Evaluating the challenges and opportunities for economic diversification in a just energy transition in South African municipalities: A case of Emalahleni local municipality

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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously submitted it, in its entirety or in part, to any other university or institution.

I also confirm that where AI has been used, it has been applied in an ethically responsible manner and in accordance with NWU guidelines. AI was used for the purposes of developing concise chapter summaries. The opsomming was generated through Google Translate.

Nondumiso Twalo

DEDICATION

This thesis is dedicated to my number one supporter, Owam Enkosi Twalo, my son.

PREFACE

The journey of researching and writing this thesis has been both challenging and rewarding. The urgency of transitioning to sustainable energy is a reality that South Africa, with its deep reliance on coal, must face. This study explores the complexities of economic diversification within the Just Energy Transition, using the Emalahleni Local Municipality as a case study. My hope is that this work contributes meaningfully to the conversation on sustainability and helps to inform policies that support government through this energy transition.

This study stems from a deep concern for the people and economies affected by the shift away from the use of coal. It is more than just an academic enquiry; it is about understanding real-world struggles and opportunities and ensuring that economies and communities do not collapse as South Africa moves towards cleaner energy, as evidenced in areas where mines have closed leaving 'ghost towns'. My 19-year experience in local government has exposed me to the challenges that municipalities face when an economic sector within their jurisdiction collapses. The results have been devastating for both municipalities and the communities in those areas, hence the need to ensure that economic diversification does not become just one of the things that must be done, but that it is prioritised and addressed adequately. By examining both the challenges to and possibilities for economic diversification, this study aims to offer insights that can help to build a more resilient and inclusive future.

The research process has been a deeply engaging one, requiring extensive engagement with literature, policy documents and, most importantly, individuals who are living through this transition. Conversations with stakeholders brought invaluable perspectives to this work, and their voices and experiences have shaped the direction of this study.

My hope is that this study not only adds to academic knowledge but also serves as a tool for decision-makers to realise what the challenges are and work towards finding solutions that can make the energy transition just. Change is never easy, but with thoughtful planning and collective effort, a more sustainable and equitable future is within reach.

ACKNOWLEDGEMENTS

I am incredibly grateful for the guidance and encouragement of my supervisor, Mr T.C. Meyer, who provided unwavering support throughout this journey. To the research participants who shared their time and insights, I extend my heartfelt appreciation. The journey was long with many winding turns and many cheers along the way. A special thanks also goes to my family, friends and colleagues, who offered encouragement, understanding and motivation during this process. When I had nothing more to give, you guys carried me over the finish line.

ABSTRACT

This study investigated the potential challenges and opportunities related to implementing economic diversification in a Just Energy Transition, to mitigate the impact of the closure of coal mines and coal power stations as a result of the Just Energy Transition. The challenges and opportunities with regard to economic diversification in a Just Energy Transition were identified and characterised through a literature review. These were evaluated through a qualitative case study of the Emalahleni Local Municipality, based on real-world observations from key stakeholders. Stakeholders from the different spheres of government with various roles in the implementation of the Just Energy Transition were interviewed, based on questions about challenges and opportunities in economic diversification in the Just Energy Transition.

The findings highlighted the need for a coordinated effort across government spheres, private-sector engagement, infrastructure investment, policy coherence reform and strategic funding mechanisms to ensure a sustainable and equitable transition. It further found that a successful Just Energy Transition requires increased capacity-building at the municipal level and substantial investment in infrastructure development.

In conclusion, better policy coordination, infrastructure development, private-sector involvement, financial accessibility and global collaboration are required to support Emalahleni's transition to a more diverse and sustainable economy.

The research findings can be generalised beyond the immediate case study to other municipalities with a similar context, based on the theories accepted and rejected. Successful economic diversification in a Just Energy Transition may, therefore, be possible in other municipalities with medium-sized towns reliant on coal mining and energy generation, provided that a comprehensive approach that integrates intergovernmental and private-sector collaboration, robust policy and regulatory frameworks, infrastructure investment and adequate financial resources is adopted.

Key terms: economic diversification, Just Energy Transition, challenges, opportunities, closure of coal mines

OPSOMMING

This opsomming was generated through Google Translate.

Hierdie studie het die potensiële uitdagings en geleenthede ondersoek wat verband hou met die implementering van ekonomiese diversifikasie in 'n regverdige energie-oorgang, om die impak van die sluiting van steenkoolmyne en steenkoolkragstasies as gevolg van die regverdige energie-oorgang te versag. Die uitdagings en geleenthede ten opsigte van ekonomiese diversifikasie in 'n regverdige energie-oorgang is deur middel van 'n literatuuroorsig geïdentifiseer en gekarakteriseer. Dit is geëvalueer deur middel van 'n kwalitatiewe gevallestudie van die Emalahleni Plaaslike Munisipaliteit, gebaseer op werklike waarnemings van sleutelbelanghebbendes. Belanghebbendes uit die verskillende regeringsfere met verskeie rolle in die implementering van die regverdige energie-oorgang is ondervra, gebaseer op vrae oor uitdagings en geleenthede in ekonomiese diversifikasie in die regverdige energie-oorgang.

Die bevindinge beklemtoon die behoefte aan 'n gekoördineerde poging oor regeringsvlakke, privaatsektorbetrokkenheid, infrastruktuurbelegging, beleidssamehanghervorming en strategiese befondsingsmeganismes om 'n volhoubare en billike oorgang te verseker. Dit het verder bevind dat 'n suksesvolle regverdige energie-oorgang verhoogde kapasiteitsbou op munisipale vlak en aansienlike belegging in infrastruktuurontwikkeling vereis. Ten slotte, beter beleidskoördinering, infrastruktuurontwikkeling, betrokkenheid by die private sektor, finansiële toeganklikheid en wêreldwye samewerking is nodig om Emalahleni se oorgang na 'n meer diverse en volhoubare ekonomie te ondersteun.

Die navorsingsbevindinge kan verder as die onmiddellike gevallestudie veralgemeen word na ander munisipaliteite met 'n soortgelyke konteks, gebaseer op die teorieë wat aanvaar en verwerp is. Suksesvolle ekonomiese diversifikasie in 'n regverdige energie-oorgang mag dus moontlik wees in ander munisipaliteite met mediumgrootte dorpe wat afhanklik is van steenkoolmynbou en energieopwekking, mits 'n omvattende benadering gevolg word wat interregerings- en privaatsektorsamewerking, robuuste beleids- en regulatoriese raamwerke, infrastruktuurbelegging en voldoende finansiële hulpbronne integreer.

Sleutelterme: ekonomiese diversifikasie, regverdige energie-oorgang, geleenthede, uitdagings, sluiting van steenkoolmyne.

LIST OF ABBREVIATIONS AND ACRONYMS

COP	Conference of the Parties
DDM	District Development Model
DFFE	Department of Forestry, Fisheries and the Environment
EEG	Evolutionary Economic Geography
FNASREC	Faculty of Natural and Agricultural Sciences Ethics Committee
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GPE	Geographical Political Economy
GVA	Gross Value Add
IDP	Integrated Development Plan
IPCC	Intergovernmental Panel on Climate Change
JET-IP	Just Energy Transition Investment Plan
KZN	KwaZulu-Natal
M&E	Monitoring and Evaluation
NPC	National Planning Commission
OECD	Organization for Economic Cooperation and Development
PCC	Presidential Climate Commission
PPP	Public-Private Partnership
QUAGOL	Qualitative Analysis Guide of Leuven
SALGA	South African Local Government Association
SME	Small and Medium-sized Enterprise
SMME	Small, Medium and Micro Enterprise
TIPS	Trade and Industrial Policy Strategy
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization

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CHAPTER 1 INTRODUCTION

1.1 Background

This chapter covers the rationale for the study by discussing the problem statement, research aim and objectives, scope of the research, limitations to the scope and associated assumptions. The chapter concludes by outlining the structure of the thesis.

After the ozone hole was discovered over Antarctica in the early 1980s, which had been undeniably caused by human activity, there was a realisation that the emission of large quantities of carbon dioxide can affect the energy balance at the Earth's surface and adversely affect the broad range of ecosystem services that support human and other life, leading to a "crisis in the biosphere" (Steffen *et al.*, 2011:842). The use of fossil fuels that ultimately led to this situation began with the Industrial Revolution. The Industrial Revolution, with its origins in Great Britain in the 1700s, was undoubtedly one of the great transitions and most significant in the development of the human enterprise. The underlying reasons for the transition were probably complex and led to the discovery and exploitation of fossil fuels as an energy source to drive the revolution (Steffen *et al.*, 2011:847).

Exploiting fossil fuels allowed humanity to undertake new activities and vastly expand and accelerate its existing activities. The result of these and other energy-dependent processes and activities was a significant increase in the human enterprise and its imprint on the environment, which was evident in the atmosphere through the rise of greenhouse gases (GHGs). Carbon dioxide, in particular, is directly linked to the rise of energy use in the industrial era as it is an inevitable outcome of the combustion of fossil fuels (Steffen *et al.*, 2011:848).

Since the 1800s, there has been an additional flow of carbon dioxide into the atmosphere from emissions as a result of human activities, including contributions from the burning of fossil fuels, industrial processes and deforestation (Raupach & Fraser, 2011:24). The current rates of emission of GHGs mean that the global average temperature is likely to cross the threshold that will lead to ongoing and potentially irreversible melting of the Greenland ice sheet, committing the world to metres of sea-level rise. It is expected that the rise in sea level projected for the 21st century will cause coastal flooding events and erosion (Braganza & Church, 2011:12). The greenhouse effect which is a natural mechanism that traps heat in the atmosphere and warms the earth's surface is important as it ensures that the earth is not too cold to support life. However, with human activity, the concentration of carbon dioxide and other GHGs is rising, raising the possibility that the world may become warmer by 1–5°C over the course of the next century (Wuebbles & Jain, 2001:100).

The understanding that this temperature increase is resulting from the increasing atmospheric concentrations of GHGs has led the international scientific community, through the Intergovernmental Panel on Climate Change (IPCC), to conclude that the burning of fossil fuels has been a major factor in the past increase in concentrations of carbon dioxide. The IPCC models also suggest that without major policy or technology changes, concentrations of carbon dioxide will continue to increase, largely because of fossil-fuel burning (Wuebbles & Jain, 2001:100).

Scientific studies have demonstrated that alterations in climate can have an impact on human health, ecological systems, socio-economic sectors, agricultural production, water resources and coastal systems, all of which are essential for sustainable development (Wuebbles & Jain, 2001:113). International efforts to mitigate climate change are being considered because of growing global concern about the phenomenon and its possible effects. These activities can be divided into two main categories: adaptive approaches, where individuals modify their lifestyles to adjust to the changing climate, and preventative or mitigation approaches, where actions are taken to try to reduce the amount of global climate change caused by humans by eliminating its causes (Wuebbles & Jain, 2001:115).

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) drew up the objective of “stabilising greenhouse gas concentrations in the atmosphere to prevent dangerous anthropogenic interference with the climate system” (UN, 1992:2). Over the years since then, several interventions have been implemented to achieve this objective, with one of them being to reduce the reliance on fossil-fuel energy and rely instead on clean energy to reduce the effects of climate change.

South Africa is entirely reliant on a coal-based energy sector, which is the backbone of the country’s economy. The burning of coal is recognised globally as a major emitter of GHGs, with their related negative environmental impacts (Mirzania *et al.*, 2023:2). These negative environmental impacts affect human health, ecological systems, socio-economic sectors, agricultural production, water resources and coastal systems, all of which are essential for sustainable human development (Wuebbles & Jain, 2001:113). Through the Paris Agreement, to which South Africa is a signatory, the country has committed itself on the global stage to a Just Energy Transition, that is, from an economy dependent on coal-based energy generation to a cleaner energy-aligned economy (Madzivhandila & Maserumule, 2023:1).

Energy is an important driver for economic growth; however, South Africa is stuck in a prolonged energy crisis. The key problems are energy poverty in low-income households, energy shortages, blackouts, high electricity rates, years of underinvestment in power infrastructure and

unplanned outages (Pollet *et al.*, 2015:16685). South Africa is one of the most coal-dependent countries in the world. However, the country is going through a rapid period of change and growth to decrease reliance on coal-fired power plants, which provide 85% of its electricity, with the highest levels of carbon dioxide. The power sector contributes approximately 45% of South Africa's carbon emissions (Pollet *et al.*, 2015:16686).

The South African government has responded to the challenges posed by climate change by implementing several actions. The government's strategy for responding to climate change and moving towards a low-carbon, climate-resilient economy is outlined in the National Climate Change Response Plan White Paper (Garland, 2014:584). The government's policy response has spanned several years, with responses focusing on various sectors and issues, particularly climate change and its effects. Garland (2014:584) states that:

> *South Africa's response to climate change has two objectives. It is to effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity. It is also to make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.*

In its attempt to make a fair contribution to the global effort to stabilise GHG concentrations in the atmosphere, South Africa has developed the South Africa Just Energy Transition Investment Plan (JET-IP) 2023–2027 (PCC, 2022b). This plan aims to respond to the global agreements to which the country is a signatory and to guide the transition from fossil fuels to clean energy. The plan outlines what the country needs to do for the transition to be just, with economic diversification one of the themes that is referred to in the plan. Areas that will be affected by the transition are those with a high concentration of coal mines and power stations, as their economies are centred on these.

1.2 Problem statement and rationale for the study

The South African government's plans to move the country towards using cleaner sources of energy are a double-edged sword, as they present both opportunities and challenges. While some of the opportunities, such as renewable energy and reduced pollution, presented by this transition are laudable, the challenges require immediate attention. For this reason, the problem that this study investigates concerns the potential challenges and opportunities faced in implementing economic diversification to mitigate the impact of the closure of coal mines and coal power stations, in line with the Just Energy Transition. The study focuses particularly on

the Emalahleni Local Municipality (also referred to as Witbank), which is located in the Mpumalanga Province of South Africa.

The closure of coal mines and coal power stations in pursuit of cleaner energy sources has serious negative implications for the coal energy value chain. The coal value chain includes all businesses that are linked to coal mining. The value chain includes the businesses that provide supplies and spares to the coal mines and the power stations that buy and utilise the coal. It also includes the municipalities that generate income from the people who are employed in the coal mines, while the government earns taxes from the coal mining operations. In the context of economic diversification in a Just Energy Transition, the closure of coal mines and coal power stations will lead to job losses and the closure of businesses that are directly dependent on the coal mines and power stations. This, in turn, could aggravate the rate of poverty and joblessness in this municipality. There are, however, opportunities that could be harvested from economic diversification in a Just Energy Transition that could mitigate the negative effects of the collapse of the coal value chain.

One of the key aspects of a Just Energy Transition is to ensure that the transition does not adversely affect the community and the economy of the area. This can be achieved through economic diversification from an economy based on fossil fuels to an economy based on clean energy. It can also be achieved through ensuring that alternative revenue sources are found to replace income from a single source, in this case, coal, which is unsustainable because of its lack of diversity (Hilmi *et al.*, 2020:19).

The Just Energy Transition will lead to the closure of mines and coal power stations, including businesses that are directly dependent on the coal mines and power stations. The closure of mines has had devastating effects on certain towns in South Africa in the past. South Africa has previously experienced mine downscaling, with approximately 100,000 jobs lost during the 1990s, when the Free State Goldfields in Mathjabeng collapsed (Mirzania *et al.*, 2023:3). Areas in the northern KwaZulu-Natal (KZN) Dundee region, which was once one of the country's primary coal belts, are approaching socio-economic extinction, owing to constraints on investment and development, skilled worker emigration and isolation by the business community following mine closures (Mirzania *et al.*, 2023:3). Secondary industries have also not been spared. For example, in KZN, the closing of coal mines has harmed Newcastle's secondary industries that produced iron and steel, as well as Dundee's glass and cable businesses (Nel *et al.*, 2003:374). The successful implementation of economic diversification is critical for mitigating these adverse effects. As such, this study investigates the potential challenges and opportunities faced by the Emalahleni Local Municipality in implementing economic

diversification to mitigate the impact of the closure of coal mines and coal power stations resulting from the Just Energy Transition.

