infrastructural development and sustainable rural livelihoods. Based on the wider review of literature and the qualitative data gathered for this study, it is well established that infrastructure development is an indispensable component of human life and socio-economic realm. It is for these reasons that availability and access to infrastructure services such as roads, electricity, telecommunications, water supply and sanitation are considered as a fundamental activity for households and for economic production. However, the study data revealed that Umzumbe Local Municipality is suffering from a wide range of shortcomings that continue to impede the strength to provide sustainable infrastructure development.

This study further found out that Umzumbe Local Municipality has initiated and implemented sizeable infrastructural projects in pursuit for socio-economic development, but quality of the infrastructure provided remains questionable. The empirical evidence signifies that the people of Umzumbe Local Municipality continue to come to terms with livelihoods that are characterised by poor road conditions, unstable water supply, poor network connectivity and poor electricity. This is so as most of the already existing infrastructure, that was provided years ago, is now ageing, decayed and others are dilapidated.

The following section of the chapter outlines research findings derived from the investigation. The research findings are presented according to the research objectives and research questions mentioned at the beginning of the study. For each of the findings, specific conclusions are derived, which will subsequently inform the overall recommendations submitted by this study.

6.4.1 Research Objective One and Research Question One

- **Research Objective One:** To ascertain the extent to which Umzumbe Local Municipality enhances infrastructural development and sustainable rural livelihoods.
- **Research Question One:** To what extent does Umzumbe Local Municipality in KZN enhance infrastructure development and sustainable rural livelihoods?

6.4.1.1 Findings: Deficient Supply of Infrastructure

The findings from the qualitative data presented in chapter five revealed that while infrastructural projects are implemented at Umzumbe Local Municipality, community members continue to suffer extreme hardship with access to and use of the available infrastructural services. In this regard, the provided infrastructure in terms of completed projects and programmes brings about the issue of poor quality thus making the infrastructure unreliable. It is for these reasons that the study maintains that poor access, quality and reliability of the infrastructural services dictate harsh rural livelihoods as majority of the wards under Umzumbe Local Municipality are with poor road conditions, poor sanitation, lack of bridges, lengthy water supply cuts and poor network connectivity. Also, maintenance on the existing infrastructure remains a daunting task.

The empirical findings further revealed that the vicious socio-economic realities are rooted in the deficient supply of infrastructure at Umzumbe Local Municipality. The lack of quality road infrastructure, for instance, compels the community members to walk long distances for transport

routes which are charged at a higher price and further imposes travelling restrictions especially during rainy seasons. In addition, the long-lasting water supply cuts forces people to walk and travel kilometres to fetch the available clean water while others are sourcing water from unprotected springs, ponds and rivers for domestic purposes.

6.4.1.2 Conclusion

The empirical data proved that infrastructure development at Umzumbe Local Municipality is binding constraints which account for the wide gap that exists between demand and supply of infrastructure. Informed by the empirical analysis of this study, it can be deduced that Umzumbe Local Municipality is not performing well in the provision of quality infrastructure to satisfy the needs of the people. As such, for the people of Umzumbe Local Municipality to enjoy the core benefits attached to the infrastructural services, quality performance monitoring and oversight on all infrastructure related projects must prevail at the highest possible form. Also, Umzumbe Local Municipality must, to a large extent, shift from striving for more infrastructure in terms of quantity and statistics. Rather, there should be striving for better and high-quality infrastructure.

6.4.2 Research Objective Two and Research Question Two

- **Research Objective Two:** To explore the current state of infrastructure at Umzumbe Local Municipality for the attainment of sustainable livelihood.
- **Research Question Two:** What is the impact of the current state of infrastructure at Umzumbe Local Municipality for better access to basic needs and sustainable rural livelihood?

6.4.2.1 Findings: Inadequate Delivery of Basic Services

Infrastructure, in general, is an essential component for basic livelihoods, thus inadequate delivery of infrastructure has detrimental effects in the provision of quality basic services such as water, roads, housing and electricity especially in the rural space. This study found that the current state of infrastructure development at Umzumbe Local Municipality has presented major service delivery challenges resulting in devastating livelihoods. The infrastructural backlog makes it difficult to roll out service delivery to the people. The empirical data has indicated, among other conclusions, that most of the access roads at Umzumbe Local Municipality are unpaved and narrow with huge potholes and slippery mud with likelihood to damage vehicles and produce accidents. Consequently, the community travels at higher transport fair and length of travelling

time. Furthermore, poor water supply and poor network connectivity also remains a cross-cutting service delivery issue at Umzumbe Local Municipality.

6.4.2.2 Conclusion

This concludes that the infrastructural endeavours at Umzumbe Local Municipality are somehow not translating to sustainable livelihoods as they are seemly lacking the quality and maintenance element. This study has also learnt that installation of infrastructure nor a ribbon cutting ceremony to celebrate the inauguration of the service is concluded as final provision of basic services. Rather, the delivery of infrastructure is when people have access to safe drinking water coming from the tap and pipe for twenty-four hours a day, at the right pressure and for many years. This implies that service delivery is an ongoing process that needs to be maintained from time to time. It is for these reasons that this study concludes that Umzumbe Local Municipality should consider redirecting their attention by focusing more on improving quality of infrastructure at all cost. This will obviously demand an enabling environment with a strong governance system and equipped work force.

6.4.3 Research Objective Three and Research Question Three

- **Research Objective Three:** To ascertain the salient contributing factors that impede infrastructural development and sustainable rural livelihoods.
- **Research Question Three:** What are salient contributing factors impacting poor and inadequate infrastructure development and sustainable rural livelihoods?

6.4.3.1 Findings: Lack of Institutional Capacity

In most rural municipalities, inadequate infrastructure development is seemingly caused by a series of institutional incapacity to deliver quality rural infrastructure for better access to basic services. The empirical findings of the study revealed that incompetent human resource on the technical department, corruption in the awarding of infrastructural tenders, limited financial resources and poor maintenance and vandalism of the existing infrastructure are the prominent, salient contributing factors that adversely affect the development of infrastructure.

The key exposition that emerged from the empirical findings is that while Umzumbe Local Municipality is heavily dependent on grants to fund the execution of municipal services including infrastructural projects. It is, however, disturbing to note that Umzumbe Local Municipality is

suffering from the problem associated with incompetence and inexperienced service providers who are awarded tenders for the delivery of major infrastructure projects. As the result, most of the infrastructure projects at Umzumbe Local Municipality are left incomplete and are not completed within the acceptable quality standard, time, and budget. Furthermore, the municipality is unable to attract and retain highly skilled personnel more so on the expertise and experience required to handle technical, financial and management duties of infrastructural related projects.