The research aims to evaluate opportunities and challenges for economic diversification in a Just Energy Transition, using the Emalahleni Local Municipality as a case study. In this research, economic diversification is viewed as a mitigating measure for JET impacts. The Just Energy Transition Implementation plan affirms that South Africa is committed to executing the Just Energy Transition (JET), while safeguarding vulnerable workers and communities by increasing energy access, fostering industrial development, stimulating innovation, cultivating sustainable livelihoods, facilitating economic diversification, and promoting inclusive economic growth (PCC, 2022). It is in the context of economic diversification being a mitigation measure that the study is premised upon.

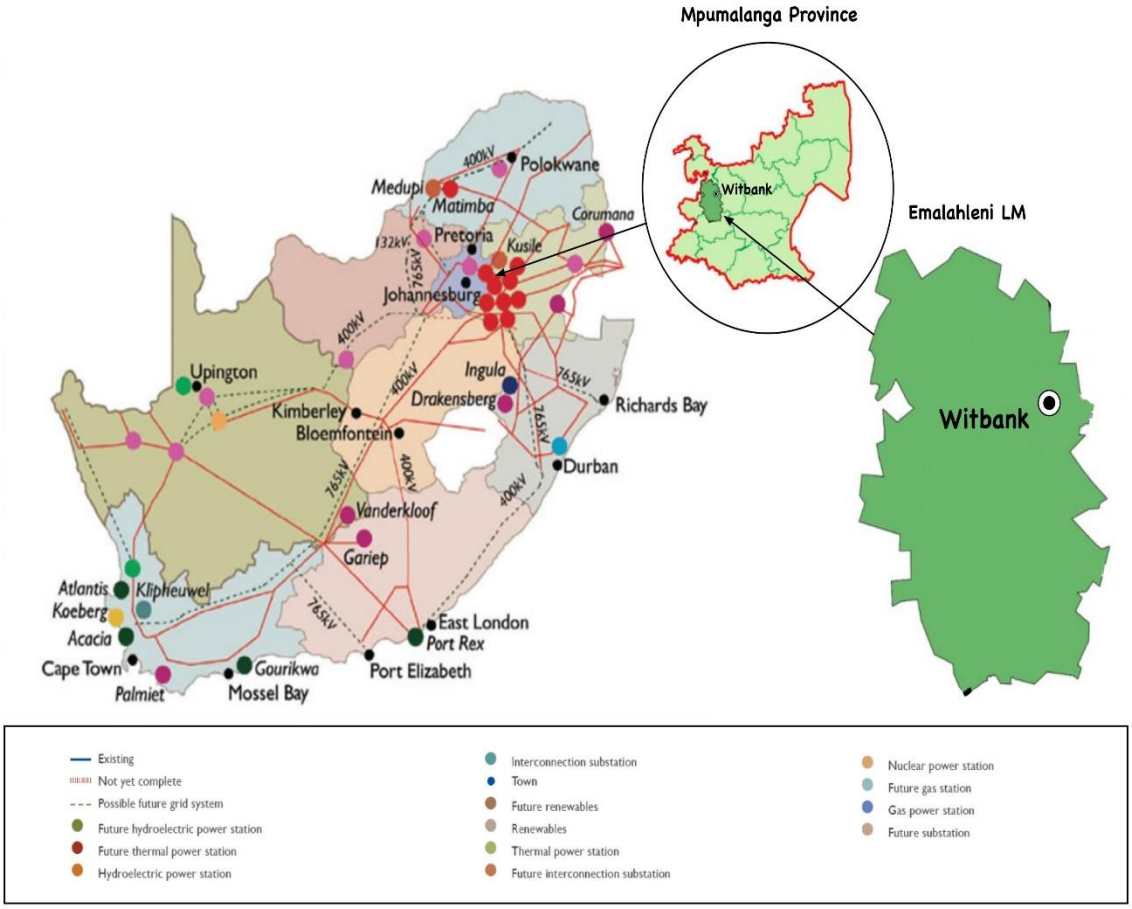

Figure 1: Generation and transmission infrastructure in Emalahleni (Eskom, 2015:68)

The Emalahleni Local Municipality is one of the municipalities in South Africa with the highest concentrations of coal mines and power stations (Figure 1). The four largest industries of mining, community services (electricity generation), finance and trade contribute more than 70% to the economy of Emalahleni (Emalahleni, 2023–24:52). The collapse of some of these sectors without economic diversification will, therefore, have severe consequences for the population of the Municipality. This means that it could be severely affected by the closure of mines in the Just Energy Transition, in similar ways to the towns of Mathjabeng, Newcastle and Dundee.

In this context, this study seeks to assess the challenges and opportunities faced by Emalahleni in implementing economic diversification, with a view to promoting a just transition that sustains the economy and community of Emalahleni.

1.3 Research aim and objectives

The research aims to identify and characterise challenges to and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Local Municipality.

The research aim is addressed through the following research objectives:

- Identify the economic diversification challenges and opportunities for a Just Energy Transition;
- Identify and characterise challenges and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Municipality;
- Propose recommendations for responding to the challenges and utilising the opportunities for economic diversification in a Just Energy Transition in the Emalahleni Municipality.

1.4 Scope of the research

The scope of the research is focused on Emalahleni Local Municipality as a case study. The municipality is one of the municipalities in South Africa with the highest concentrations of coal mines and power stations, which means that it will be severely affected by the Just Energy Transition.

1.5 Assumptions and limitations

1.5.1 Assumptions

While the study aims to evaluate the challenges to and opportunities for economic diversification in the Just Energy Transition, the research is limited to a case study of a single municipality

whose economy is reliant on the coal sector, which is affected by the Just Energy Transition. As South Africa has several municipalities with high concentrations of coal mines and power stations, the study assumes that the research should provide results that are representative of municipalities in a similar context.

The documents used in this study were all electronic; however, they included both externally published and unpublished information, as well as documents and graphs relating to the unique case study. The assumption is that all relevant information has been published and is in the public domain, with the limitation that documents outside this domain, such as confidential or classified government documents, were not considered in the research. The consequence of this limitation might be that there may be aspects of economic diversification in a Just Energy Transition described in confidential or classified government documents that the study did not consider.

1.5.2 Limitations

The study focused on the three spheres of government and did not include the mining companies, electricity utility, local communities and labour unions. It is acknowledged that the absence of other perspectives weakens the representativeness of the data and triangulation opportunities. Although it is known that certain stakeholders hold specific policy positions, the researcher did not pre-empt the bias and allowed participants to express their opinions to limit introducing more bias into the research. Therefore, the research findings must be considered within these contexts.

The study also made use of semi-structured interviews to gather information and opinions on the topic. These interviews were limited to individuals who were actively involved in the implementation of the Just Energy Transition, and it is therefore assumed that their hands-on experience provides for an accurate reflection on the challenges and opportunities related to economic diversification in the Just Energy Transition. However, the limited number of participants selected, at two people per organisation, may mean that others who were not included might view the challenges and opportunities differently.

1.6 Potential contribution of the research

This research contributes to the debate about economic diversification within the Just Energy Transition, particularly as it relates to municipalities, by improving the understanding of economic diversification in the context of the Just Energy Transition. The Emalahleni Municipality and other municipalities in similar situations should benefit by gaining insight into the potential challenges that need to be met and the opportunities that could be provided by the

economic diversification process. The provincial and national governments may benefit from understanding the challenges in the specific context of Emalahleni, which could hinder economic diversification in and contribute to the economic collapse of the region. This insight will enable government role players to develop both policy and implementation responses for economic diversification in a Just Energy Transition, to mitigate the challenges and build on the opportunities.

1.7 Structure and outline of the thesis

Chapter 1: Introduction

This chapter provides a general introduction to the study. It describes the background to and rationale for the study and outlines the research problem, research aim and objectives of the research. It also describes the scope of the research and discusses its assumptions and potential contribution.

Chapter 2: Literature Review

This chapter focuses on the existing literature regarding the research aim and objectives. It particularly focuses on literature related to economic diversification within the Just Energy Transition in South Africa.

Chapter 3: Research Methodology

This chapter discusses the research methodology embraced by the study. The study used a mixed-methods methodology that incorporated quantitative and qualitative methods, using a case-study approach. The chapter describes the research design, the process for selecting the study participants and the data-collection, data-analysis and data-representation procedures applied to the research. It concludes with the ethical considerations that apply to the research.

Chapter 4: Results and Discussion

This chapter presents an interpretation, analysis and discussion of the main research findings of the responses received in relation to the research objectives and literature reviewed.

Chapter 5: Conclusion and Recommendations

Chapter Five provides the conclusion drawn from the research findings. On the basis of the conclusions, practical recommendations are made along with suggestions for future research.

1.8 Conclusion

This chapter establishes the foundation for the study by outlining the global importance of taking climate change into account and the need for a Just Energy Transition to mitigate the effects of fossil fuels. The chapter highlights South Africa's dependency on coal and the socio-economic implications of transitioning to clean energy. Through a focused investigation of Emalahleni, the study aims to assess economic diversification as a viable solution for mitigating negative impacts. The study contributes to policy development and economic resilience strategies. The subsequent chapters build upon this groundwork by delving deeper into the literature, outlining the methodology used in the study, reporting on the findings and making recommendations for economic diversification in the context of a Just Energy Transition (ChatGPT Plus, 2025).

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter presents a literature review that links the research aim and objectives with existing literature. This is achieved by first focusing on the background to climate change and the global responses to the climate-change concern. The chapter then discusses the Just Energy Transition as a response to climate change, as well as the challenges and opportunities encountered in the quest for the economic diversification required for the Just Energy Transition. The current socio-economic situation in the Mpumalanga Province and the Emalahleni Local Municipality particularly and the implications of economic diversification for the Emalahleni Local Municipality are also discussed.

Climate change has impacts across the world, with Chevallier (2010:191) stating that “climate change exacerbates existing development challenges in Africa and places further stress on socio-economic indicators”. The UNFCCC, which was established by the United Nations (UN) at the Earth Summit in Rio de Janeiro in 1992, has the objective of stabilising the concentrations of GHG in the atmosphere to a level that would prevent dangerous human-based interference with the climate system. Further elements of this objective are “to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner” (UN, 1992:9).

To respond to climate change, various countries have entered into several global agreements, under the UNFCCC. The best-known of these agreements have been the Kyoto Protocol of 1997 to the UNFCCC and the series of other agreements that were concluded at the Conferences of the Parties (COPs) to the UNFCCC. The latest agreement was COP28, which was held in the United Arab Emirates in 2023. These agreements are attempts to encourage countries to commit to environmental targets, which include agreements to reduce GHG emissions in the atmosphere and thus reduce the effects of these emissions on the climate and the environment.

Benistona and Stephenson (2004:8) note that, “while changes in the long-term mean that climate will have numerous consequences on a range of environmental, social, and economic sectors, many significant impacts of climatic change are likely to come about from shifts in the intensity and frequency of extreme weather events”. South Africa has not been spared from extreme weather events. These include the floods that took place in March 2023, in the Port St Johns area of the Eastern Cape Province, which caused massive destruction to infrastructure, displacement of people and loss of income in certain sectors. “On 11–13 April 2022, in the city

of Durban, severe flooding and landslides caused by heavy rainfall caused the death of 448 people, displaced over 40,000 people, destroyed over 12,000 houses, and severely damaged infrastructure such as roads, health centres and schools (RescueSA, 2022). In addition, other areas of the country, which include the Western Cape Province and the city of Gqeberha, have also experienced extreme weather events.

Addressing climate change also necessitates reductions in GHG emissions, which are the harmful pollutants that drive climate change (PCC, 2022:3). South Africa is entirely reliant on a coal-based energy sector, which is the backbone of the economy. Burning of coal is recognised globally as a major emitter of GHGs, with their related negative environmental impacts (Mirzania *et al.*, 2023:2). On the global stage through the Paris Agreement, South Africa has committed itself to a Just Energy Transition to an economy that is aligned to cleaner energy production (Madzivhandila & Maserumule, 2023:1).

2.2 Energy transition

Addressing the threat of climate change requires a fundamental transition from the incumbent fossil-fuel energy system to a low or zero carbon system. Energy transition involves the phasing out of fossil fuels, while increasing renewable-energy resources such as solar and wind, which currently occupy only a small share of the energy mix. This shift necessitates complicated social and technological changes and is likely to have a profound social impact (Wang & Lo, 2021:1). As a global response to climate change and global energy challenges, the Paris Agreement, which was signed on 22 April 2016, at the COP21, committed the parties to attempt to phase out fossil-fuel dependency by 2050, and to keep the global temperature increase below 1.5°C (Burton, *et al.,* 2019).

The development of renewable energy is considered an important tool in promoting the UN's sustainable development goals (SDGs) which are, as it has the potential to replace the highly polluted, dangerous, grey economy that is dependent on fossil fuels with an environmentally friendly, healthy, green economy (Wang & Lo, 2021:1). The sustainable development goals (SDGs) are a set of 17 interconnected goals adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet towards a more sustainable future. This transition to renewable energy also contributes towards achieving the global targets that were set at the Kyoto Protocol and the Paris Agreement of reducing reliance on fossil fuels.

While the importance of transitioning to a green economy is recognised, there is a high cost associated with the transition from carbon-intensive industries to clean energy industries. When job losses occur because of the transition, employees in carbon-intensive industries often encounter difficulties in finding new employment opportunities as they lack the necessary skills.

The social consequences of the resultant unemployment extend to communities and municipalities (Wang & Lo, 2021:1). These consequences include high unemployment rates, which could breed crime and other social ills in the area. While reducing dependence on coal is essential, it is not simply a case of replacing a fossil-fuel source with renewable energy. The problem is further compounded by the economic collapse of mining towns, as coal mining and its associated industries contribute substantially to the GDP of those mining towns (Harrahill & Douglas, 2019). Moreover, fossil-fuel industries play an important role in the local tax revenue base, which means that the decline of the industry may adversely affect public services (Wang & Lo, 2021:1).

As a result of these socio-economic effects of the energy transition, it is critical that the energy transition must be implemented in a way that mitigates the potential adverse socio-economic effects on the employees and the community.

2.3 Just Energy Transition

The term ‘just transition’ was originally proposed by global trade unions in the 1980s as a mobilising term for promoting green jobs as a necessary component of the transition away from fossil fuels (McCauley & Heffron, 2018:1). There are various interpretations of what a just transition is, and the meanings are relative. There are researcher, business sector, government and policy-making points of view, as well as justice, technology and general public perspectives. The evolution of the term ‘just transition’ has been widely discussed; however, its relationship with the creation of a low-carbon economy has spurred its use in recent years (Heffron, 2021:1). In 2010, the UN COP16 held in Cancún discussed the concept of ‘just transitions’, which refers to making the transition to a low-carbon economy equitable, sustainable and legitimate for citizens (Newell & Mulvaney, 2013:133). These discussions led to the adoption of the term ‘Just Energy Transition’, whose focus is not just the transition from fossil-based energy to clean energy but also the socio-economic effects of the transition on the workers, community and the local economy. Most of the literature on the just transition focuses on job security. However, there are many other outcomes of the energy transition, which include the potential increase of ghost towns whose economies have collapsed post the closure of coal mines and associated industries, and the many other consequences associated with this. It is therefore important that the Just Energy Transition considers many more issues than jobs. While the energy transition is positive in many respects, it raises a question regarding the degree to which a rapid low-carbon transition may adversely affect certain economic sectors, communities and regions (Gambhir *et al.*, 2018:4)

The just transition is defined here as “a fair and equitable process of moving towards a post-carbon society”. As such, it seeks fairness and equity with regard to the major global justice concerns such as ethnicity, income and gender within both developed and developing contexts (McCauley & Heffron, 2018:2). It involves the development of principles, tools and agreements that ensure both a fair and an equitable transition for all individuals and communities (McCauley & Heffron, 2018:2).

While it was previously discussed from the perspective of potential job losses, the just transition policy journey really began in 2015 when it was included in the 2015 Paris Agreement, with 188 countries signing and ratifying the international agreement (Heffron, 2021:3). At the 2018 G7 talks, momentum began to gather on the just transition when it was specifically mentioned as a policy goal in the final communique issued by the governments. In 2019, some countries began to deliver further on their just transition policies. For example, certain countries have put in place the first legislative steps to achieve the transition through a number of different forms. All of these countries have established some form of commission whose purpose is to provide expert advice on the ways to achieve a just transition. These commissions also monitor the effects of existing laws and policies to ensure that they contribute to the delivery of a just transition (Heffron, 2021:43).

A key injustice in energy is the over-reliance of present-day global societies on the historically embedded production systems of fossil fuels to satisfy growing energy demands. In 2016, oil, coal and gas amounted to 86% of the world’s energy supply. This suggests that a just transition is needed to capture the ‘just’ process when societies move towards an economy that is free of carbon dioxide emissions and that justice is an important element of the transition (McCauley & Heffron, 2018:2).

2.3.1 Structural change theory

According to McMillan *et al.* (2014:11), structural change is crucial for long-term economic growth because it enables economies to shift labour and resources from low-productivity sectors like subsistence agriculture to higher-productivity sectors like manufacturing and services. This shift not only raises overall productivity but also supports income growth and poverty reduction. Structural change theory explores how economies evolve by reallocating resources and moving productive activities between sectors, and thus provides a crucial framework for understanding economic diversity, especially within the Just Energy Transition.

This transition allows economies to move beyond their reliance on a restricted set of economic activities, resulting in more robust and inclusive growth. Economic diversification, defined as the broadening of an economy's productive activities and outputs, is both a result and a cause of

structural change. As a result, diversification can be understood as a practical manifestation of structural change (UNCTAD, 2018:5).

An important link between structural change and economic diversity is the reallocation of resources between sectors. In coal-dependent regions, for example, structural change means shifting jobs away from the coal mining and coal power generation industries and toward manufacturing, renewable energy, and other economic sectors. This reallocation could minimise sectoral risk while also broadening the economic base in Emalahleni.

Key components of Structural Change Theory include: the reallocation of labour and capital from traditional to modern sectors, technological upgrading and productivity growth across and within sectors, demographic transition and urbanisation, the evolution of demand structures driven by rising incomes, and institutional and policy adaptation to support economic transformation (McMillan, *et al.* 2014:12). Labour reallocation is central to the theory and is often considered the primary engine of growth in early stages of development. The theory asserts that as labour moves from subsistence agriculture into manufacturing and services, overall productivity rises, and the economy begins to diversify, accompanied by technological change.

2.3.2 Politics, energy justice and the Just Energy Transition

The ‘just transition’ concept features in policy discourse globally. It appeals to the need to ensure that efforts to steer society towards a lower carbon future are underpinned by attention to issues of equity and justice. It also takes into consideration that there are people with access to reliable energy and those whose livelihoods are affected by and dependent on a fossil-fuel economy (Newell & Mulvaney, 2013:132). Existing injustices in the energy system include the issue of energy access, the impacts of energy infrastructure development on nearby communities, intergenerational justice and the movement for a just transition (Ramkumar, 2024). The issue of access is currently being addressed by electricity generated through coal. The transition must also include, in the production of clean energy, people who have been previously excluded from the energy system. So, the transition is not just aimed at changing the status quo but also at including new people in the clean energy system.

Energy justice focuses on setting a framework through which decisions can be made about energy policy, its development and distribution, energy security and climate change, with the aim of resolving some of the tensions between the competing goals of economics, politics and environmental concerns (Kraal, 2018). To deliver energy justice, five forms of justice are central. These are: distributive, procedural, restorative, recognition and cosmopolitanism justice (Heffron, 2022:1). Heffron (2022:2) describes these forms of justice as follows:

Distributive justice is concerned with an equitable distribution of costs and burdens associated with the production and consumption of energy. Procedural justice aims to make the decision-making procedure as equitable as possible, by ensuring that all stakeholders have access to the necessary information, policy mechanisms, and political power to participate in decision-making and provide consent. Restorative justice emphasizes the need to recognize that some people and communities have been historically marginalized in the energy system, and to value this cultural and historical context, and different ways of knowing in the decision-making process. Recognition justice is concerned with the rights of various groups, particularly local and/or indigenous communities. Cosmopolitanism justice is based on the belief that in energy, we are all citizens of the same planet, and thus the cross-border consequences of energy operations must be taken into account.

Energy justice, as shown in Figure 2 below, is about the application of human rights across the energy life cycle, which operates from extraction to production to operation to consumption to waste management, including decommissioning (Heffron, 2022:2). The relationship between activities in the energy life cycle and the core five elements of justice and human rights must be understood collectively to ensure that the energy system, and therefore the energy transition, is just (Heffron, 2022:3). This relationship is expressed diagrammatically in the energy justice circle presented in Figure 2, as developed by Heffron (2022:4).

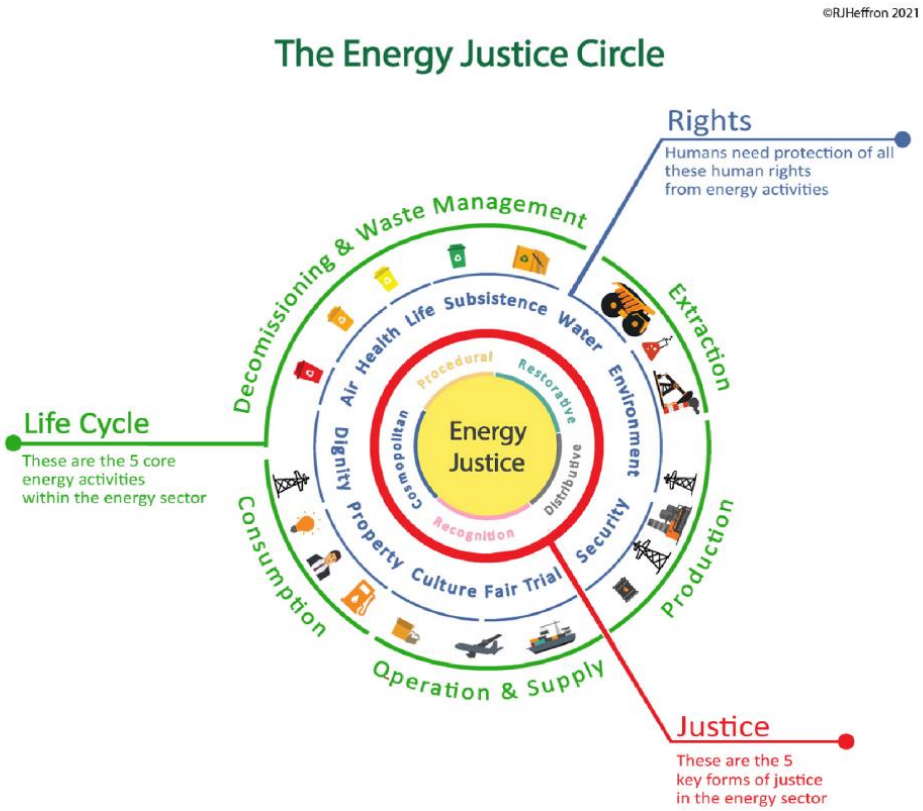

Figure 2: The energy justice circle (Heffron, 2022:4)

2.3.3 Just Energy Transition in South Africa

The South African government has promoted the idea of a just transition to a climate-resilient, low-carbon economy to address many of the complex, interlinked socio-economic challenges that come with an energy transition. In 2011, the government presented the vision for a "long-term, just transition to a climate-resilient and lower-carbon economy and society" (DFFE, 2011:5) through the National Climate Change Response White Paper. The National Development Plan 2030, which was adopted in 2012, supports the "transition to an environmentally sustainable, low-carbon economy" as a cross-cutting policy objective that needs to be integrated into all government plans. In 2019, the national Department of Public Enterprises outlined the key pillars of South Africa's just transition process in a roadmap that outlined the governance reforms of Eskom, which is the main energy supply entity in South Africa. These key pillars include creating an inclusive economy based on the cheapest energy available, protecting and growing jobs from low-cost energy, and enabling energy access and security for all South Africans (Hanto *et al.*, 2022:166).

In 2020, the South African president established the Presidential Climate Commission (PCC) as a statutory organisation made up of government ministries and other social partners to supervise the country's response to climate change. South Africa further published the Just Transition Framework for South Africa in June 2022; the Just Energy Transition Investment Plan (JET-IP) for South Africa in November 2022; and South Africa's Nationally Determined Contribution, which was updated in September 2021.

While the Paris Agreement acknowledges that energy transitioning is generally positive, it also raises concerns about the degree to which a quick shift to a low-carbon economy can harm specific industries, localities and geographic areas. In South Africa, coal caters for more than 80% of electricity generation and contributes strongly to employment opportunities and livelihood activities in the country at large and in mining communities specifically (Madzivhandila & Maserumule, 2023:1). There are predictions that changes in energy production and use will potentially lead to the loss of over 6 million jobs globally by 2030. This is a concerning figure, considering the high levels of unemployment and poverty that are prevalent in South Africa currently (Madzivhandila & Maserumule, 2023:2).

South Africa's Minister of Mineral Resources and Energy, Gwede Mantashe, addressing the ministerial symposium of the African Oil Week and Green Energy Africa Conference on 3 October 2022, warned about the possibility of certain towns becoming ghost towns if the country stops utilising coal to provide energy. "Mantashe further emphasised that 10 ghost towns in the

coal belt province of Mpumalanga would be created immediately if South Africa were to cease mining, transporting, shipping and burning coal (Madzivhandila & Maserumule, 2023:2)."

2.3.4 The current socio-economic situation in the Emalahleni Local Municipality

Emalahleni had a population of 395,466 people in 2011 and 434,522 in 2022, making it the fourth-largest municipality in the Mpumalanga Province and accounting for 27,3% of the Nkangala District population (Emalahleni, 2023:34). In 2023, unemployment in the Emalahleni Local Municipality stood at 27,3%, with the expanded unemployment rate being substantially higher at around 35,8% (Emalahleni, 2023). The Emalahleni Local Municipality is the largest contributor (at 45,8%) to the economy of the Nkangala District, while its 18% contribution to the Mpumalanga economy is the second largest of all municipalities, with the City of Mbombela the largest contributor (Emalahleni, 2023:51). As per the 2023 Emalahleni Municipal Spatial Development Framework, mining in Emalahleni is the biggest contributor to the Nkangala District GDP and is also the biggest employer in the region (Emalahleni, 2023).

The current economic system in Emalahleni is mostly dependent on mining and related sectors, along with the coal mining value chain. According to the 2023 Emalahleni Municipal Spatial Development Framework (Emalahleni, 2023:99), the area has rich coal reserves that account for 40% of its GDP, creating major economic development opportunities. Emalahleni was established in 1903 as the town of Witbank when coal was discovered in the area (Emalahleni, 2023–24:1). Over the years, mining grew in the area, which attracted other industries such as energy generation. The area now has the largest concentration of power stations in the country. Over time, the area has developed a path dependency that is based on the coal mining taking place in the area and the other industries linked to the product. With the climate-change risks and the evolution towards a Just Energy Transition, the area needs to undergo a process of innovation that is independent of coal to diversify the current economic path.

Dependence on single industries such as coal mining and electricity generation makes a town vulnerable to boom-and-bust cycles. Emalahleni's mineworkers are particularly vulnerable because they are directly dependent on the mines' growth or decline, but local businesses are also at risk, being indirectly dependent on the mines (Van Rooyen & Van Zyl, 2022:150). With the just transition, the Emalahleni region must reduce its reliance on the fossil-fuel–based economy and diversify to other segments of the economy to ensure that the region remains economically sustainable when the coal mines and associated industries close.

The Emalahleni Municipality's Integrated Development Plan (IDP) stresses that the local economy depends on mining. The mining and energy sectors contribute almost 60% of Emalahleni's Gross Value Add (GVA), with approximately 33% of employed people in

Emalahleni working in the mining and energy sectors (Van Rooyen & Van Zyl, 2022:152). Although the regional service function has expanded with the construction of malls and business opportunities, Emalahleni remains dependent on mining.

Earlier attempts to establish an industrial base in Emalahleni have had mixed results, as the other industries were developed on the understanding that uninterrupted coal-fired energy would be available. However, the area has not been exempted from the country's power crisis. In 2016, Highveld Steel, which was initially established by Anglo American, closed, while Ferro Metals had to downscale because of pollution problems. These unexpected events had a major effect on the local population, as the population that was attracted by these industries was left unemployed when the companies closed or downscaled (Van Rooyen & Van Zyl, 2022:153).

2.4 Economic diversification

Both policymakers and researchers increasingly acknowledge that economic diversification is critical for the performance of developing economies and view it as a policy priority. Diversification, which entails broadening the range of economic activities within a country, is an essential mechanism for fostering sustainable economic growth and improving standards of living (IMF, 2014). For developing economies, the shift to a diversified economy is especially pertinent because it increases their capacity to absorb economic shocks, while also creating new opportunities for innovation, investment and job creation. This section examines the concept of diversification from the perspectives of a range of authors.

Economic diversification involves moving away from depending on traditional sectors, such as mining, towards a broader range of sectors and services. Diversification is related to the process of structural transformation, which concerns the shift of resources from less productive to more productive sectors. This process involves both taking advantage of a country's current comparative advantage and building the capabilities required to create new comparative advantages. This makes diversification important for economic development and an essential pillar for promoting sustainable growth and improving living standards, particularly in developing economies (Delechat *et al.*, 2024).

The UNFCCC (2025) defines economic diversification as the process of moving an economy from one income source towards multiple sources from a range of sectors and markets that is continually growing. While traditionally, diversification has been used as a strategy to promote economic growth and development, when applied to climate-change adaptation, it can be seen as a strategy for moving away from vulnerable products, markets and jobs toward low-emission and more climate-resilient income sources (UNFCC, 2025).

Economic diversification is defined by the World Bank (2017) as the shift toward a more varied structure of trade and of domestic production so as to increase productivity, create jobs and provide the base for sustained poverty-reducing growth. Domestic production diversification results from the shift of domestic output across sectors, industries and firms. It captures the dynamics of structural transformation because successful diversification of domestic production entails the reallocation of resources across and/or within industries from low-productivity activities to those with higher productivity.

Delechat *et al.* (2024:1033) suggest that diversification strategies often involve both broad-based ("horizontal") and sector- or industry-specific ("vertical" or "targeted") approaches. These authors define horizontal strategies as centring on improving conditions that support all sectors. In contrast, vertical strategies, which are often referred to as "industrial policy", focus on supporting specific activities or technologies. In the face of recent complex challenges, such as climate change, technological change, and geoeconomic fragmentation, and with the need to increase innovation, secure a competitive advantage in strategic industries and ensure supply-chain resilience, countries around the world are embracing industrial policy (Delechat *et al.*, 2024:1033).

Delechat *et al.* (2024:1033) argue that the future of economic diversification in developing economies is likely to rely on the effectiveness of policy interventions of the horizontal and vertical strategies. Horizontal policies are useful for improving the general business environment across all sectors of an economy, such as by developing infrastructure and human resources, increasing business efficiency and strengthening governance. Vertical policies focus on supporting specific sectors, industries or technologies that have high growth potential or strategic importance but have inadequate private support. Vertical policies could include subsidies and tax incentives, along with specific lending programmes and regulatory regimes, with the aim of promoting investment, skills development and innovation in the focus areas (Delechat *et al.*, 2024:1033).