6.4.3.2 Conclusion

This study concludes that the salient factors identified have translated to capacity constraints and performance failure for Umzumbe Local Municipality. The existence of these factors has worked against the ability to provide quality infrastructural development resulting in Umzumbe Local Municipality being unable to respond to the increasing demand for infrastructural development for the growing population. This advocates that Umzumbe Local Municipality needs an urgent turnaround strategy that will consider the outlined factors and further be useful to enable development of infrastructural mandates for sustainable livelihoods.

6.4.4 Research Objective Four and Research Question Four

- **Research Objective Four:** To explore recent development endeavours of Umzumbe Local Municipality that enhance sustainable rural livelihoods.
- **Research Question Four:** What are the recent development endeavours adopted by Umzumbe Local Municipality to drive infrastructure development and sustainable rural livelihoods?

6.4.4.1 Findings: Quality of Infrastructural Projects and Programmes

Infrastructure projects and programmes are indeed central in the delivery of developmental endeavours while they also underpin the quality of life in general. This study found out that infrastructural projects and programme at Umzumbe Local Municipality are not translating into socio-economic development that leads to sustainable livelihoods. Most of the participants indicated that infrastructural projects and programmes are far below standards in terms of both quality and quantity. There is dissatisfaction with infrastructural projects, such as construction of access roads and bridges that are easily swept away especially during rainy seasons which, in turn, questions the quality measures. In this context, the construction of Mpelazwe Access Road and

Mthiniwomile Access road were highly criticised. In relation to this, the study participants blamed the factors relating to project management incompetent, poor infrastructure design and project immaturity.

This study also revealed that infrastructural projects are not executed within the prescribed timeframe nor completed. If completed, they are not delivered within allocated budget nor satisfy community demands. It was also found that the already existing infrastructural services are suffering from a broad range of factors including efficacy of intended operation, weather conditions and level of maintenance.

6.4.4.2 Conclusion

This study concludes that infrastructure development initiatives are of high importance when it comes to sustainable rural livelihoods as they promote social cohesion, economic development, and community development at large. It is clear that the community members are not satisfied with the quality of infrastructure provided as most of the projects and programmes implemented at Umzumbe Local Municipality are considered to be of substandard. From the analysis and findings, the study concluded that Umzumbe Local Municipality was able to implement quantifiable infrastructural projects, but it is confronted by quality challenges resulting in a shorter project outcome life span.

6.4.5 Research Objective Five and Research Question Five

- **Research Objective Five:** To ascertain the role played by national and provincial spheres of government to enhance sustainable rural livelihoods in rural municipalities.
- **Research Question Five:** In what way is the national and provincial government supporting rural municipalities for sustainable rural livelihoods?

6.4.5.1 Findings: Co-Operative Governance

This study maintains that national and provincial spheres of government have a constitutional mandate to provide support, monitoring and play an oversight role to municipalities including Umzumbe Local Municipality. Informed by the empirical data, it was established that the most prominent cooperative governance mechanisms at Umzumbe Local Municipality includes the OSS, IDP Rep Forum, Local Labour Forum, Municipal Managers Forum and Mayors Forums.

This included the newly launched DDM as a new game-changer into the development agenda of the district of uGu at large. The study further noted that despite the existing IGR structures, such structure does not directly relate to infrastructure development besides the financial support in terms of grant allocation for infrastructural projects. Yet, they are shared services, for example, road infrastructure with the provincial Department of Transport but there are no collaborative partnerships to find common ground for speedy road infrastructure, which is seemly a huge problem at Umzumbe Local Municipality. In this context, the KZN Department of COGTA is the provincial department that mostly provides a supervisory and monitoring role.

6.4.5.2 Conclusion

The delivery of infrastructure development is a complex mandate that is not only limited to the municipalities but demands the attention of other government departments. Contrary, it seems that provincial government with a supervisory role to municipalities is somehow falling short in supporting and reinforcing the spirit of working together. To this extent, municipalities including Umzumbe Local Municipality always bear the brunt for shared function with government department such as road construction and maintenance. This emanated from the inability of the community members to differentiate between municipal access roads and provincial roads. It is, therefore, hoped that the newly launched DDM will put much more needed focus on accelerating and improving infrastructure development using the district-based approach. This will most probably provide a fresh opportunity to champion infrastructure development and sustainable livelihoods by all spheres of government using a collective effort.

6.4.6 Research Objective Six and Research Question Six

- **Research Objective Six:** To provide recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural livelihoods.
- **Research Question Six:** What strategic interventions can be recommended for the improvement of infrastructural development and sustainable rural livelihoods?

6.4.6.1 Findings: Recommendations and Improvement Strategies

In relation to the last objective of this study, it sought to solicit recommendations on strategic interventions necessary for the improvement of infrastructural development and sustainable rural

development. Through emerging themes in the empirical investigation, the study participants have suggested the following recommendation and strategies:

- Land acquisition – Umzumbe Local Municipality urgently needs to acquire land in hope to create sustainable rural areas as the municipality functions under no land ownership.
- Tendering system – The study participants made a proposal that the municipality must consider the cognizance of efficiency and transparency in municipal tenders or either consider insourcing.
- Revenue collection – This study also recommends that Umzumbe Local Municipality must find alternative strategies to stimulate their own revenue base. The revenue collection will supplement the municipal cash flow for additional funding for service delivery initiative.
- Investment attractions – It is also suggested that the municipality should explore the possibilities for expanding and attracting investors for a robust economic outlook.

6.4.6.2 Conclusion

The current position of infrastructure development at Umzumbe Local Municipality confirmed that possible recommendations need to be proposed in the interest of advancing sustainable livelihoods. In line with the above, recommendations were proposed, emanating from the primary data as outlined above. The detailed recommendations of the study will be presented in section 6.7 of this study.

6.5 Theoretical Considerations

The theory of infrastructure-led development and SLF as the chosen theoretical framework was presented and discussed in detail in chapter three of this dissertation. This section reflects on the theoretical assumptions in the context of the empirical findings of the study.

6.5.1. Theory of infrastructure-led development

The theory of infrastructure-led development strongly emphasised that the availability of adequate infrastructure is a critical ingredient for the attainment of socio-economic development and sustainable livelihoods in general (Agénor, 2010:2). The theory maintained that investment in quality of infrastructure expands on access to and reliability of infrastructure with its related services. Thus, the availability of infrastructure typically supports various kind of economic and livelihood activities that improves welfare and standard of living of people in their respective

communities. In this study, the theory postulated a number of key benefits associated with infrastructure investment including economic growth, socio-economic development, basic services, poverty reduction, and productivity. Furthermore, the benefits that are associated with investment in quality infrastructure includes indirect effect on labour productivity, effect on adjustment costs, effect on the durability of private capital, impact on health and nutrition, impact on education and magnification effect through health and education

On a broader spectrum of the theoretical viewpoints, this study ascertained that provision of more quality of infrastructure would bring a high throughput of the socio-economic development, improved basic services, poverty reduction and directly lead to sustainable livelihoods. The availability of infrastructure further raise productivity, also with the potential to enhance human capital formation. As suggested by the theory of infrastructure-led development, access to clean water and sanitation, for instance, directly improves the health conditions of the people while access to electricity reduces cost of boiling water and spending time on collecting smoky traditional fuel for cooking. Also, proper road conditions enable accessibility of various areas while reducing transportation costs, resulting in business investment and tourism (Agénor, 2010:3).