Economic diversification and industrial development are crucial for promoting a fair and Just Energy Transition in South Africa. Without forceful intervention, coal-dependent regions will suffer substantial social and economic consequences from South Africa's energy transformation, particularly the phasing out of its coal value chain over the next three decades (PCC, 2022b:48). To replace employment opportunities that may be lost and to generate new ones, new economic clusters must be established. The new economic clusters and opportunities should not entrench existing inequalities but, instead, should account for and attempt to address the existing spatial disparities in South Africa (PCC, 2022a:18). The diversification of domestic production occurs when domestic economic output shifts between sectors, industries and

companies. This points to the dynamics of structural transformation, since successful diversification of domestic production necessitates resource reallocation across and/or within industries (WTO, 2019:1).

Economic diversification is a complex process. It requires an enabling environment; the right institutional mix (financial, legal, regulatory and market institutions); the necessary infrastructure; and human capital development and entrepreneurship. All of these elements need to be combined with the right policy mix that is sustained over a considerable period of time (Isukul *et al.*, 2019:2). Economic diversification provides a means to secure the stability and the sustainability of income levels in the future, which entails a reinvigoration of the private sector and necessitates the implementation of broader reforms (Hvidt, 2011:102).

Economic diversification is a process of broadening the range of economic activities both in the production and distribution of goods and services. As such, it improves the stability of economies by diversifying their economic base (Anyaehie & Areji, 2015:89). Economic sustainability entails securing alternative sources of revenue to substitute for those generated by coal production and its associated industries to achieve productivity growth. It is also based on policy reforms, which include competition and private-sector reform. By combining these ways, it achieves meaningful diversification (Hilmi *et al.*, 2020:19).

There are a number of ways in which economic diversification can be achieved. First, it can be achieved by supporting small and medium-sized enterprises (SMEs), providing or facilitating financing for new small and micro enterprises, and identifying viable new economic opportunities. It can also be achieved by developing competitive industries to produce inputs and support services (design, engineering and maintenance) for green technologies, developing innovative technologies that improve climate resilience and promoting the circular economy. Finally, it can be achieved by establishing regulatory frameworks that promote new technologies; managing lobbying from established producers that aim to protect older, uncompetitive production sites, and resist technological change and innovation; and stimulating technological advances that can generate employment (PCC, 2022a:18). A lack of economic diversification is closely associated with increased economic vulnerability. In economies that rely on a single economic foundation, for example, external shocks can substantially undermine the economic growth and economic development process (Isukul *et al.*, 2019:7).

Pande *et al.* (2023:4) have developed a framework for economic diversification, based on a global review of case studies of past economic diversification efforts in natural resource sectors. This framework constitutes five key elements of economic diversification: institutionalisation of the diversification process; development of local infrastructure; identification of alternative

economic sectors; mobilisation of finance for economic diversification; and investment in human capital development. In terms of the framework, an evolution in the regional economic landscape is a prerequisite for economic diversification, to ensure that the environment is conducive to implementing economic diversification. The framework also refers to new technologies that must be introduced in the area for the economy to diversify, and to deal with the aspect of new industries and technologies, which is informed by the literature on path creation (Pande *et al.* 2023:4)."

According to the Just Energy Transition Investment Plan (JET-IP) (PCC, 2022b:62), the government of South Africa has identified the following as activities that should be implemented for economic diversification:

- The evaluation of current national and regional development plans, strategies and policies;
- The identification of the most promising alternative sectors;
- The creation of a small, medium and micro enterprise (SMME) support programme;
- Collaboration with stakeholders to develop a portfolio of pilot projects for early transition implementation; and
- The creation of a monitoring and evaluation (M&E) system.

2.5 Economic diversification challenges and opportunities

South Africa's high reliance on coal makes the energy transition a question of social and political challenges with multiple interests at play, such as ensuring that South Africans are not economically deprived because of the transition. Research conducted by the non-profit company Trade and Industrial Policy Strategy (TIPS) (TIPS, 2023) indicates that while there is consensus that economic diversification is necessary, divergent views exist among the constituencies in terms of their own direct interests and the impacts on their sectors and communities. This poses a challenge in terms of the buy-in of the relevant stakeholders that must take part in the economic diversification of Emalahleni. South Africa's just transition is further complicated by its unique legacies of apartheid, social unrest, poverty, unemployment and structural crisis in the energy sector, which dictate much of its political landscape (Mirzania *et al.*, 2023:3).

Jolo *et al.* (2022:1) find that "economic diversification is an essential aspect of sustainable development as diversification enhances macroeconomic stability and promotes structural and long-term transformation not only in the economy but also in other pillars of sustainable development". Economic diversification has the ability to solve the unemployment problem across regions and countries (Matallah, 2020:3). In essence, diversification can make a massive

and constructive contribution by widening the doors of employment opportunities, in this way increasing growth prospects (Matallah, 2020:3).

The perspectives on diversification and their potential role in overcoming the challenges facing economic diversification and the opportunities they present are discussed in the sections below.

2.5.1 Institutional governance in the economic diversification process

Michael and Abbas (2023:1) apply evolutionary economics to the economic-diversification process, suggesting that this type of economics "studies how economic change occurs, and is focused on innovation and entrepreneurship, industrial and institutional dynamics, and on patterns and trends as they relate to economic growth and development". Further, evolutionary economics recognises the rich mix of institutions that are involved in economic activity, which includes the various roles of government, households, institutions and markets and their regulating institutions toward the co-evolution of technologies (Michael & Abbas, 2023:4). This rich mix of institutions is critical for diversifying an economy and ensuring economic sustainability.

Research conducted by Gertler (2010:3) shows how locally distinctive and evolving institutions, as they interact with national and provincial institutions, along with local political dynamics and organisations, help to create particular economic trajectories. These trajectories, in turn, lead to differentiated social and economic outcomes. Sotarauta and Pulkkinen (2011:102) further contribute to the topic of institutions by adding what they define as institutional entrepreneurs. They assert that "institutional entrepreneurs can be individuals, organizations, or groups of actors who not only introduce the needed change and/or innovation but also work to change the broader context so that the innovation has a widespread appeal and impact" (Sotarauta & Pulkkinen, 2011:100). These actors have an interest in the change and leverage resources to transform existing paths. In particular, "to be regarded as institutional entrepreneurs, actors must fulfil two conditions: they must initiate divergent changes to the current business activities; and actively participate in the implementation of these changes" (Sotarauta & Pulkkinen, 2011:101).

2.5.1.1 Carbon lock-in

In the process of structural change, a challenge to economic diversification could be carbon lock-in. Carbon lock-in is a path-dependent process driven by technology and institutional advancements that increase returns to scale. Carbon lock-in is caused by a mix of systemic dynamics that sustain fossil fuel-based infrastructures despite their recognised adverse environmental impacts and the existence of cost-effective alternatives (Unruh, 2000:817).

The momentum generated by linked technical systems, institutions, and individuals creates its own condition of lock-in, which can be intensified by the involvement of formal governmental institutions. The government's involvement is significant because it has the capacity to utilise institutional policy to override market forces. Government policy can remove market uncertainty regarding the path of technical advancement, favouring a given design (Unruh, 2000:824).

The second reason governmental institutions are significant is that once founded, they often remain in their original form for long periods of time. Once established, institutions tend to become stuck in place, with only incremental change occurring over extended periods of time. The well-known challenge of eliminating ineffective institutions reveals the persistence of path dependency. The interconnections between emerging technical systems and government institutions can result in significant and long-lasting market and policy failures (Unruh, 2000:828).

2.5.1.2 The role of government institutions in economic diversification in the Just Energy Transition

Government intervention is necessary to create policies that promote export growth and economic diversification. In addition, governments must also get the fundamentals right so that they can create an enabling environment by, among other things, maintaining macroeconomic stability, investing in infrastructure, improving the business climate, encouraging private investment and investing in people, especially in education at all levels (UNFCC, 2019). The UN publication on best practices for economic diversification identifies promoting a conducive environment in the form of the policies, incentives and infrastructures needed for economic diversification as an important practice (UNFCCC, 2023:19). The first step in the diversification process is to build a thoughtful, executable and measurable plan with realistic, clearly defined and action-oriented goals (Matallah, 2020:3).

To create a healthy business climate, the government must play the essential role of developing a regulatory framework that encourages economic activity (OECD, 2011:15). Governments can play a role in supporting education, research and development, and venture capital through fiscal and regulatory frameworks. In terms of financial support, they can provide two basic forms of support: directly supplying funding and providing financial incentives, such as tax rebates, loans and equity guarantees.

Economic diversification requires that the government pay policy attention to four key determinants of successful diversification strategies. These are: (i) the supply of appropriate incentive frameworks; (ii) investments and policy reforms targeted at reducing trade costs; (iii) effective policies to support adjustment and the reallocation of resources towards new economic

activities; and (iv) government interventions directed at specific market, policy and institutional failures (WTO, 2019:143). The need for government action through well-designed public investments and effective policy reforms that support a more diversified economy is centrally important (WTO, 2019:144).

Effective government interventions to promote economic diversification necessitate an ongoing conversation and strong collaboration with the private sector. Institutional arrangements are necessary to gather information from the private sector on potential economic diversification opportunities, bottlenecks that may hinder progress and effective policies to overcome these obstacles (WTO, 2019:151). The government can support entrepreneurship by implementing favourable policies and removing bureaucratic barriers to launching new business enterprises (OECD, 2011:17).

Governments can work with other stakeholders from the private sector to discover new goods or sectors of economic importance, allocate appropriate resources and promote the implementation of action plans (OECD, 2011:68). In a study that was conducted in South Africa by the OECD (2011:68), it was concluded that the government will have to address public-sector capacities to support new areas of the economy. To achieve results, leaders in government and other stakeholders must identify sectors that could drive economic diversification and develop diversified policies (OECD, 2011:75). It is imperative that governments strengthen all existing partnerships with stakeholders through an agreed plan and deliverable goals that will improve the enabling context of projects identified to support economic diversification. Effective governance at the national, provincial and local government spheres will be critical for accomplishing a just and equitable energy transition in South Africa. This governance should include plan execution, consensus building, resource mobilisation, implementation coordination and progress monitoring (PCC, 2022a:21).

To implement the Just Energy Transition successfully, the national government must provide critical leadership and policy guidance. The Just Energy Transition policy objective should be integrated into the government's central planning framework, specifically the National Development Plan, Medium-Term Strategic Framework, annual performance plans and budgetary processes (PCC, 2022a:21).

2.5.1.3 The role of national government institutions in economic diversification in the Just Energy Transition

The national government plays several roles in ensuring economic diversification. Its specific roles in supporting a Just Energy Transition include providing overall policy and planning coherence in support of a just transition; allocating responsibilities explicitly and consistently;

and mobilising resources from both the public and private sectors. In terms of revenue, the roles of the national government include integrating the just transition imperative into the national budget and public spending; supporting capacity building at the provincial and municipal government spheres for effective implementation of the just transition agenda; and supporting municipalities to develop a new revenue model. At the societal level, further roles include providing public employment opportunities; providing financial incentives to spur a just transition; creating forums and dispute-settlement mechanisms; and promoting social solidarity and collective action in at-risk communities. From an M&E perspective, its roles include monitoring progress made towards the overall aims of the just transition; ensuring that mining companies adhere to social and labour plans; and making adequate financial provision for end-of-life mine rehabilitation (PCC, 2022a:21).

2.5.1.4 The role of provincial and local government institutions in economic diversification in the Just Energy Transition

Provincial and local governments play critical roles in responding to spatially specific climate impacts and coordinating just transition policies within their respective provinces and municipalities. At the same time, many of these governments have limited resources and sometimes struggle to provide basic services. As a result, these spheres of government will require assistance in boosting their capacity, in terms of both financial resources and technical competence, so that they can implement an equitable transition while increasing resilience to climate-change impacts (PCC, 2022a:22).

Specific roles of provincial and local governments in supporting a just transition include identifying climate impacts, just transition impacts, and vulnerabilities in the province or municipality. These roles are integrated into the Provincial Growth and Development Strategies and IDPs. More roles include implementing and managing adaptation projects to improve community resilience; providing essential infrastructure services, including service delivery; and regulating planning and land management, in a manner that supports the overall aims of a just transition. Moreover, provincial and local government endeavours aim to support local economic diversification with a particular focus on working with people and small businesses in at-risk communities; empowering individuals, communities, ward committees, municipalities, unions and civil society; and facilitating collaborations to build partnerships with social partners, including traditional leaders (PCC, 2022a:22).

2.5.1.5 Mining municipalities' capacity for economic diversification

Eskom coal plants and mines supply water, energy and waste services to their surrounding communities, in addition to assisting a variety of community activities. As economic activity

drops with the transition away from coal mining, this will diminish the rates base and create the need for municipal assistance to households, which will place additional strain on municipal finances and capabilities (PCC, 2022b:48).

Areas in the northern KZN Dundee region, which was once one of the country's primary coal belts, are approaching socio-economic extinction owing to constraints on investment and development, the migration of skilled workers and the ostracisation of these areas by the business community post the mine closures (Mirzania *et al.*, 2023:3).

To prevent some of the devastating prospects of energy transition, there is a need to employ policy-directed interventions that cater not only for the replacement of or compensation for the employment opportunities lost during the transition, but also for the revitalisation of the socio-economic conditions of these areas. Just transition requires a holistic approach that encompasses economic diversification, support for workers in the coal value chain, environmental remediation and inclusive processes that also address equity impacts (Madzivhandila & Maserumule, 2023:5).

In 2017, “19 mining municipalities were in financial distress and struggling to provide services to their communities. Municipalities with mines that are downscaling, such as those with gold mines, are in sharp economic decline because of the decrease in economic activity and job opportunities (Henricks, 2022:220).” Other municipalities, such as those with coal or platinum mines, are currently expanding and attracting an influx of migrant job seekers, with the concurrent need for increased infrastructure and basic services from municipalities. In the case of the coal mining town, the Just Energy Transition advocates the closure of coal mines, which means that these municipalities will move along the same trajectory as the municipalities that had gold mines that closed (Henricks, 2022:220).

´The mines have assisted the local government, especially in terms of infrastructure development through their social and labour plans. However, with the mine decline in the area, the budget allocated to these plans has also declined, as has the mines’ support for the local government (Henricks, 2022:220).” Van Rooyen and van Zyl (2022:152) argue that a just transition requires good relationships between the mining sector, the business sector, the local authority and the community. Such a transition should also ensure that enough information is available for private-sector entrepreneurs to make an informed decision about their current and future investments.

Emalahleni received support from the government’s Revitalisation of Distressed Mining Communities Programme, which was launched in 2012. The overall objective of the programme was to transform mining towns through the creation of sustainable human settlements. “The

National Treasury in 2017 classified Emalahleni as being in financial distress, mainly for the following reasons: overspending on the operational budget, underspending on the capital budget, an increase in debtors, lack of cash available to pay off current liabilities and insufficient total cash available in the bank accounts (Henricks, 2022:221)."

If the mines decline, this could mean less water and electricity revenue for the municipality as people move out or cannot afford to pay for the services. Illegal connections might increase as economic decline sets in. More problematic could be large losses from property tax, as an increasing number of mine employees and people employed in mine-related industries would be unable to pay off their mortgages and would have to give up their properties. A just transition requires planning for this reality and possibly requires the national and provincial government to support the municipality to avoid a total collapse (Henricks, 2022:228).

2.5.2 The role of the private sector in the economic diversification process

The private sector is the primary driver of economic diversification, so all actions taken by the government and other stakeholders should strive to improve support for the private sector by promoting a business-friendly environment (OECD, 2011:76).