In relation to the theory, the empirical findings revealed that the vicious socio-economic realities are rooted in the deficient supply of infrastructure at Umzumbe Local Municipality. As the result, majority of the communities of Umzumbe Local Municipality are exposed to livelihoods that are characterised by poor road conditions, unstable water supply, poor network connectivity and poor electricity. In this context, the empirical findings discovered that most of the access roads are gravel roads with potholes. Majority of the wards were found to be experiencing long water supply cuts that last for weeks or months. Bridges are not constructed properly, for example, the bridge at kwaVuka, among others, is impassable and hazardous during rainy seasons. Moreover, the network connectivity was deemed to be of great challenges in some residential areas.

The empirical findings reflected that rural municipalities like Umzumbe Local Municipality continues to be engulfed with infrastructural backlog to satisfy the needs of the people. This is despite the implementation of a sizeable infrastructural projects in most of the wards at Umzumbe Local Municipality. Of concerns, most of the infrastructural projects are not executed within the prescribed timeframe nor completed. If completed, they are not delivered within allocated budget

or poor quality. Also, the existing infrastructure is suffering from a long period of poor maintenance, neglect and under investment. This confirms the postulation by the theory that infrastructure backlog in general and in Umzumbe Local Municipality in particular presents major service delivery challenges resulting in devastating livelihoods.

6.5.2 Sustainable Livelihood Framework

This study also considered the SLF as a tool of analysis in understanding the livelihoods of the people linked with their assets and capacities for livelihoods outcome and related challenges that confronts rural people. In general, the SLF consist of livelihood assets, vulnerability context, policies, institutions, processes, livelihood strategies and livelihood outcomes (Wubayehu,2020:107). In the same vein, Mubangizi and Mubangizi (2021: 219) point out that people make a living using the five types of resources including natural, physical, social, and human. The livelihood resources were considered as essential tools needed by households to survive, provide basic services and engage on economic activities for sustainable livelihoods. However, access to sustainable livelihoods is influenced by the vulnerability context including trends, shock, and seasonality. The SLF outlined the capabilities of the poor are related with the interaction of external factors that influences people's livelihoods and outcomes. To this effect, the framework has shown a direct and indirect link between livelihood assets, vulnerability context, and institution and their effect on individual household.

Livelihood assets are a core requirement and competence for livelihood; thus, lack of adequate access is the key basis for poverty and human vulnerability. In relation to physical assets, this study maintained that having access to sufficient and balanced assets is essential for sustainable livelihoods. Therefore, it was established that physical assets as a basic infrastructure are necessary to support livelihoods but remains a critical challenge for Umzumbe Local Municipality. Although a reasonable number of existing infrastructures were evident, but level of quality and quantity necessity substantial improvement. This study found out that lack of proper roads conditions, water supply, telecommunication and electricity have directly and negatively impacted on the rural livelihoods. As the result, it denied rural people in having affordable transport, access to information, adequate water supply and reliable electricity.

Similarly, and in relation to natural resources, access to and ownership of natural resources including land, water, trees, and forests are significant in supporting human life and meeting

people's needs. The availability of natural resources enables most of households to engage on agricultural activities such as farming while other households are exposed to the use of firewood in the form of forests as their primary source of energy for the purposes of cooking and lighting. Furthermore, human capital as assets also forms the basic services such as education and human skills that can advance the development of standards of living. However, the IDP of the municipality indicated the education profile is very low in Umzumbe local municipality. Consequently, most of the uneducated people secures employment in informal sectors while others pursue various livelihood strategies including farming and informal trading. Thus, majority of rural people build their livelihoods on cheap labour, self-employment activities and social grants.

Livelihood assets are significant for people to meet their livelihoods and prevent vulnerability related to shocks and stress. As such, the framework also presented the vulnerability context that shows the direct impact on assets and institutional context. The consequences of vulnerability may lead people lose their valuable assets resulting in poverty and other human suffering. Wabayehu (2020:108) explains that vulnerability of the poor is exacerbated when there are no strong institution, strong policies and strategies that promotes the rights of poor individual. In the institutional context, institutions directly influence household activities by defining permissible or impermissible and legal or illegal activities. Also, institutions indirectly influence on access and control of livelihood resources (Wabayehu, 2020:109).

In line with the above assertion, the empirical evidence of this study reflected on institutional incapacity, weak intergovernmental relations, unethical procurement processes and prevalent of corruptive activities. The institutional context has a huge influence on the nature, quality and quantity of service that is provided to the people. In this regard, the government institutions are mandated to create a favourable environmental conditions and empowering policies. As such, livelihood resources, policies and institutions become essential to expand the on the capabilities of the people to initiate appropriate developmental endeavours. The empirical findings, therefore, advocate that Umzumbe Local Municipality has weak institutional arrangements including power, politics, policies, and processes with a high possibilities of leading to impoverishment and powerlessness of the communities they serve. This implies an exposure to vulnerability and negative livelihood outcome for the rural people.

From the vulnerability context, it was established that the recent Covid-19 pandemic as shock led to human vulnerability with its unexpected disruption to human livelihoods. The Covid-19 pandemic as a global health emergency has exposed and worsen the social and economic condition of the rural populace. Several countries including South Africa have adopted aggressive health policies and redirected their available resources to deal with global health crisis of the covid-19 (Buheji *et al*. 2020:213). The Covid-19 as a shock to human livelihood, presented hard-hitting restrictions on the ability of some people to satisfy their immediate basic needs as unnecessary face-to-face interactions was prohibited through social distancing and lockdown. Moreover, the direct impact of the Covid-19 includes morbidity and mortality while indirect impact relates to economic shutdown, job losses and unstable livelihoods. The long-lasting impact of Covid-19 is expected to impact on people's valuable assets making it difficult for the vulnerable people to cope and recover from the condition of shocks of the Covid-19 pandemic. The chosen framework has demonstrated on the impact of assets for the building of livelihoods, reduction of vulnerability of the poor and improving sustainable livelihood outcome.

6.6 Significance of the study to the body of knowledge of infrastructure development and sustainable rural livelihoods

This study has significantly extended knowledge in respect of the current state of infrastructure development and sustainable rural livelihoods of Umzumbe Local Municipality. From a development context, the findings associated with infrastructure and sustainable rural livelihoods provided new perspectives and knowledge of the challenges, and further provided opportunities thereto. In essence, this study provides a better and contextual understanding of infrastructure development and sustainable rural livelihoods.

Through this study, the empirical evidence indicated that the people of Umzumbe Local Municipality continue to come to terms with harsh livelihoods that are characterised by poor infrastructural development in terms of road, water supply, network connectivity and electricity. This advocated that the unpleasing livelihood realities are rooted in the deficient supply of infrastructure. It is for these reasons that this study offered a detail insight into theoretical understanding on how to successfully advance infrastructure and livelihoods, also contributing to the development planning for the rural populace. Finally, this study provided a methodology in the academic literature in evaluating the impact of infrastructure on the developmental scale. Overall,

the study contributed to the ideals in South Africa's NDP, Africa Union's Agenda 2063 and the United Nation's SDGs.

6.7 Overarching Recommendations of The Dissertation

As noted earlier, this section provides detailed recommendations of the study.

6.7.1 Recommendation One

Infrastructural investment framework: The competitiveness of any economy that seeks perfection is determined by the strength of infrastructural indicators influenced by the sound investment. In alignment with infrastructure master plan and IDP of Umzumbe Local Municipality, the need for framework that directly deals with infrastructure investment remains paramount. Informed by the alarming, deficient supply of infrastructure, the framework will tap into a range of investment opportunities on infrastructure including the scope of municipal infrastructure, institutional arrangement, intergovernmental interfaces, and impact of economic and social indicators. In addition, the framework will predominantly draw more attention to building, upgrading, rehabilitating, and expanding the necessary infrastructural needs. More broadly, this framework will establish a set of targets and the amount of capital and specific indicators, where the need of the infrastructure is the greatest in providing strategic alignment of infrastructural projects and impetus for strong project management in municipalities. It must also cover the multidimensional nature of sustainable livelihoods with it associated outcomes.

6.7.2 Recommendation Two

Monitoring and Evaluation: This study recommends that Umzumbe Local Municipality must improve their Monitoring and Evaluation (M&E) mechanisms in pursuit of better infrastructural delivery that will impact the sustainable livelihoods. It was noted that M&E for municipalities in general is largely vested in the provincial COGTA. It is for these reasons that Umzumbe Local Municipality must establish and improve the existing systems and processes that monitors and evaluates municipal performance more especially on quality decisions, accountability, and compliance regarding the delivery of infrastructure. Furthermore, the M&E tools will identify and prioritise innovative local solutions to developmental challenges, including the identified deficiencies in the delivery of infrastructure projects. This recommendation resonates with Mubangizi's (2019) assertion that "an ideal system of monitoring and evaluation based on the

sustainable livelihoods framework requires comprehensive information which interrogates the livelihood framework as well as policy and institutional processes."

6.7.3 Recommendation Three

Procurement strategy: In line with the existing SCM regulations prescribed by National Treasury and Provincial Treasury, this study recommends that Umzumbe Local Municipality must establish their own procurement strategy major infrastructural projects. It is alleged that SCM vulnerabilities including poor SCM processes result to poor municipal financial performance and presents failure in major infrastructural projects. Therefore, having a comprehensive procurement strategy will assists in making sustainable construction procurement choices that will take accountability on the full value of the service to be procured. Fundamentally, the strategy could also entail features of cost effectiveness, quality assurance measures, supplier's competence, procurement ethics and supplier's database management including the aspect of risk management envisaged in national legislation including Public Finance Management Act (Act 1 of 1999). This strategy will also provide a shift from the traditional procurement method that severely lacks quality and client competence on major infrastructural projects resulting in incomplete or poor-quality projects.

6.7.4 Recommendation Four

Revenue collection strategies: It was established that infrastructure development is the primary function of Umzumbe Local Municipality, yet the municipality is heavily dependent on national and provincial spheres for financial support. It is recommended that Umzumbe Local Municipality creates alternative, innovative, and sustainable revenue collection strategies to stimulate their revenue base. This should be implemented to supplement the cash flow of the municipality which can be used to meet municipal targets especially for poorly resourced municipality like Umzumbe Local Municipality. The expansion of revenue stream will harness the capacity of the municipality to establish alternative development projects to improve on financial investment on infrastructure, thus reducing financial dependency on other spheres of government.

6.7.5 Recommendation Five

Intergovernmental relations: Co-operative governance amongst the spheres of government remains indispensable and pivotal. As such, this study recommends that, through effective IGR structures, other spheres of government must mutually co-operate and support Umzumbe Local

Municipality especially on the growing demand of infrastructure. The findings of the study showed that people of Umzumbe Local Municipality are struggling with water supply challenges which is the core function of Ugu District Municipality. Furthermore, this includes the issue of road construction and maintenance which is a shared responsibility with the provincial Department of Transport. This advocates that effective IGR structures are more significant than the financial support. In this regard, hopes and aspirations are currently vested in the newly launched DDM that aims to improve coherence. While the DDM is anticipated to move from silo planning, budgeting and implementation, it should do so on improving infrastructure and livelihoods for Umzumbe Local Municipality.

6.8. Suggestions for Future Research Study

This dissertation has examined the impact of infrastructure development and sustainable rural livelihood at Umzumbe Local Municipality. Drawing from the magnitude of the study, several fruitful avenues for future research are suggested by:

- A study is suggested to interrogate the institutional constraints and capacity limits that continue to impede the performance of infrastructural projects.
- A study is suggested to evaluate the quality and life cycle of infrastructural projects.
- A study can be conducted on the effectiveness of the value for money and expenditure control on infrastructural projects.
- A study can be conducted on the impact of Covid-19 at the lens of livelihoods to provide recommendations on how people can better recover from the effect of Covid-19.

6.9 Chapter Summary

The final chapter of the dissertation began by presenting the recapitulation of the research objectives and research questions. The summary of all chapters in this dissertation was highlighted. Furthermore, the chapter provided the findings that emanated from the qualitative data, thereafter, discussing the deductions that were drawn from each of the research findings. More so, the significance of the study was reiterated while making new submission to the body of knowledge. Finally, and based on the study findings, the chapter provided overarching research recommendations that assisted in accomplishing research objectives and answered the research questions. This concludes the dissertation.