The private sector can help to advance diversification by fostering innovation and economic activity in underutilised industries. It can also invest in research and development to launch new economic activities (OECD, 2011:16). The government should support entrepreneurship by implementing favourable policies and removing bureaucratic barriers to launching enterprises. Similarly, the private sector should reciprocate by participating in government programmes and taking the lead in advancing the economic diversification goal (OECD, 2011:17). A strong financial market, accessible services and increased domestic resource mobilisation are important aspects of the business climate (OECD, 2011:76). Assistance should be considered for developing the SMME sector. The flexibility of this sector and its ability to innovate and spur growth and diversification can be strengthened by boosting its access to capital, along with strengthening its ties with research and development centres and business incubators (OECD, 2011:76).

The labour market plays a substantial role in determining how quickly workers migrate between occupations, businesses, industries and regions, as well as the costs of adjustment for those who are negatively affected by industry closure (WTO, 2019:155). Investing in education and skills contributes positively to economic diversification, and alignment with labour market demand is critical for addressing skill mismatches and supporting economic diversification (WTO, 2019:155). Improving public-private collaboration is needed to better identify the skills required to meet present and future labour demands.

Entrepreneurship is globally acknowledged as an instrument that can achieve economic growth and development along with employment creation in the economic-diversification process (Abasilim *et al.*, 2017:104). Entrepreneurs are people associated with new opportunities. They are prepared to take the risk of investing in uncertain ventures, and it is only when new ventures are created and productive activities are undertaken, that the economy can grow and diversify. This makes entrepreneurship a useful tool for diversification if managed properly (Abasilim *et al.*, 2017:107).

2.5.3 Policy and regulatory frameworks for economic diversification

Economic diversification must be accompanied by the development of the necessary policies and regulatory frameworks that can be implemented and overseen by suitable governance structures. In this regard, economic diversity faces a number of challenges. Economic diversification related to the Just Energy Transition that uses a rushed approach because of pressure on the policy-planning process has a high risk of failing and causing more harmful effects than benefits (UNFCC, 2023). In addition, the lack of clear guidelines on diversification and the private sector's dependence on government spending are both challenges that have faced countries seeking to diversify their economies (Matallah, 2020:3). The UNFCCC (2023:21) study of best practices has also identified a lack of clear priorities and guiding frameworks for effective economic-diversification implementation as a key challenge faced by economic diversification efforts. Lastly, a further challenge is posed by a shortage of finance and organisational abilities for creating markets for innovative community-based economic activities.

Creating a trade and investment policy agenda is fundamental to a strategy of economic diversification (WTO, 2019:143). Providing the foundations for structural reform and private-sector-led growth is critical to achieving a broader base of economic activity (WTO, 2019:143). The policy agenda must possess the following key basic elements: an appropriate incentive framework through reforms to the business and investment climate; investments and policy reforms; effective policies to support adjustment and the reallocation of resources to new activities; and government interventions that target specific market, policy and institutional failures. Policies that promote innovation and entrepreneurship, along with the reallocation of resources to innovative enterprises, can aid in the transition (WTO, 2019:155).

Three major areas of economic incentives overlap to influence the economic-diversification framework. These are business regulations, investment policy and competition policy. The business regulations and investment policy ensure that economic diversification makes use of clear, open and predictable business regulations that create a level playing field for all investors.

The competition policy promotes an efficient and diverse private sector by addressing issues such as dominant positions, collusion, unfair competition and antitrust investigations. It also includes legal enforcement and institutional effectiveness (WTO, 2019:148).

Spatial policies can play an important role when growth is not regionally balanced and certain areas within countries regress (MacKinnon et al., 2009:131). Spatial policies are policy interventions that aim to foster economic development in certain locations within a country by attracting the establishment of productive and innovative businesses in those locations. The World Trade Organization (WTO) (2019:148) defines the key characteristics of spatial policies as "that they: (i) target a specific area; (ii) are tailored to the specific context and history of a locality; (iii) aim to overcome coordination failures between different actors; and (iv) frequently involve stakeholders at the national and local government spheres in the assessment, design and implementation stages". These activities can be organised around four types of interventions: (i) growth poles; (ii) special economic zones; (iii) economic corridors; and (iv) clusters (WTO, 2019:148).

Recent international solutions to socio-economic difficulties have resulted in the design of economic-development strategies and transformation agendas (Malefane, 2010:219). Local economic-development initiatives in South Africa serve as drivers to stimulate, facilitate and encourage growth for the restructuring of the economic base (Malefane, 2010:219). Municipal local economic-development strategies will be ineffective if they do not include economic diversification, which is considered a useful instrument for restructuring the local economic base (Malefane, 2010:218).

2.5.4 Contribution of local infrastructure to economic diversification

In coal-dependent regions, improved connection, transportation and digital infrastructure are critical factors in promoting effective economic diversification away from coal (PCC, 2022b:65). To attract new corporate investments and professional expertise to South Africa's fading coal districts, suitable market and digital connectivity is required, along with underlying infrastructure developments in water, electricity, housing and other fundamental services (PCC, 2022b:165). The goal of infrastructure investment is to ensure that the essential infrastructural base is in place to attract and retain new firms while also enabling new investments in developing productive areas (PCC, 2022b:165).

In the private-sector production process, public infrastructure, such as roads, public transportation, and water and sanitation systems, should be regarded as a factor of production in addition to labour and private capital (Kumo, 2012:6). Sustainable growth requires high-quality infrastructure as a fundamental component. All nations must have effective energy,

communications, transportation and sanitation systems to thrive and to offer their citizens a respectable quality of living (Kumo, 2012:6).

According to Kumo's (2012) economic theory, five paths exist through which infrastructure could stimulate economic growth. Kumo (2012:6) states that:

> *Infrastructure can be viewed in five ways: (i) as a direct input into the production process, which makes it a factor of production; (ii) as a complement to other inputs into the production process, in which its improvements may lower the cost of production or its deficiency may create a number of costs for firms; (iii) infrastructure may stimulate factor accumulation by offering facilities for the development of human capital; (iv) infrastructure investment can also boost aggregate demand through increased expenditure during construction and possibly during maintenance operations; and finally, (v) infrastructure investment can also serve as a tool to guide industrial policy.*

South Africa must maintain and increase its energy, water, transportation and telecommunications infrastructure to achieve its economic growth and social-development objectives (NPC, 2013:159). Considering the government's limited funds, private money will be required for some of these investments (NPC, 2013:159). While this may present the government with a challenge, positive correlations have been found between infrastructure investment, employment creation, poverty reduction, and sustainable growth and development, according to both theoretical and empirical literature (Kumo, 2012:7).

2.5.5 Funding economic diversification

The success of the Just Energy Transition will be determined by the scale and availability of financing, including grants from relevant sources. Limited public funds must be properly allocated to mobilise larger amounts of money, particularly from the private sector and previously untapped sources such as institutional investors (PCC, 2022b:14).

The UNFCCC (2023:21) study of best practices identified a shortage of finance, along with a lack of organisational ability to create markets for innovative community-based economic activities, as a key challenge for the implementation of economic diversification. According to the PCC (2022:152), major structural impediments to a just transition in Mpumalanga include high unemployment and a lack of adequate skills and poor infrastructure (including transportation, internet and energy access). Resolving challenges with infrastructure is critical to attracting private-sector investment. However, owing to structural limitations in the finance

sector and limited availability of grant financing, the existing financial ecosystem does not address all the just transition projects in the province.

2.6 Chapter summary

This chapter has highlighted the need for a well-managed Just Energy Transition that balances environmental sustainability with socio-economic stability. South Africa's approach to the Just Energy Transition must integrate strong governance and inclusive development policies to ensure long-term success. Economic diversification is not just about shifting industries. Rather, it is about creating sustainable economic and social development. Economic diversification refers to the process of broadening the range of economic activities, which has the effect of increasing the stability of economies by diversifying their economic base.

A Just Energy Transition requires multi-sectoral collaboration that involves government spheres and entities, private-sector entities, local communities and international partners. The shift away from coal dependency presents both challenges and opportunities, and strategic planning is essential to mitigate risks and maximise benefits. The literature reviewed identified challenges to economic diversification in the Just Energy Transition such as institutional inefficiencies, poor resourcing, poor infrastructure and infrastructure investment, and inadequate policy and regulatory frameworks. Similarly, the literature pointed to the following economic-diversification opportunities: securing alternative sources of revenue, policy development, adequate resourcing and infrastructure development. In relation to the local context for economic diversification, important considerations are the availability of effective governance and financial frameworks to support a just transition. Lessons from global best practices indicate that economic diversification must be carefully implemented to avoid economic displacement and inequality. Through inclusive policies and sustained investment, South Africa can achieve a sustainable transition that ensures that the communities most affected by the coal phase-out are not left behind but are instead equipped with the tools and opportunities to thrive (ChatGPT Plus, 2025).

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter describes the research methodology that was used for the study, which justifies the selection of the research approach and instruments used. In addition, the chapter delimits the research population, explains and motivates the sample-selection process, describes the design of the instruments used in collecting the data, and discusses the techniques used for the data analysis. This information provides a narrative of the research design used to address the research objectives.

3.2 Research approach and design

A research design is the logical sequence that connects the empirical data retrieved by a study to the study's initial research objectives and, ultimately, to its conclusions (Yin, 2009:26). A research design is a blueprint for research that deals with at least four problems: what questions to study, what data is relevant, what data to collect and how to analyse the results (Yin, 2009:26).

The aim of the current study was to identify and characterise challenges to and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Local Municipality. This was achieved through the collection and subsequent analysis of data on the potential barriers and opportunities that influence economic diversification in the Just Energy Transition, to address the research objectives in a deductive manner.

The study used a case-study approach and a mixed-methods methodology that incorporated quantitative and qualitative methods to gather and analyse in-depth data on the challenges to and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Local Municipality.

3.3 Case-study approach

Gillham (2000:1) defines a case study as an investigation into an institution, group or community to meet specific research objectives that seek a range of evidence from the case settings. As a research method, the case-study approach is used in various situations to contribute to the knowledge of individuals, groups, organisations and social, political and related phenomena (Yin, 2009:16). As such, "the essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result" (Yin, 2009:17). In this study, the researcher sought

to contribute to the existing knowledge about the challenges and opportunities related to economic diversification in the Just Energy Transition in South Africa.

According to Yin (2009:5), three criteria determine the suitability of a case-study research approach. These are the type of research objectives, the extent of control an investigator has over actual behavioural events and the degree of focus on contemporary, rather than historical, events (Yin, 2009:2). A case study uses how and why questions, as they deal with operational links that are exploratory and allow the researcher to gain more insight into the research subject (Yin, 2009:3).

The case study is the preferred approach in research that examines current events because it relies on interviews with the people involved in the events. The case study's unique strength is its ability to use data from various sources and to deal with a full variety of evidence-documents and interviews, beyond what might be available in a conventional historical study (Yin, 2009:11). Case studies must be carefully designed to provide a logical sequence that connects the empirical data to the study's initial research objectives and, ultimately, to its conclusions (Yin, 2009:26). The five components of a research design that are important in case-study research are the research intentions, the research objectives, units of analysis (person or entity), the criteria for interpreting the findings and the logic linking the data to the intentions (Yin, 2009:35).

In this study, the case study was designed to address all five components. The research intention was to evaluate the challenges to and opportunities for economic diversification in a Just Energy Transition in South African municipalities with a similar context to the Emalahleni Local Municipality. The research objectives sought to explore barriers to and opportunities for economic diversification during the Just Energy Transition. The Emalahleni Local Municipality was selected as the unit of analysis in the study, as one of the municipalities was expected to be most strongly affected by the Just Energy Transition. The choice of this municipality thus enabled the researcher to understand the context of the topic explored. In this case-study research, the data collected directly responded to the research questions, which were based on the findings of the literature reviewed and aligned with the research objectives to ensure that the analysis was focused on the research aim. The interpretation of the findings began with a clear alignment of the findings with the original research aims and objectives. In addition, a logical link was established between what the researcher intended to research and what the data produced. This was attained through clearly defining the objectives of the research, seeking relevant literature aligned to the research topic and developing a research tool linked to the objectives and the literature (as set out in Chapter 2) to assist in achieving the research objectives. This connection ensured that the interpretations were not arbitrary but were rooted in the purpose and scope of the research.

The literature reviewed had an equally important function in directing the interpretation of the data. Data was not assessed in isolation, but rather in relation to the relevant literature as outlined in Chapter 2. This enabled the researcher either to support or critique the existing literature.

There are four tests and associated tactics that can be used to determine the relevance of the case-study approach for a particular research topic (Yin, 2009:40). The relationship between the tests and the current research was confirmed and is illustrated in Table 1.

Table 1: Tests for the relevance of using a case-study approach

Tests	**Case-study Tactic**	**Relationship with This Research**
Construct validity	Use multiple sources of evidence.	Semi-structured interviews from different participants, described in Section 3.5, were used as sources of evidence.
Internal validity	Do pattern matching. Do explanation building.	This was achieved through data analysis, as described in Section 3.6.
External validity	Use theory in a single case study.	As described in Section 3.2, this research focused on economic diversification within the specific context of a Just Energy Transition in a municipality heavily reliant on the coal sector. The research findings can be generalised beyond the immediate case study to other municipalities with a similar context, using theories that have been developed and tested in the research.
Reliability	Use case-study protocol. Develop a case-study database.	This case-study protocol, as per Yin (2009:81), is described in Section 3.5.1.

3.3.1 Case-study theoretical framework

Theory development as part of the design phase of a case study is essential, whether the ensuing case study's purpose is to develop or to test theory (Yin, 2009:35). Developing a theory

does more than make the subsequent case study's data-collection process easier; the degree to which the case-study findings can be generalised is also determined by the suitably developed theory. Analytic generalisation compares the actual outcomes of the case study to a previously created theory and can be applied to a case study with one or more cases. The same theoretical perspective serves as the primary vehicle for generalising the case-study findings (Yin, 2009:35). According to Yin (2009:35), theory development prior to the collection of any case-study data is an essential step in conducting a case study.

The theoretical framework for the current case study was primarily developed through the literature review, as set out in Chapter 2, based on the common topics that were identified by the various scholars. The literature review identified the prerequisites for a successful economic diversification, which included institutional mix (financial, regulatory, market); infrastructure; entrepreneurship; and policies (cf. Isukul et al., 2019:2). It also identified five key elements of economic diversification as the institutionalisation of the diversification process; development of local infrastructure; mobilisation of finance for economic diversification; identification of alternative sectors; and investment in human development (Pande et al., 2023:4). “Other important aspects of economic diversification identified included promoting a conducive environment in the form of policies, incentives and infrastructures needed for economic diversification (UNFCC, 2023).” Six theories were developed regarding economic diversification in a Just Energy Transition for this research (Table 2).

Table 2: Theories for economic diversification in a Just Energy Transition in a medium-sized town largely dependent on coal mining and energy generation from coal

Statement	**Theory**
Economic diversification in a Just Energy Transition is only dependent on collaboration between different spheres of government.	Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is dependent only on collaboration between different spheres of government.
Economic diversification in a Just Energy Transition only depends on collaboration between government institutions and the private sector.	Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is dependent only on the collaboration between the government and the private sector.

Statement	Theory
An enabling policy and regulatory framework is the only requirement for economic diversification in a Just Energy Transition.	A policy and regulatory framework is the only requirement for economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation.
Economic diversification in a Just Energy Transition only depends on local infrastructure investment.	Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is dependent only on local infrastructure investment.
Economic diversification in a Just Energy Transition only depends on the availability of adequate and accessible funding.	Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is dependent only on the availability of adequate and accessible financial resources.
Economic diversification in a Just Energy Transition depends on a comprehensive approach that includes intergovernmental and private-sector collaboration, robust policy and legislative frameworks, local infrastructure investment and adequate funding.	Economic diversification in a Just Energy Transition in a medium-sized town reliant on coal mining and energy generation is dependent on a comprehensive approach that includes intergovernmental and private-sector collaboration, robust policy and legislative frameworks, local infrastructure investment and adequate funding.

3.3.2 Case-study selection

The scope of the case study was limited to the Emalahleni Local Municipality. Since the research included all relevant documents from the province and national government, the results of the study on the challenges and opportunities related to economic diversification could be relevant to other coal-mining-reliant municipalities with a similar context to Emalahleni.