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Appendix 1: Standard letter requesting research participants in the study

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL

For research with human participants

Information Sheet and Consent to Participate in Research

Date:

Greetings,

My name is Sabelo Reginald Buthelezi (212553928) a master's student from School of Management, IT and Governance, of the University of KwaZulu-Natal (UKZN). My contact details are as follows:

Email address: 212553928@stu.ukzn.ac.za or Sbuthelezi39@gmail.com

Cell number: 083 867 9683

You are being invited to consider participating in a study entitled **"Infrastructure development and sustainable rural livelihoods: perceptions from Umzumbe Local Municipality"**. The aim and purpose of this research is to examine infrastructure development and sustainable rural livelihoods with the hope to improve the standard of service delivery for rural municipalities including Umzumbe Local Municipality. The study is expected to consist of a total of 42 participants including Municipal officials, Councilors, Izinduna and community members at Umzumbe Local Municipality. Study intends to adopt the non-probability sampling method using purposive sampling procedure. The duration of your participation if you choose to participate and remain in the study is expected to be 60 minutes. The study is not funded but all costs shall be paid by the researcher.

The study will not involve any risks and/or discomforts. We hope that the study will gain insights about the challenges and opportunities of infrastructure development and sustainable rural livelihoods at Umzumbe Local Municipality. Furthermore, we hope that the study will contribute to the existing body of knowledge for the improvement of the delivery of infrastructure development and sustainable rural livelihoods. There are no provided alternative procedures and treatment that seek to serve as possible alternate options to study participation.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number_____).

In the event of any problems or concerns/questions you may contact the researcher at 083 867 9683 or sbuthelezi39@gmail.com or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban 4000 KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Your participation in the study is voluntary and by participating, you are granting the researcher permission to use your responses. You may refuse to participate or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in the study. Your anonymity will be maintained by the researcher and the School of Management, I.T. & Governance and your responses will not be used for any purposes outside of this study.

All data, both electronic and hard copy, will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.

If you have any questions or concerns about participating in the study, please contact me or my research supervisor at the numbers listed above.

Sincerely

Mr. Sabelo Buthelezi (Researcher)

Signature: _____

CONSENT TO PARTICIPATE

I…… (Full Names) have been informed about the study entitled "Infrastructure development and sustainable rural livelihoods: perceptions from Umzumbe Local Municipality" by Mr Sabelo Buthelezi.

I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at 083 867 9683 or sbuthelezi39@gmail.com .

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to:

Audio-record my interview / focus group discussion YES / NO

Video-record my interview / focus group discussion YES / NO

_____ _____

Signature of Participant **Date**

_____ _____

Signature of Witness **Date**

(Where applicable)

_____ _____

Signature of Translator **Date**

(Where applicable)

Appendix 2: Standard letter requesting research participants in the study (Isizulu Version)

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

ISICELO SOKUVUNYWA KOKUZIPHATHA OKUQONDILE

Ngocwaningo lwabantu ababamba iqhaza

Ishidi Lemininingwane Nokuvumela Ukubamba Iqhaza

Usuku:

Izibingelelo,

Igama lami uSabelo Reginald Buthelezi (212553928), umfundi wezeziqu eziphezulu i-master's esikoleni Sokuphatha, Imininingwane Yezobuchwepheshe Nokulawula eNyuvesi yaKwaZulu Natali (UKZN). Imininingwane yami yezokuxhumana yile elandelayo

Ikheli le-email: 212553928@stu.ukzn.ac.za noma sbuthelezi39@gmail.com

Inombolo yeselula: 083 867 9683

Uyamenywa ukuthi ucubungule ukubamba iqhaza ocwaningweni olunesihloko esithi **"Ukuthuthukiswa Kwengqalasizinda Kanye Nempilo Esimeme Yasemakhaya: Imibono Eqhamuka Kumasipala Wendawo Umzumbe"**. Inhloso nenjongo yalolu cwaningo ukuhlola udaba lokuthuthukiswa kwengqalasizinda kanye nempilo esimeme yasemakhaya ngethemba lokuthuthukisa izinga lokuthuthukiswa kwengqalasizinda ezindaweni zasemakhaya zikaMasipala weNdawo yaseMzumbe. Lolu cwaningo luzokwamukela indlela yokuthatha idlanzana labantu ngokwenhloso yokuqoqa imininingwane efanelekile enanini lababamba iqhaza abangamashumi amane nambili(42) kubandakanya abasebenzi bakaMasipala, amakhansela, izinduna kanye namalungu omphakathi akuMasipala weNdawo yaseMzumbe. Isikhathi okulindeleke sisithathe uma uvuma ukubamba iqhaza futhi ulibambe kuze kube semaphethelweni kungaba yimizuzu engamashumi ayisithupha(60). Lolu cwaningo alukhokhelwa. Izindleko zonke zizokhokhelwa umcwaningi.

Akukho bungozi noma ukulimazeka lolu cwaningo olungakubandakanya. Sithemba ukuthi lolu cwaningo luzothola ukuqonda okujulile mayelana nezinselelo namathuba okuthuthukiswa kwengqalasizinda nentuthuko yempilo esimeme yasemakhaya ngaphansi kukaMasipala weNdawo Umzumbe. Ngaphezu kwalokho, sethemba ukuthi lolu cwaningo luzoba nomthelela

ekuthuthukiseni lolu lwazi olukhona ukuze kuthuthukiswe ingqalasizinda kanye nentuthuko yempilo yasemakhaya esimeme. Azikho ezinye izinqubo nokwelashwa ezinikeziwe ezibheke ukuthi zibe ezinye izindlela okungenzeka ngazo mayelana nokubamba iqhaza ocwaningweni.

Lolu cwaningo lubukeziwe ngokufanelekile laphinde lavunywa yiHumanities and Social Sciences Research Ethics Committee yaseNyuvesi yaKwaZulu Natali (UKZN) (Inombolo yokuvumela _____)

Uma kuba khona nanoma yiziphi izinkinga noma ukukhathazeka noma imibuzo ungaxhumana nomcwaningi ku 0838679683 noma 212553928@stu.ukzn.ac.za /sbuthelezi39@gmail.com noma i-UKZN Humanities & Social Sciences Research Ethics Committee imininingwane yokuxhumana nabo yile elandelayo:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban 4000 KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Ukubamba kwakho iqhaza kulolu cwaningo kungokuzithandela futhi ngokubamba kwakho iqhaza, unika umcwaningi imvume yokuthi asebenzise izimpendulo zakho. Ungakwazi ukunqaba ukuthi ubambe iqhaza noma uhoxe ocwaningweni nanganoma yisiphi isikhathi futhi lokho ngeke kube nemiphumela engemihle. Akukho mali ozoyithola ngokubamba iqhaza kulolu cwaningo. Ukungaziwa kwakho kuzogcinwa umcwaningi neSikole Sokuphatha, Imininingwane Yezobuchwepheshe Nokulawula kanti futhi izimpendulo zakho ngeke zisetshenziselwe enye inhloso ngaphandle kwalolu cwaningo.

Yonke imininingane, efakwe kokukagesi kanjalo nekhishelwe emaphepheni, izogcinwa iphephile ngesikhathi socwaningo bese kuhlala kugciniwe iminyaka emihlanu(5). Emva kwalesi sikhathi, yonke imininingwane izoshabalaliswa.

Uma kukhona imibuzo noma ukukhathazeka onakho mayelana nokubamba iqhaza kulolu cwaningo, ngicela uxhumane nami noma umphathi wami wokucwaninga kulezi zinombolo ezibhalwe ngenhla.

Ozithobayo,

Sabelo Buthelezi (UMcwaningi)

I-signature: _____

IMVUME YOKUBAMBA IQHAZA

Mina……..(Amagama Ngokugcwele) ngazisiwe mayelana nocwaningo olunesihloko esithi “”Ukuthuthukiswa Kwengqalasizinda Kanye Nempilo Esimeme Yasemakhaya: Imibono eqhamuka Kumasipala Wendawo Umzumbe” olwenziwa Sabelo Buthelezi.

Ngiyayiqonda inhloso nezinqubo zalolu cwaningo.

Nginikiwe ithuba lokubuza imibuzo mayelana nalolu cwaningo nezimpendulo engizinikiwe zingigculisile.

Ngiyakuveza ukuthi ukubamba kwami iqhaza kulolu cwaningo ngikwenza ngokuzikhethela ngokuphelele nokuthi ngiyazi ukuthi ngingahoxa nanganoma yisiphi isikhathi ngaphandle kokuthi kube nemithelela kunanoma yiziphi izinzuzo engiyaye ngibe nazo.

Uma kukhona eminye imibuzo/ukukhathazeka noma okudinga ukuphendulwa okumayelana nalolu cwaningo, ngiyaqonda ukuthi ngingaxhumana nomcwaningi ku 083 867 9683.

Uma kuba khona imibuzo noma ukukhathazeka mayelana namalungelo ami njengobambe iqhaza ocwaningweni, noma uma ngikhathazeke ngengxenye ethile yalolu cwaningo noma abacwaningi, lapho ngingaxhumana:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Imvume enezezelwe, la idingeka khona

Ngaleyo ndlela nginikeza imvume ku:

Qopha izwi le ngxoxo-mpendulwano yami/ iqoqo elihlangene ngengxoxo YEBO/CHA

Qopha okubonakalayo kwengxoxo yami/ iqoqo elihlangene ngengxoxo YEBO/CHA

_____ _____

Signature yoBambe Iqhaza **Usuku**

_____ _____

Signature kaFakazi **Usuku**

(Lapho esebenza khona)

_____ _____

Signature yoMhumushi **Usuku**

(Lapho Esebenza Khona)

Appendix 3: Research Instruments - Municipal Officials Interview Guide

COLLEGE OF LAW AND MANAGEMENT STUDIES
SCHOOL OF MANAGEMENT, IT AND GOVERNANCE

MASTER OF ADMINISTRATION (MADMIN)

Researcher: Mr SR Buthelezi (083 867 9683)
Supervisor: Dr BR Qwabe (031 260 7490)
Research Office: Ms M Snyman (031 260 8350)

MUNICIPAL OFFICIAL INTERVIEW SCHEDULE/GUIDE SECTION A: BIOGRAPHICAL DETAILS

Title: Mr/Mrs/Miss/Dr/Prof/Cllr/Rev: _____
Position/Designation : _____
Department/Unit : _____
Role/Responsibilities : _____
Period of service : _____
Gender : _____
Highest qualification : _____

SECTION B: MEASURES TO ENHANCE INFRASTRUCTURE AND SUSTAINABLE RURAL DEVELOPMENT

1. To what extent has Umzumbe Local Municipality in recent years established and implemented measures to enhance infrastructural development and sustainable rural livelihood?
2. How does Umzumbe Local Municipality identify and priorities infrastructural development projects and rural development programs in all municipal wards?

SECTION C: QUALITY STANDARDS AND ASSURANCE

3. What are your perceptions in terms of quality of the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
4. What are your perceptions in terms community accessibility to the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
5. What are your perceptions in terms of reliability of the current infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
6. To what extent does infrastructure development initiatives support the opportunities of sustainable rural livelihood in Umzumbe Local Municipality?

SECTION D: BARRIERS HINDERING INFRASTRUCTURE DEVELOPMENT AND SUSTAINABLE RURAL DEVELOPMENT

7. What are the salient contributing factors that hinder quality infrastructure development in Umzumbe Local Municipality?
8. What is the impact of these factors on the attainment of sustainable rural livelihood in Umzumbe Local Municipality?

SECTION E: ENDEAVORS ON INFRASTRUCTURE PROJECTS AND PROGRAMMES

9. What are recent infrastructural rural development programmes adopted by Umzumbe Local Municipality to enhance sustainable rural livelihood?
10. How are the delivery of infrastructural programmes promoting socio-economic development for Umzumbe Local Municipality at large?
11. What are recent infrastructural projects adopted by Umzumbe Local Municipality to enhance sustainable rural livelihood?
12. How are the delivery of infrastructural projects promote socio-economic development for Umzumbe Local Municipality at large?

SECTION F: COLLABORATIVE ROLES AMONGST SPHERES OF GOVERNMENT

13. In what way is the national sphere of government performing the supervisory and monitoring role for Umzumbe Local Municipality?
14. In what way is the provincial sphere of government performing the supervisory and monitoring role for Umzumbe Local Municipality?
15. What is the efficacy of the collaborative mechanisms between spheres of government to facilitate infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?

SECTION G: INFRASTRUCTURAL IMPROVEMENT STRATEGIES

16. What are future plans, goals and/or turnaround strategies that Umzumbe Local Municipality hopes to achieve in the interest of infrastructure development and sustainable rural livelihood?
17. Finally, what strategies can you recommend for Umzumbe Local Municipality to improve on infrastructural development and sustainable rural livelihood?

Appendix 4: Research Instruments - Councillors Interview Guide

COLLEGE OF LAW AND MANAGEMENT STUDIES
SCHOOL OF MANAGEMENT, IT AND GOVERNANCE

MASTER OF ADMINISTRATION (MADMIN)

Researcher: Mr SR Buthelezi (083 867 9683)
Supervisor: Dr BR Qwabe (031 260 7490)
Research Office: Ms M Snyman (031 260 8350)

COUNCILLORS INTERVIEW SCHEDULE/GUIDE

SECTION A: BIOGRAPHICAL DETAILS

Title: Mr/Mrs/Miss/Dr/Prof/Cllr/Rev : _____
Position/Designation : _____
Ward : _____
Role/Responsibilities : _____
Term of Office : _____
Gender : _____
Highest qualification : _____

SECTION B: MEASURES TO ENHANCE INFRASTRUCTURE AND SUSTAINABLE RURAL DEVELOPMENT

1. What are initiatives in place to enhance infrastructure development and sustainable rural livelihood in your municipal ward in Umzumbe Local Municipality?
2. What are rural infrastructural development programme(s) currently adopted in your municipal ward in Umzumbe Local Municipality?
3. What are rural infrastructural development project(s) currently implemented in your municipal ward in Umzumbe Local Municipality?