Emalahleni Local Municipality is strategically located in the Nkangala district in the Mpumalanga Province. It is a gateway into the province, while its proximity to the Gauteng Metropolitan Municipalities, which jointly constitute the largest economy in the country, serves the

municipality favourably. It is situated on the road and rail transport routes linking Gauteng with Maputo in Mozambique, which are critical to ensure improved trade between Mozambique and South Africa, Botswana and Namibia. The southern areas of the Emalahleni Municipality are part of the Energy Mecca of South Africa, due to its rich coal reserves and power stations, such as Kendal, Matla, Duvha and Kusile (https://emalahleni.gov.za/v2/about).

According to Stats SA, Emalahleni municipality contributed 17.4% to the Mpumalanga economy in 2021, making it the province's second largest economy (Emalahleni, 2024:53). The municipality has the second highest Human Development Index (HDI) in the province, improving from 0.63 in 2011 to 0.68 in 2022 (Emalahleni, 2024:155). This composite index measures human development, with a focus on three fundamental aspects of human development, a long and healthy life, knowledge, and a reasonable standard of living (UNDP, 2025).

The Emalahleni Municipality's IDP indicates that the local economy depends on mining and electricity generation through coal power stations. The mining sector contributes almost 60% of Emalahleni's GVA and approximately 33% of employed people in Emalahleni work in the mining and energy sectors (Van Rooyen & Van Zyl, 2022:152). Despite efforts to expand the regional service function through the construction of malls and business possibilities, mining remains the primary source of income in Emalahleni. In 2021, the four major industries in Emalahleni (mining, community services, finance, and trade), accounted for more than 70% of Emalahleni's economy(Emalahleni, 2024:53).

Dependence on a single resource, such as coal, makes a town vulnerable to boom-and-bust cycles. Emalahleni's mineworkers are particularly vulnerable as they depend directly on the growth or decline of coal mining. Local businesses are also at risk as they are indirectly dependent on this activity (Van Rooyen & Van Zyl, 2022:150). The Emalahleni region needs to reduce its reliance on the fossil-fuel–based economy and diversify to other segments of the economy so that the region can be economically sustainable when the coal mines and their associated industries close.

According to the Emalahleni local municipality 2024 IDP, there are a number of key concerns of the municipality which include the population growth that is general higher than the economic growth, pressure on basic services & infrastructure, high and/or deteriorating backlogs in informal dwellings, piped water and electricity connections, deteriorating unemployment and poverty rate and limited revenue base (Emalahleni, 2024:54). Currently, Emalahleni is experiencing a population growth rate that is higher than its economic growth rate, with negative implications for its gross domestic product (GDP) per capita and for infrastructure, service delivery and job creation (Emalahleni, 2023–24:52).

3.4 Sampling process

Two critical aspects of the research process are the selection of the sampling technique and the justification of the sample size. These aspects are explained in the sections below.

3.4.1 Sampling technique

There are two types of sampling techniques: probability and non-probability. Probability sampling techniques employ random selection to guarantee that every case in the population has an equal chance of being chosen. Non-probability sampling techniques select the sample on the basis of the researcher's subjective assessment. Quota sampling, purposive sampling, self-selection sampling and snowball sampling are examples of common non-probability sampling techniques (Berndt, 2020:224).

When selecting a sampling strategy, a researcher must consider factors such as the research methodology, the research objectives and the size of the population of interest. Other factors include knowledge about the population, the researcher's financial constraints, the desired level of confidence regarding the study conclusions and whether the findings of the study could be generalised to other areas with a similar context (Berndt, 2020:225).

This study used the purposive sampling technique. Purposeful sampling is a qualitative research technique that identifies and selects participants in information-rich situations to maximise resource efficiency (Palinkas *et al*., 2013:3). This technique entails identifying and selecting participants (individuals or groups of people) who are particularly knowledgeable about or experienced in the topic of interest. In addition to having the relevant knowledge and experience, the participants must also be available and willing to participate in the study (Palinkas *et al.*, 2013:3).

According to Palinkas *et al.* (2013:3), purposive sampling research should adhere to the following general principles:

> *(1) the approach to sampling should stem logically from the conceptual framework as well as the research objectives being addressed by the study; (2) the sample should be able to generate a comprehensive database on the type of issue under study; (3) the sample should at least allow the possibility of drawing clear inferences and credible explanations from the data; (4) The sampling strategy must be ethical; (5) The sampling plan must be viable; (6) The sampling plan must allow the researcher to apply the study's findings to different contexts or populations; and (7) The sample scheme must be as efficient as possible.*

One advantage of purposive sampling is that it helps researchers to justify participant selections on analytical, logical or theoretical grounds. Purposive sampling can be useful in qualitative research with multiple phases and/or aims. One disadvantage, however, is that purposive sampling can be prone to researcher bias, particularly if rules or criteria for judgement are poorly documented or explained (Berndt, 2020:225). In addition, purposive sampling can make it difficult to defend the representativeness of the population. To address these disadvantages in this study, the criteria for the selection of each participant were documented explicitly, as discussed in Section 3.4.3 below.

3.4.2 Sample size

In choosing the size of the sample to be used in a research study, the primary goal is to explain how the data obtained from the sample is likely to yield useful information, given the researcher's inferential intentions (Lakens, 2022:1). When determining a sample size, several elements must be addressed. The first of these elements is the study's scope, while the second is the nature of the topic under investigation. If the topic being studied is evident and straightforward, and information can be gathered simply through interviews, fewer participants are required. Topics that are not immediately visible typically result in the need for more substantial contributions and necessitate a more experienced analyst, more data (perhaps from many sources), and, without a doubt, more participants. Furthermore, topics that are challenging to grasp or that participants feel uncomfortable discussing also require more participants. The third element to consider is data quality. The quality of information gained during the interview is closely proportional to the complexity of the topic. Some participants have more experience with the issue or are more willing to share their insights with the researcher. If the data is on target, rich and experiential, it will take fewer participants to attain data saturation. The fourth and final element concerns the research design (Morse, 2000:4). A research design aimed at a wider overview or a more diverse sample will almost certainly entail a bigger sample size, whereas a design focusing on a specific element may necessitate a smaller, more targeted sample (Morse, 2000:4). In this research, a sample size of 10 participants was used. The sample involved role players linked to the economic diversification involved in the Just Energy Transition process in the Emalahleni Local Municipality.

3.4.3 Participant selection

The research focused on the spheres of government and other institutions that are actively involved in implementing the Just Energy Transition. Therefore, it did not include other stakeholders, such as community members, labour unions, the electricity utility and mining companies. Due to time and resource limitations, only two people from each of the relevant

stakeholder groups were interviewed for exploring the research topic (Table 3). The participants were selected in accordance with their role in the economic diversification associated with the Just Energy Transition process in the Emalahleni Local Municipality.

Table 3: Research participants

Stakeholder	Role
Emalahleni Local Municipality	The Emalahleni Local Municipality plays an important role in advancing the Just Energy Transition by enabling localised climate action, infrastructure development and social inclusion. As primary distributors of electricity, municipalities are strategically positioned to integrate renewable-energy technologies. Municipalities are tasked with supporting economic diversification by driving inclusive economic-development strategies.
Nkangala District Municipality	District municipalities play an important coordinating and facilitative role in the Just Energy Transition, serving as links between national policy directives and local municipalities' implementation capacities. District municipalities, with their bigger jurisdiction and strategic planning mandate, are responsible for incorporating Just Energy Transition principles into district-wide development strategies such as the District Development Models (DDMs).
Mpumalanga Department of Agriculture, Rural Development, Land and the Environment	The provincial government works within the national context to develop a provincial framework of laws, policies and financing mechanisms that are responsive to the specific realities and needs of the province's cities and towns, as well as to provide capacity building and support to municipalities. In South Africa's Just Energy Transition, the provincial governments play a critical role in implementing national policies and regulating the effects of the energy transition on the local economy and communities.
Presidential Climate Commission (PCC)	The PCC is an independent, multi-stakeholder group established by the president of South Africa to oversee and facilitate a just and equitable energy transition towards a low-emission and climate-resilient economy.
South African Local Government Association (SALGA)	The SALGA represents local and municipal interests in provincial and national policies. Among its many roles, the organisation examines and strives to facilitate solutions to challenges faced by local, district and metropolitan municipalities in the Just Energy Transition.

3.5 Data collection

The research aimed to evaluate opportunities for and challenges to economic diversification, using the Emalahleni Local Municipality as a case study. Data collection was undertaken through semi-structured interviews. This research method was considered useful for gathering

information that was based on actual experience from the participants involved in the implementation of the Just Energy Transition process in the Emalahleni Local Municipality.

3.5.1 Case-study protocol

Yin (2009:79) describes a protocol as a primary approach to improving the credibility of case-study research. The case-study protocol is intended to guide the researcher through the data-collection process for a specific case. According to Yin (2009:79), having a case-study protocol is desirable in all case-study research, but it is essential for conducting a single case study. Yin (2009:79) explains that the protocol contains the measuring instrument (questionnaire) but also the procedures and general rules to be followed in using the protocol.

3.5.1.1 Development of the research questions and the research instrument (questionnaire)

The research instrument used was a semi-structured questionnaire. A questionnaire was developed for data collection during the interviews using the various topics that covered the challenges and opportunities associated with economic diversification as identified in the literature review. Then questions for the questionnaire were generated from the theories that were developed from the literature (see Table 2 above). The following topics were covered in the questionnaire:

- The role of government in economic diversification: this was split into the three spheres of the South African government so that the correct perspective could be obtained, as the three spheres have different roles:
  - The role of national government in economic diversification;
  - The role of provincial government in economic diversification;
  - The role of local government in economic diversification;
- The role of the private sector in the economic diversification process;
- Policy and regulatory frameworks for economic diversification;
- Contribution of local infrastructure to economic diversification; and
- Financing economic diversification.

The questionnaire used open-ended questions, as these were expected to provide rich data that allowed in-depth analysis.

3.5.1.2 Reliability and validity of the research instrument (questionnaire)

Piloting is required before questionnaires are administered to the research sample to ensure their reliability and validity and remove any defects (for example, phrasing or instructions that

have caused confusion). Reliability is the degree of consistency or dependability with which the instrument measures the attribute it is designed to measure, so that differences in results reflect differences in participants' viewpoints rather than differences in how the questionnaire was understood (Marshall, 2005:135).

To ensure the validity of the questionnaire, the questionnaire was piloted. A sample of four people, who were not part of the research, was purposefully selected. The participants were requested to provide feedback on the clarity of the questions and the time that it took to complete the questionnaire. The feedback was used to revise the questions to ensure that the questionnaire would enable the research to achieve its desired objectives.

3.5.1.3 Interview procedure

Interviewing is an important data-gathering technique that involves verbal communication between the researcher and the participant and is commonly used in survey designs and in exploratory and descriptive studies (Fox, 2006:5). Semi-structured interviews involve the researcher asking participants a series of predetermined, but open-ended questions. In semi-structured interviews, the researcher has more control over the interview topics than in unstructured interviews, but unlike structured interviews or questionnaires with closed questions, there is no prescribed range of responses to each question (Ayres, 2008). The use of semi-structured interviews can also provide the opportunity for the interviewer and interviewee to discuss certain topics in more detail (Fox, 2006:7).

Key role players involved in the implementation of the Just Energy Transition were interviewed because of their knowledge of the process and as they were the current implementors and regulators of the Just Energy Transition. The interviews were conducted through virtual platforms and in person. Virtual interviewing tools are cost effective, time effective and user-friendly. They also enable the interviewer to maintain rapport with the interviewee, especially when compared to "nonvisual" communication mediums such as the telephone or email (Archibald *et al.*, 2019:2). Archibald *et al.*'s (2019:7) findings are based on Zoom as a software program. However, Zoom and Microsoft Teams are based on similar platforms and so their findings would also be applicable to Microsoft Teams.

Owing to the geographic spread of the interviewees, the interviews were undertaken both in person and through Microsoft Teams. Microsoft Teams is a software system that can be utilised to meet with individuals or teams via computers, laptops or mobile devices connected via the internet. It is a cost-effective interview method, as it limits the amount of travelling required and allows the interview participants to observe and listen to one another through video and audio systems, while also providing the option for sessions to be recorded for playback.

The interview questionnaires were distributed to the interviewees via email prior to the interview to allow them to prepare for the interview. This was followed by one-on-one Microsoft Teams or physical interview sessions with each participant.

During the interviews, individuals were asked to respond to and elaborate on each of the questions in the questionnaire. They were also requested to provide reasons and examples from their own experience. Key words were noted and written down during the individual interviews and recordings were made utilising the Microsoft Teams recording function for the virtual meetings and a recording device for the physical interviews, with consent provided by the interviewees. The interviews were recorded and transcribed into a document. The interviews conducted on Microsoft Teams were transcribed through the recording and transcription tool on the Microsoft Teams app. The Teams transcription was downloaded and verified against the researcher's notes because Microsoft Teams is not always able to understand the language and transcribe it accurately, particularly if a person uses another language other than English when responding.

3.5.1.4 Voluntary participation

None of the participants were coerced or given incentives to participate in the research. At the start of their interviews, the participants were made aware that their participation in the study was completely voluntary and that they could stop at any moment. The participants were informed of their rights and were informed that they could withdraw from the interview at any time if they felt uncomfortable.

3.5.1.5 Informed consent

The research purpose, goals, objectives and research methodology were explained to the participants prior to the interviews. The participants were invited to ask questions about the study. They were also advised that the thesis resulting from this study would be submitted to the North-West University as part of studies towards a Master's degree in Environmental Management.

3.5.1.6 Confidentiality and anonymity

The participants were informed that none of the findings would be traceable to any participants. To protect the participants' privacy and well-being, the interviews took place in suitable settings such as their places of employment and on virtual platforms. The recordings were stored on password-protected devices owned by the researcher, while the transcripts of the interviews were stored in locations that were only accessible to the researcher.

3.6 Data analysis

McNabb (2010) asserts that data gathered through various methods has little meaning if the data is not processed, analysed and interpreted by the researcher. Consequently, the data gathered was analysed, as described below.

3.6.1 Interview analysis

Analysis, or the breaking up or down of qualitative data, necessitates that the data be prepared in a way that would achieve the research project's goals and anticipated outcome. Transcribing is a procedure that involves the prudent preservation of components of research interviews (Sandelowski, 1995:373).

Following the interviews, the interview content was transcribed verbatim in totality from the recordings and the transcriptions were then analysed. During the analysis, the researcher identified key phrases from each interview. For every interview, the researcher developed a one-page narrative report that articulated the essence of the interviewee's responses to the objectives of the research, while looking for essential elements of the interviewee's story that might improve the researcher's insight into the research topic (cf. de Casterle *et al.*, 2012:363).

The most important data in relation to the research objectives was filtered and clustered into concepts that captured the essence of the interview in response to the research objectives. The key concepts were highlighted and clarified with respect to their content. The concepts were further developed and refined to check for any overlap or vagueness, which were remedied through integration. The concepts were analysed by checking whether there was one common message that described the essence of the concept or whether it needed to be split into several sub-concepts. A deeper analysis of the concepts allowed the researcher to find out when, where, why and in which circumstances the concepts appeared (cf. de Casterle *et al.*, 2012:368). All these concepts were integrated into a meaningful storyline response to the research objectives.

The researcher then reconstructed the remarks of the participants, this time on a theoretical level that was grounded in the literature review. The essential findings were systematically and carefully described in response to the research objectives. Important quotations were added, where necessary, to capture the essence of the concepts and their relation to the research objectives fully (cf. de Casterle *et al.*, 2012:368). After describing the key research findings, the researcher reread all the interviews for a final appraisal of the storyline's accuracy and comprehensiveness (cf. de Casterle et al., 2012:368).