4. How do you ensure that consistent and visible involvement of the community members in initiatives related to infrastructural development and sustainable rural livelihood in your municipal ward in Umzumbe Local Municipality?

SECTION C: QUALITY STANDARDS AND ASSURANCE

5. Can you describe the state of infrastructure development and sustainable rural livelihood in your ward in Umzumbe Local Municipality?

6. What are your perceptions regarding community accessibility to the current infrastructure development and sustainable rural livelihood initiatives in your municipal ward in Umzumbe Local Municipality?
7. What are consultation strategies you have adopted to encourage infrastructure development and sustainable rural livelihood in your municipal ward in Umzumbe Local Municipality?

SECTION D: BARRIERS HINDERING INFRASTRUCTURE DEVELOPMENT AND SUSTAINABLE RURAL DEVELOPMENT

8. What are the salient contributing factors that hinder quality infrastructure development in your municipal ward in Umzumbe Local Municipality?
9. What is the impact of these factors on the attainment of quality infrastructure development and sustainable rural livelihood in your municipal ward in Umzumbe Local Municipality?

SECTION E: COLLABORATIVE ROLES AMONGST SPHERES OF GOVERNMENT

11. In what way are you working with national government departments to strengthen infrastructure development and sustainable rural development in your municipal ward in Umzumbe Local Municipality?
12. In what way are you working with provincial government departments to strengthen infrastructure development and sustainable rural development in your municipal ward in Umzumbe Local Municipality?
13. What are successes and challenges, if any, for working with national and provincial departments to facilitate infrastructure development and sustainable rural livelihood in your municipal ward in Umzumbe Local Municipality?

SECTION F: INFRASTRUCTURAL IMPROVEMENT STRATEGIES

14. What are future plans, goals and/or turnaround strategies that Umzumbe Local Municipality hopes to achieve in the interest of infrastructure development and sustainable rural livelihood?
15. What strategies can you recommend for Umzumbe Local Municipality to improve infrastructural development and sustainable rural livelihood?

Appendix 5: Research Instruments – Izinduna Interview Guide

COLLEGE OF LAW AND MANAGEMENT STUDIES
SCHOOL OF MANAGEMENT, IT AND GOVERNANCE

MASTER OF ADMINISTRATION (MADMIN)

Researcher: Mr SR Buthelezi (083 867 9683)
Supervisor: Dr BR Qwabe (031 260 7490)
Research Office: Ms M Snyman (031 260 8350)

***IZINDUNA* INTERVIEW SCHEDULE/GUIDE**

SECTION A: BIOGRAPHICAL DETAILS

Title: Mr/Mrs/Miss/Dr/Prof/Cllr/Rev : _____
Position/Designation : _____
Traditional Council : _____
Ward : _____
Role/Responsibilities : _____
Term of Office : _____
Gender : _____
Highest qualification : _____

SECTION B: MEASURES TO ENHANCE INFRASTRUCTURE AND SUSTAINABLE RURAL DEVELOPMENT

1. To what extent does your traditional council promote the establishment of measures to enhance infrastructure development and sustainable rural livelihood at Umzumbe Local Municipality?
2. How does your traditional council contribute to infrastructural development and sustainable rural livelihood programmes at Umzumbe Local Municipality?
3. How does your traditional council contribute to infrastructural development and sustainable rural livelihood projects at Umzumbe Local Municipality?
4. How does your traditional council ensure that community members are consistent and visibly involved in infrastructural projects and sustainable rural livelihood initiatives?

SECTION C: QUALITY STANDARDS AND ASSURANCE

5. Can you describe the state of infrastructure development and sustainable rural livelihood within the jurisdiction of your traditional authority?
6. What are your perceptions regarding community accessibility to the current infrastructure development and sustainable rural livelihood?
7. What are consultation strategies has your traditional council adopted to encourage infrastructure development and sustainable livelihood at Umzumbe Local Municipality?

SECTION D: BARRIERS HINDERING INFRASTRUCTURE DEVELOPMENT AND SUSTAINABLE RURAL DEVELOPMENT

7. What are the salient contributing factors that hinder quality infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
8. What is the impact of these factors on the attainment of quality infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?

SECTION E: COLLABORATIVE ROLES

9. What are successes and challenges, if any, for working with national departments including Umzumbe Local Municipality to facilitate infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
10. What are successes and challenges, if any, for working with provincial departments to facilitate infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?
11. What are successes and challenges, if any, for working with Umzumbe Local Municipality to facilitate infrastructure development and sustainable rural livelihood in Umzumbe Local Municipality?

SECTION F: INFRASTRUCTURAL IMPROVEMENT STRATEGIES

12. What strategies can you recommend for Umzumbe Local Municipality to improve on infrastructural development and sustainable rural livelihood?

Appendix 6: Research Instruments - Focus Groups Discussion Guide

COLLEGE OF LAW AND MANAGEMENT STUDIES
SCHOOL OF MANAGEMENT, IT AND GOVERNANCE

MASTER OF ADMINISTRATION (MADMIN)

Researcher: Mr SR Buthelezi (083 867 9683)
Supervisor: Dr BR Qwabe (031 260 7490)
Research Office: Ms M Snyman (031 260 8350)

FOCUS GROUP DISCUSSION GUIDE: COMMUNITY MEMBERS

SECTION A: BIOGRAPHICAL DETAILS

_____
_____
_____

SECTION B: MEASURES TO ENHANCE INFRASTRUCTURE AND SUSTAINABLE RURAL LIVELIHOOD

1. What are recent initiatives implemented by Umzumbe Local Municipality to promote infrastructural development and sustainable rural livelihood in your wards?

2. What are consultation mechanisms adopted by Umzumbe Local Municipality in identifying and prioritising on infrastructural development needs in your wards?

SECTION C: QUALITY STANDARDS AND ASSURANCE

3. Can you describe the state of infrastructure and socio-economic living conditions in your wards?

4. What are your perceptions regarding the quality and the current state of infrastructure development and sustainable rural livelihood at Umzumbe Local Municipality?

5. What are your perceptions regarding community accessibility to the available infrastructure development and sustainable rural livelihood at Umzumbe Local Municipality?

6. What are your perceptions regarding the reliability of the current infrastructure development and sustainable rural livelihood at Umzumbe Local Municipality?

SECTION D: BARRIERS HINDERING INFRASTRUCTURE DEVELOPMENT AND SUSTAINABLE RURAL DEVELOPMENT

7. What are the salient contributing factors that hinder quality infrastructure development and in your wards at Umzumbe Local Municipality?

8. What is the impact of these factors on the attainment of sustainable rural livelihood in Umzumbe Local Municipality?

9. What actions, if any, has Umzumbe Local Municipality taken to mitigate factors that hinder infrastructure development and sustainable rural livelihood?

SECTION E: INFRASTRUCTURAL IMPROVEMENT STRATEGIES

10. What strategies can you recommend for Umzumbe Local Municipality to improve on infrastructural development and sustainable rural livelihoods?

THANK YOU FOR YOUR PARTICIPATION

Appendix 7: Gatekeeper's letter from Umzumbe Local Municipality

UMZUMBE MUNICIPALITY
UMASIPALA WASEMZUMBE

C/o P.O. Box 561
HIBBERDENE
4220

Tel: c/o 039 972 0005
Fax: c/o 039 972 0099
E-mail: Nomonde@umzumbe.gov.za

Umzumbe MUNICIPALITY

OFFICE OF THE MUNICIPAL MANAGER

For Attention: Sabelo Buthelezi
Student Number: 212553928

Dear Sabelo R. Buthelezi

RE: PERMISSION TO CONDUCT RESEARCH AT UMZUMBE LOCAL MUNICIPALITY

The above subject bears reference to your application letter dated 15 April 2019.

It with great pleasure to inform you that Umzumbe Local Municipality grants you permission to conduct research project entitled **"Infrastructure Development and Sustainable Rural Livelihoods: Perceptions from Umzumbe Local Municipality"**. You are allowed to use Umzumbe Local Municipality as your case study provided that ethical clearance has been obtained from your institution. The municipality, therefore, consent that all the information collected should be strictly used for scholarly purposes with a high degree of confidentiality and anonymity.

We assure you of our cooperation as a municipality in making you achieve your academic goals. In return, we hope that you will share the results and recommendations of your research with the municipality for consideration.

Warm Regards.

[redacted]

Ms ZP Mngadi
Acting Municipal Manager
Umzumbe Local Municipality

Appendix 8: Ethical clearance letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

10 November 2020

Mr Sabelo Reginald Buthelezi (212553928)
School Of Man Info Tech & Gov
Westville Campus

Dear Mr Buthelezi,

Protocol reference number: HSSREC/00001693/2020
Project title: Infrastructure development and sustainable rural livelihood: Perceptions from Umzumbe Local Municipality
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 15 June 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL** on the following condition:

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 10 November 2021.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/dd

Appendix 9: Gatekeeper's letter from KZN Department of COGTA

cogta

Department:
Cooperative Governance and Traditional Affairs
PROVINCE OF KWAZULU-NATAL

TRADITIONAL RESOURCE ADMINISTRATION

Enquiries: Imibuzo: Navrae:	BPN Dludla	My Reference: Inkomba Yami: My Verwysing:	E-mail:	Bonisiwe.dludla@kzncogta.gov.za	Date: Usuku: Datum:

For Attention: Sabelo Buthelezi

Student number: 212553928

Dear Mr. Buthelezi

RE: PERMISSION TO CONDUCT RESEARCH INTERVIEWS WITH IZINDUNA

The subject matter in respect to your request for gatekeeper's application dated 15 April 2020 bears reference.

This serves to inform you that the Ugu Local House of Traditional Leaders under the Department of Co-operative Governance and Traditional Affairs (COGTA) in KwaZulu-Natal (KZN), have considered your request and therefore grants you gatekeepers permission. It is noted that your masters research project is entitled **"Rural Development and Sustainable Rural Livelihoods: Perceptions from Umzumbe Local Municipality"** and you intend constituting your sample by conducting interviews with several participants including izinduna from KwaQoloqolo and Mathulini Traditional Councils, respectively.

The District, therefore, grants you the gatekeepers' permission on the following terms:

- Ethical clearance is obtained from University of KwaZulu-Natal (UKZN).
- Amakhosi from the respective traditional council are informed about the research project
- Izinduna you have identified provide their voluntary consent to participate.
- The interview questions are submitted to the department as soon as they are available.
- Information collected be strictly used for scholarly purposes and treated with confidentiality and anonymity.

Yours Sincerely,

[redacted]

Mrs. BPN Dludla
Deputy Director: Ugu Local House of Traditional Leaders
KZN Department of COGTA

Appendix 10: Language Editor Certificate

ASOKA ENGLISH LANGUAGE EDITING
45 Vausedale Crescent, Escombe, 4093.

DECLARATION

THIS IS TO CERTIFY THAT THE FOLLOWING DISSERTATION HAS BEEN ENGLISH LANGUAGE EDITED TO A **PARTIAL EXTENT** WITH THE FOLLOWING EXCLUSIONS: ABSTRACT, CHAPTER 5, CHAPTER 6 & REFERENCES.

Infrastructure development and sustainable rural livelihood: Perceptions from Umzumbe Local Municipality

Candidate: Buthelezi S.R.

[redacted]

DISCLAIMER
Whilst the English language editor has used electronic track changes to facilitate corrections and has inserted comments and queries in a right-hand column, the responsibility for effecting changes in the final, submitted document, remains the responsibility of the client and the editor cannot be held responsible for the quality of English Language expression used in corrections or additions effected subsequent to the transmission of this certificate on 19/10/2020.

Director: Prof. Dennis Schauffer, M.A.(Leeds), PhD, KwaZulu (Natal), TEFL(London), TITC Business English, Emeritus Professor UKZN. Univ. Cambridge Accreditation: IGCSE Drama. Hon. Research Fellow, DUT. Durban University of Technology.

Appendix 11: Language Editor Certificate

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Editing and proofreading services for
academic articles/papers & dissertations

Jennifer Sheokarah
083 287 2456 jennifer_sheokarah@yahoo.com

TO : **Whom it may concern**
FROM : **Miss Jennifer Sheokarah**
SUBJECT : **Dissertation Language Editing**
DATE : **6 July 2021**

Infrastructure development and sustainable rural livelihood: Perceptions from Umzumbe Local Municipality

by

Mr Sabelo Reginald Buthelezi (Master of Administration: 212553928)

The above dissertation was edited.

While I have corrected spelling and language errors (punctuation, tense, concord, word choice, word order, etc.) I have not edited any quotations. I have also not checked that the sources indicated in reference list are all contained in the body of the document or that these sources are cited correctly. Ideas expressed have not been altered in any way.

Please note that the dissertation was edited using track changes to be addressed by the student who will use his/her discretion when deciding whether to accept/reject changes suggested by the editor. The editor will not be liable for the student's decision to accept or reject a change.

Sincerely

[redacted]

Jennifer Sheokarah
Language Editor