3.7 Ethical considerations

The protection of study participants through the application of appropriate ethical principles is important in research. The North-West University, Faculty of Natural and Agricultural Sciences Ethics Committee (FNASREC) reviewed and cleared this study as posing minimal ethical risk. FNASREC granted permission to initiate this study under ethics number NWU-01240-24-A9.

3.8 Chapter conclusion

Chapter 3 describes the structured research methodology used by the study for evaluating the challenges and opportunities associated with economic diversification in a Just Energy Transition. The research used a case-study approach to gather real-world observations from key stakeholders, with the aim of providing a clear view of these challenges and opportunities. Furthermore, the qualitative case-study approach was chosen to strengthen the research by providing qualitative depth and offering a holistic view of economic diversification.

The methodology used in this study was selected so that the conclusions were both reliable and valid, in this way providing an improved understanding of economic diversity within the Just Energy Transition. The case-study approach, data-collection methods and ethical issues considered all contribute to the credibility and dependability of the study's findings, providing the foundation for Chapters 4 and 5, which present and discuss the study results (ChatGPT, 2025).

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the study through the interpretation and discussion of the data obtained from the semi-structured interviews conducted the data-collection phase. The data obtained was utilised in identifying the challenges to and opportunities for economic diversification in a Just Energy Transition in South African municipalities.

The first research objective was to identify the economic diversification challenges and opportunities for a Just Energy Transition. This objective was met by conducting a literature review of relevant literature, which is reported in Chapter 2. The current chapter presents the results of the empirical study, as they relate to the second and third research objectives.

4.2 Economic diversification challenges and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Municipality (Research objective 2)

This section reports on the study results concerning the challenges and opportunities for a Just Energy Transition, including the challenges faced by the Emalahleni Local Municipality. The section focuses particularly on the roles of government institutions, the private sector, infrastructure, policy and regulatory frameworks, and funding in the economic diversification of the municipality.

4.2.1 The role of government institutions in economic diversification in a Just Energy Transition

The first topic to be explored is the role of government institutions in economic diversification, looking at both the challenges and opportunities faced by these institutions in effecting a Just Energy Transition.

4.2.1.1 Government institutional challenges to economic diversification in a Just Energy Transition

The challenges identified in the Emalahleni case study regarding the role of government institutions are summarised in Figure 3.

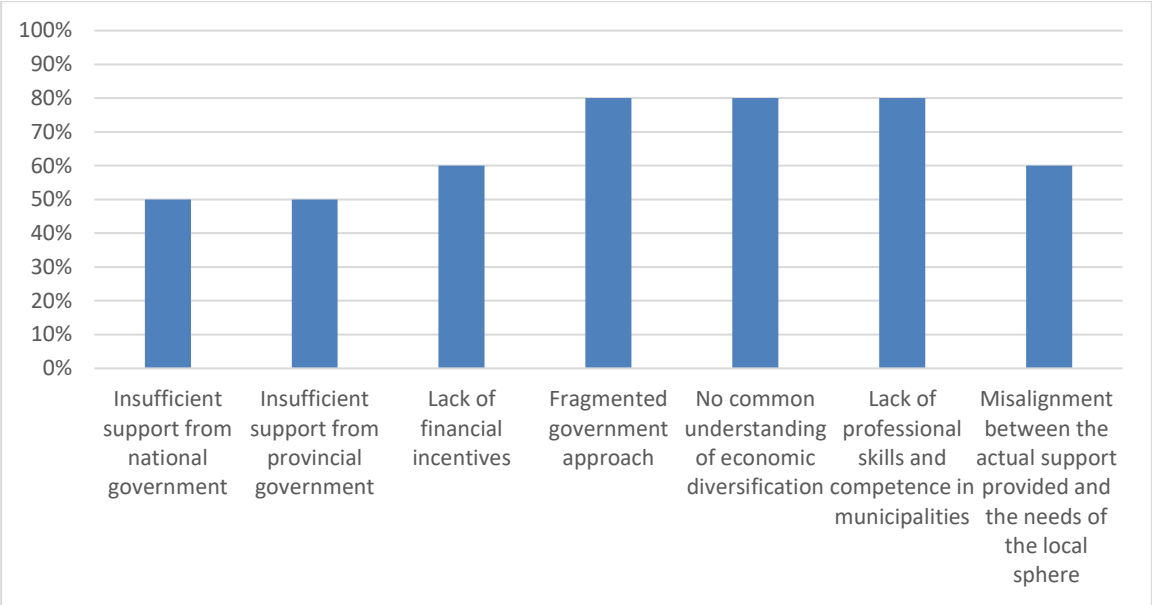

Figure 3: Challenges identified in the Emalahleni case study regarding the role of government institutions in economic diversification in the Just Energy Transition

The results revealed substantial challenges related to governance and financial support. Of the seven challenges identified, the challenges that were identified by most of the participants, at 80% in each case, were a fragmented government approach, a lack of a common understanding of economic diversification and insufficient professional skills for diversification. These most-identified challenges suggest that structural and knowledge-based obstacles are more pressing than purely financial concerns. While the lack of financial incentives and misalignment in support, which were both identified by 60% of the participants, were notable, they did not rank as the most identified challenges. The least-identified challenge was insufficient support from the national government, which was identified by 50% of the participants. The fact that this challenge was identified by fewer participants indicates that while government backing is an issue, other systemic inefficiencies were considered by the participants as being more detrimental.

A key trend in the data was that five out of the seven challenges (86%) related to governance and policy issues. The causal factors that were identified by the participants from the local and provincial government spheres included government inefficiencies, lack of coordination and poor policy implementation as the primary roadblocks to economic diversification. The participants from the local government sphere indicated that the fragmentation of government efforts highlighted the need for better collaboration across different spheres of government. They suggested that better collaboration would contribute to a shared understanding of

economic diversification to ensure policy alignment and communication among the spheres of government.

The national government has developed frameworks such as the Just Energy Transition framework. However, these frameworks are frequently affected by shortcomings in implementation at the provincial and municipal government spheres, which are made worse by a lack of both financial and human resources in municipalities to match national targets with local realities. Participants from the provincial and local government spheres indicated that a number of policies and frameworks are not being adequately implemented because of a lack of resources and adequate support. Support for local government needs to accompany the policies to ensure their adequate implementation. The results showed that although some support is provided, this is inadequate. More than half of the participants identified a misalignment between the actual support provided and the needs of the local government sphere that is being supported. These results are consistent with the view of Henricks (2022:228), who suggests that a just transition requires planning for this reality and potentially requires the national and provincial governments to support the municipality to avoid a total collapse.

Participant 5, from the provincial government, highlighted that the reason for the fragmented approach by government to economic diversification was that the “fragmented coordination among various departments, such as the Departments of Mineral and Petroleum Resources, Department of Forestry, Fisheries and the Environment, Presidency and the National Treasury, creates inefficiencies and misaligned implementation of policies, thus reducing the impact of such policies”.

As indicated by Michael and Abbas (2023:3), in the literature review, institutions are important for the diversification of the economy because they provide the underlying framework for shaping economic activity. This, in turn, influences the transformation of the economy over time and determines the path dependency of economic development by establishing the rules and incentives for economic diversification. Participants 1 and 6 from the local government sphere said that the absence of professional skills and competence in the Emalahleni Local Municipality further exacerbates the challenges that are faced by the municipality.” This points to the fact that economic diversification concerns not just policy but also human capital development.

While financial constraints were found to play a role, the results showed this role to be secondary to governance and skill-related issues. Participants 1, 2, 5, 9, 11 and 12 suggested that “funding could help address some barriers”, but Participants 1, 11 and 12 indicated that “increasing financial support alone is unlikely to solve the broader structural challenges.” Participant 6 from the local government sphere identified a “misalignment between the support needed by Emalahleni and the actual support provided, which results in a gap between what is provided

and what the municipality actually requires." To solve the above challenge, Participants 1, 2, 5, 6, 8, 9, 11 and 12 identified targeted interventions where financial and policy support aligns with municipal needs.

In summary, the results highlight that the most pressing obstacles to economic diversification stem from government inefficiencies, governance fragmentation, lack of a shared vision, inadequate support to municipalities, poor coordination and skill gaps, rather than just financial constraints. In the analysis, there were no clear differences between the various stakeholder groups that were interviewed. Participants identified that addressing these issues requires a strategic policy shift, better intergovernmental collaboration, capacity-building programmes and human resource support to equip professionals with the skills needed for economic diversification. By focusing on these areas, policymakers can create a more sustainable and effective approach to economic diversification.

These findings are consistent with those of the UN report on best practices for economic diversification (UNFCCC, 2023:19), which recognises that promoting a conducive environment in the form of policies, incentives, and infrastructures is an important aspect of economic diversification.

4.2.1.2 Government institutional opportunities for economic diversification in a Just Energy Transition

Various opportunities for government support were identified by the participants for the three spheres of government. A summary of these opportunities is illustrated in Figure 4 below.

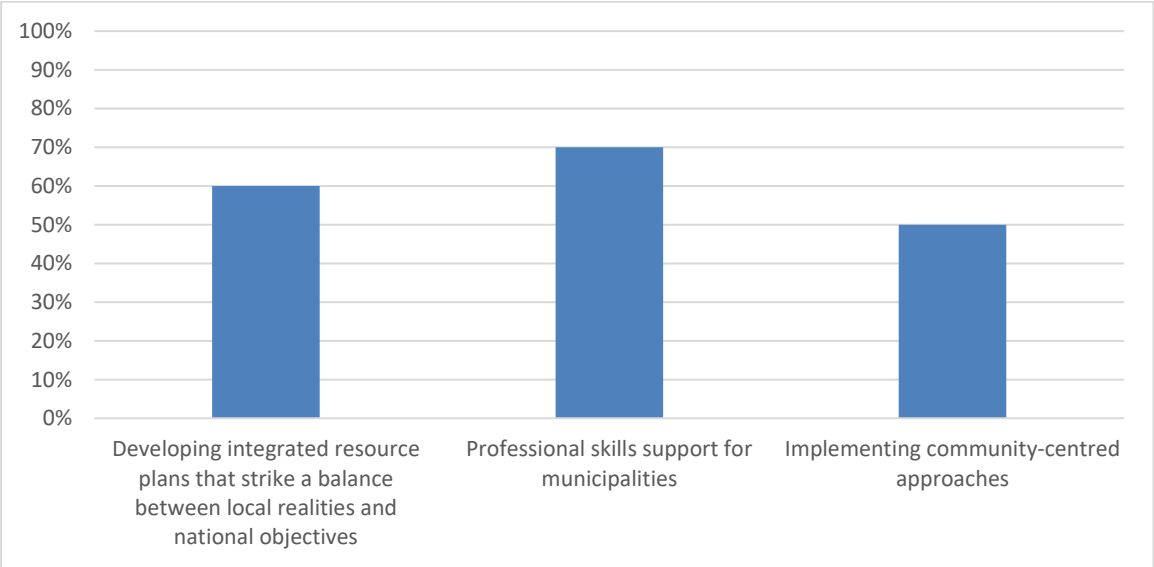

Figure 4: Opportunities regarding the role of government institutions in economic diversification in the Just Energy Transition

The most-identified opportunity, which was supporting municipalities with professional skills (see Figure 4), indicates that supporting municipalities was perceived as more impactful or valuable than direct community-centred approaches or integrated resource planning in government, as this opportunity could strike a balance between national objectives and local realities. Participant 6, from the local government sphere, indicated that:

> *Emalahleni is expected to drive complicated diversification programmes without the necessary support, as small municipalities would never be able to attract the requisite skills to be effective. If government seizes the opportunities of ensuring that the municipalities, particularly small municipalities are provided with specialist human resource support, programmes in general, which includes economic diversification programmes, will thrive.*

These results are consistent with the study by the OECD (2011:68) conducted in South Africa, which concluded that the government needs to address public-sector capacities to support new areas of the economy. Participant 1, from the local government sphere, stated: “there are tangible benefits in strengthening governance and operational efficiency at the local level, as municipalities are central for implementing policies and delivering services, so investing in their capacity may have widespread benefits.” In the analysis, all the stakeholder groups supported this.

Interestingly, implementing community-centred approaches was identified by only half of the participants (see Figure 4) as an opportunity for effective economic diversification. This opportunity was only identified by two of the four stakeholder groups consulted. The opportunity of developing integrated resource plans that strive for balance was identified by 60% of the participants. Matallah (2020:3) identifies thoughtful planning as the first step in the diversification processes, a view that half of the participants agreed with.

4.2.2 The role of the private sector in economic diversification in a Just Energy Transition

A key player in economic diversification during the Just Energy Transition is the private sector, especially in coal-dependent areas such as Mpumalanga and Emalahleni.

4.2.2.1 Private-sector economic-diversification challenges in the Just Energy Transition

The results highlight key challenges that affect private-sector engagement in economic diversification during a Just Energy Transition (Figure 5).

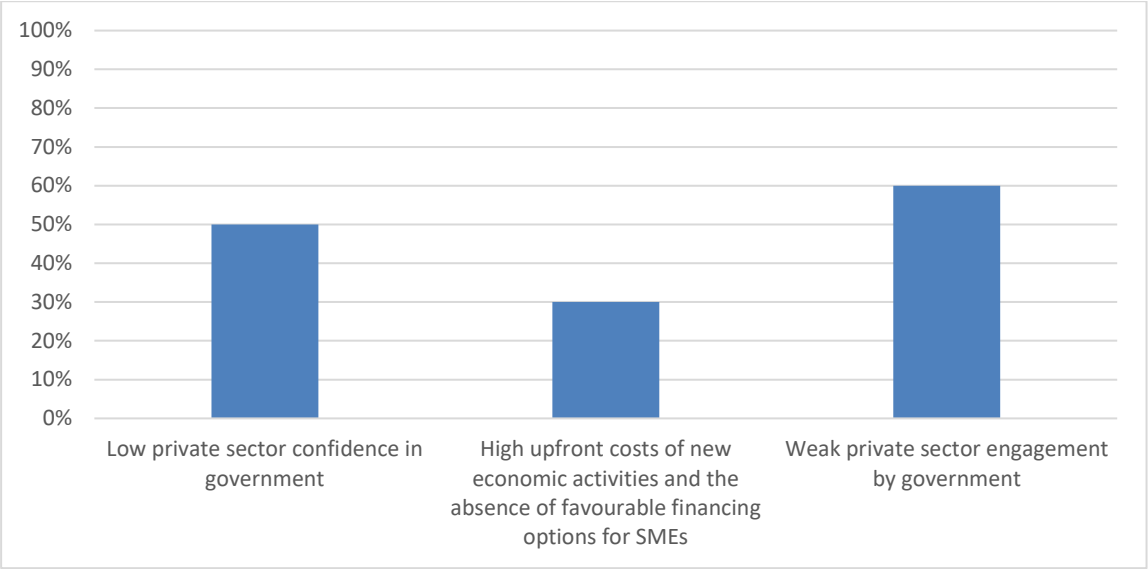

Figure 5: Challenges to the private sector in economic diversification in the Just Energy Transition, as identified in the Emalahleni case study

The most-identified challenge was weak private-sector engagement by government, which was identified by 60% of the participants. That the majority of participants in the different stakeholder groups identified this challenge suggests that engagement between businesses and policymakers is a major issue. Participant 9, from the national sector, indicated: “a lack of structured communication channels, unclear regulations, or bureaucratic inefficiencies prevented the government from effectively engaging with the private sector.” Another reason for this weakness, as provided by Participant 6, from local government, was fragmented engagement by government, where the “national government sphere engages business, while none of the other spheres are in attendance to ensure that they understand what will be implemented and the role that they have to play in such programmes”.

A challenge that was identified by half of the participants (see Figure 5) was low private-sector confidence in government. This challenge is closely related to the challenge of weak government engagement with the private sector, identified by the participants. Some of the reasons provided by Participant 1, from the local government sphere, included that: “businesses do not trust the government's ability to create a stable and supportive economic environment because of inconsistent policy messages and corruption concerns.” When businesses perceive the government as unreliable or unpredictable, they may hesitate to invest in or expand operations that could pose challenges for economic diversification. Van Rooyen and Van Zyl argue that a just transition requires good relationships between the mining sector, the business sector, the local authority and the community (Van Rooyen & Van Zyl, 2022:150).

The challenge that was identified by the least number of participants concerned the high upfront costs of new economic activities. This suggests that while financial barriers exist, participants viewed this as less pressing than engagement and trust-related issues. Participant 9, from the national sector, indicated: “businesses may be more willing to overcome financial barriers if engagement and governance concerns are addressed.”

4.2.2.2 Private-sector economic diversification opportunities in the Just Energy Transition

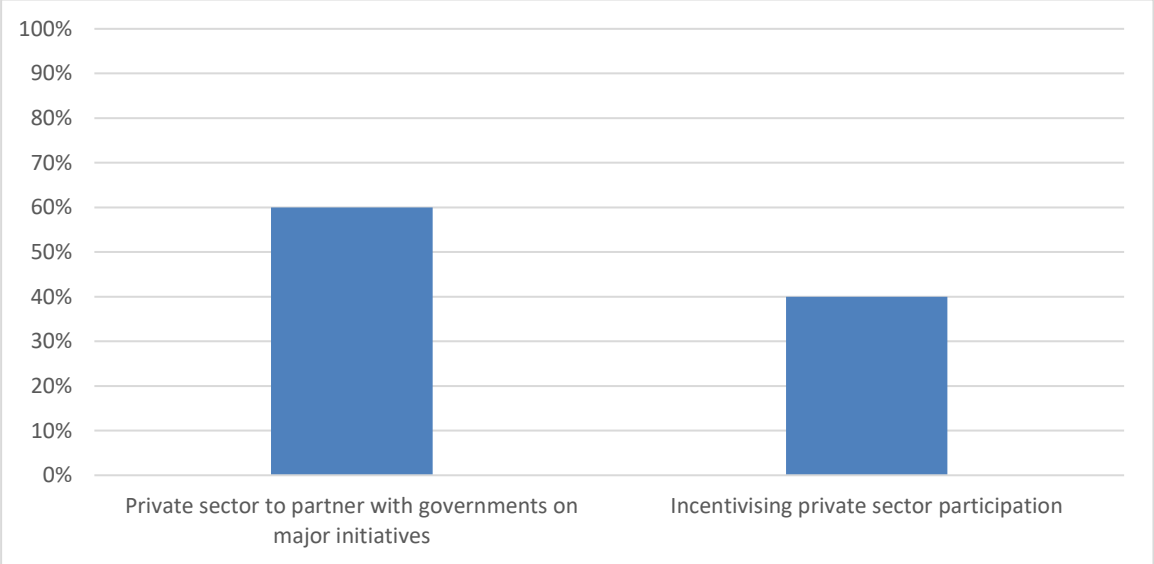

Figure 6: Opportunities for the role of the private sector in economic diversification in the Just Energy Transition

Figure 6 provides the results of the two opportunities that were identified by the participants, aimed at increasing private-sector engagement. The majority of the participants viewed collaborative efforts between governments and businesses as a more effective approach to diversifying the economy in an energy transition than financial or regulatory incentives alone. Participant 6, from the local government sphere, stated: “direct cooperation, shared responsibility, and strategic alliances between the private and public sectors are more sustainable and provide impactful solutions.”

Less than half of the participants identified incentivising private-sector participation as an opportunity, which suggests that participants were of the opinion that businesses may not find incentives alone to be a sufficient motivator. As Participant 12 indicated, “structural issues, such as trust, engagement, and long-term partnership opportunities, are more important than short-term incentives, as short-term incentives may not address deeper systemic challenges that hinder private-sector involvement.” Overall, the results suggest a shift toward institutional collaboration over offering incentives to the private sector.

4.2.3 The role of policy and regulatory frameworks for economic diversification in a Just Energy Transition

Matallah (2020:11) asserts that some of the challenges that are faced by countries aiming to diversify their economies include a lack of defined diversification guidelines.

4.2.3.1 Policy and legislative framework challenges to economic diversification in a Just Energy Transition

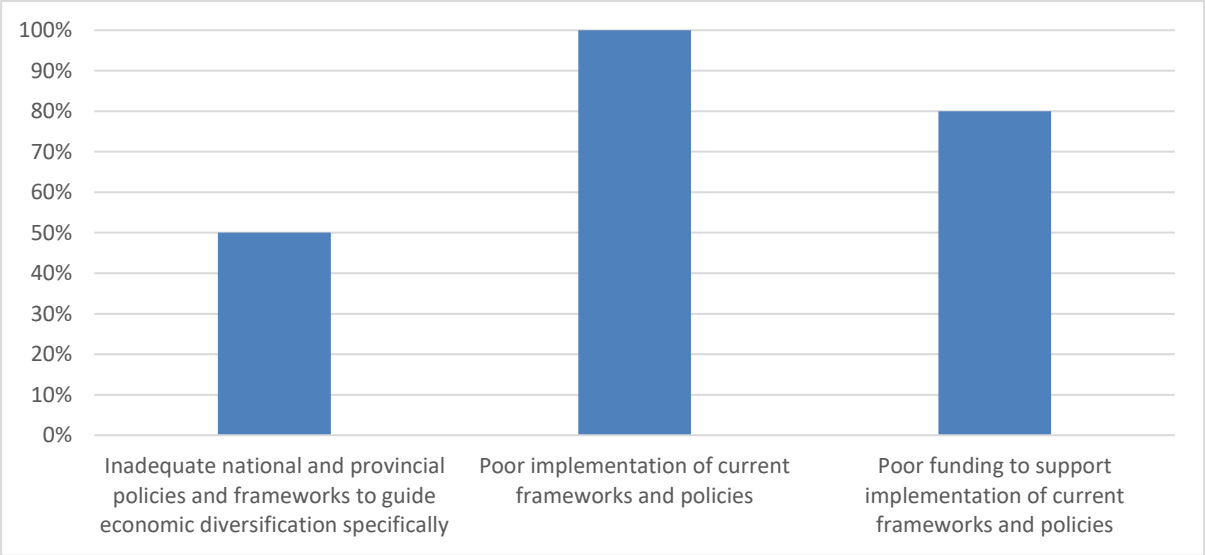

Figure 7: Policy and legislation challenges to economic diversification in the Just Energy Transition

The results from the interviews presented three challenges: the inadequate policies and frameworks, specifically for economic diversification; poor implementation of current frameworks; and poor funding to support implementation of existing frameworks (Figure 7). These issues represent a typical policy-execution gap, where planning exists but execution and resourcing lag behind. The one challenge where there was consensus amongst all participants from all the stakeholder groups (Figure 7) was the poor implementation of current frameworks and plans, which indicated that all participants viewed this as the most critical challenge. This highlights a widespread perception that while policy structures may be in place, their impact is hindered by ineffective or inconsistent implementation. Implementation failure stands out as the most severe challenge, suggesting that strategies and frameworks are not translating into tangible results on the ground. Participant 11 stated that: “this is due to weak institutional capacity, lack of accountability, and insufficient monitoring mechanisms.”

Following closely, as identified by 80% of the participants, was the challenge of poor funding to support the implementation of current frameworks. The identification of this challenge reinforces

the view that execution is affected not only by operational capacity but also by a lack of sufficient financial support. This result suggests that even well-intended frameworks are ineffective if not adequately resourced. The least identified challenge, although still important, with 50% of the participants supporting it, concerns the inadequate national and provincial policies and frameworks to guide economic diversification. While this challenge is important, it appears that participants believed that the real issue lies in turning existing plans into action. Overall, the results suggest that the challenge is less about planning and more about delivery and resource mobilisation.

Matallah (2020), in the article "Economic diversification in MENA oil exporters: Understanding the role of governance", asserts that some of the challenges that are faced by countries aiming to diversify their economies include a lack of defined diversification guidelines. In contrast, policy inadequacy, although relevant, was viewed as a less pressing issue by the participants of the current study, which indicates that the policy and regulatory backbone is largely in place. Participant 8, from local government, pointed out that: "without effective implementation and proper funding, those policies become static documents rather than engines of change." The results show that adequate funding is a bridge between the presence of frameworks and their application, which indicates that financial resourcing is essential for operationalising policy goals. The three challenges are closely interconnected, forming a policy-to-execution continuum.

4.2.3.2 Policy and legislative framework opportunities for economic diversification in a Just Energy Transition

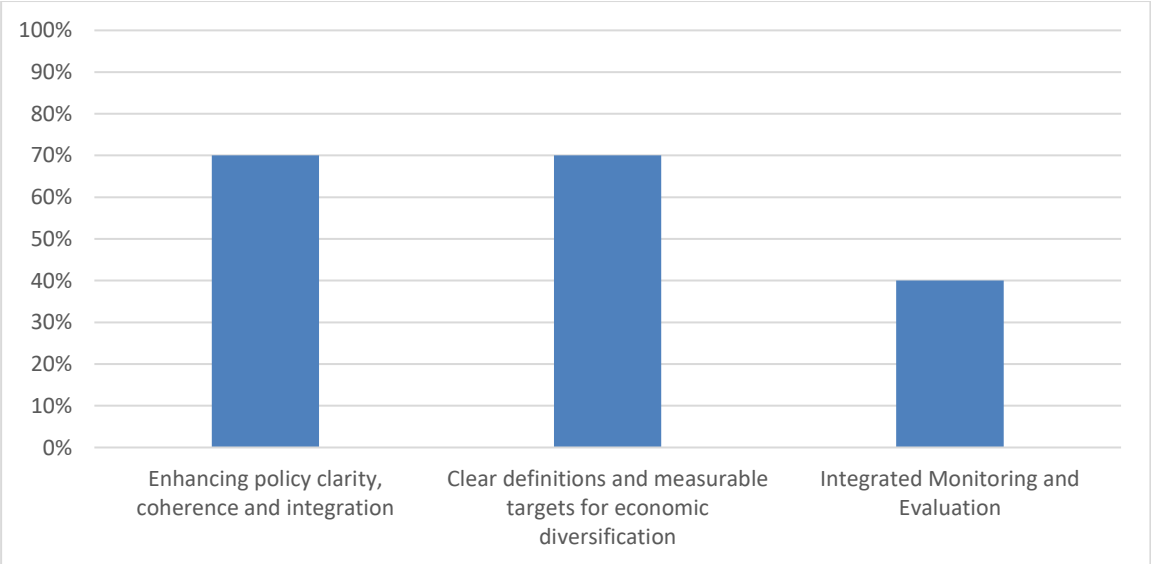

Figure 8: Policy and legislation opportunities for economic diversification in the Just Energy Transition

The results presented in Figure 8 indicate that three strategic opportunities were identified by the participants representing all the stakeholder groups that were interviewed: enhancing policy clarity, coherence and integration, defining measurable targets for effective implementation, and integrating M&E. The opportunities that were recognised by most participants were “Enhancing policy clarity, coherence and integration” and “Clear definitions and measurable targets”, which were identified by 70% of the participants representing all the stakeholder groups, reflecting a shared perception of their foundational role in economic diversification within the Just Energy Transition. These opportunities emphasise the need for well-structured, logically aligned policy frameworks with clearly defined objectives, which are critical for translating plans into meaningful action. A lack of clear guidelines on diversification has been identified by Matallah (2020:3) as one of the challenges that countries seeking to diversify their economies have faced.

In contrast to the opportunities discussed above, only 40% of the participants identified integrated M&E as an opportunity (Figure 8). This suggests that while M&E is recognised as important, it may be perceived as a downstream activity rather than as a central driver of policy success. Participant 11, from the national sector, indicated that: “emphasis is placed more heavily on policy formulation and design, while monitoring and accountability mechanisms may be less developed or inconsistently applied.”

Together, these results reflect opportunities that strongly value clarity and strategic alignment, but may underestimate the long-term importance of learning, accountability and adaptive management, all of which depend on robust M&E

4.2.4 The role of local infrastructure in promoting economic diversification in a Just Energy Transition

To attract new investments and professional expertise to South Africa's fading coal districts, infrastructure developments in water, electricity, housing and other fundamental services are required, as well as suitable market and digital connectivity (PCC, 2022b:165).

4.2.4.1 Infrastructure challenges to economic diversification in the Just Energy Transition

Figure 9 highlights the participants’ view of three major challenges related to public infrastructure, which are inadequate funding for infrastructure maintenance, insufficient investment in new infrastructure, and inadequate, outdated or overburdened infrastructure. A key finding was that there was very little variation in the percentage of participants who identified each of these challenges, and the participants represented all the stakeholder groups that were interviewed, which suggests that all these challenges are widely recognised as critical and

interlinked issues. The narrow percentage range implies a high level of agreement among the participants regarding the severity of infrastructure funding and investment challenges. Inadequate funding for both new infrastructure and the maintenance of existing infrastructure was identified by the majority of participants, which suggested that financial constraints are the most pressing concern in the development and maintenance of infrastructure. This indicates that lack of infrastructure and infrastructure deterioration are not just a result of ageing facilities but rather a symptom of inadequate financial support and low investment levels in new infrastructure.

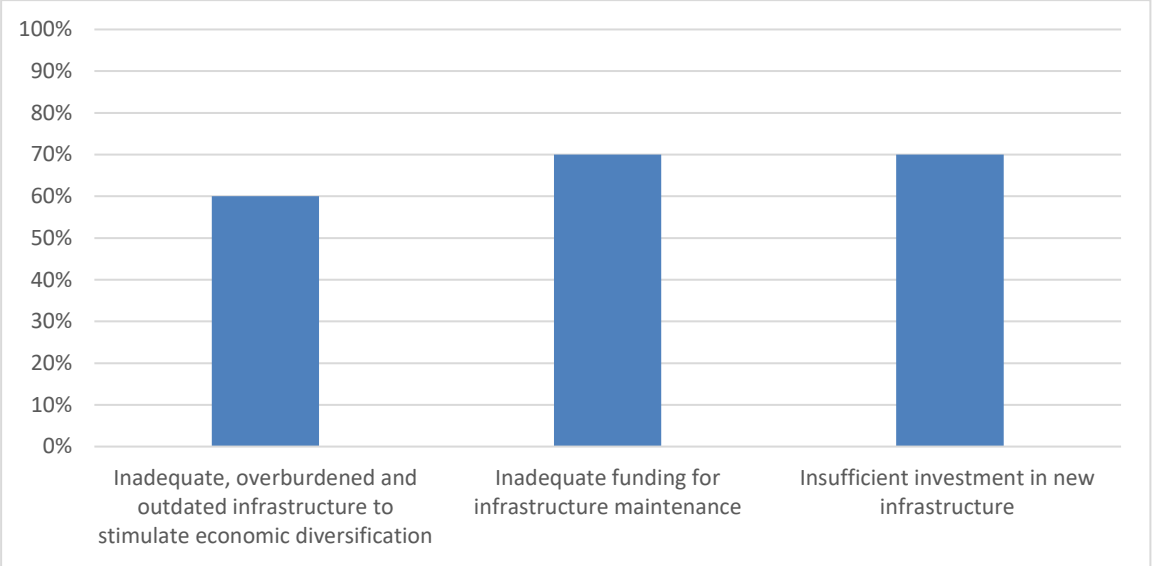

Figure 9: Infrastructure challenges to economic diversification in the Just Energy Transition

The results seem to indicate that infrastructure funding gaps are perceived as a greater challenge than existing infrastructure conditions. While 60% of the participants identified ageing infrastructure as an issue, 70% of the participants identified inadequate funding for investing in building new and maintaining existing infrastructure, respectively, as challenges. Participant 6, from the local government sphere, stated that “solving financial constraints would alleviate many of the other infrastructure problems”, suggesting that there is a cause-and-effect relationship between these problems. Participant 1 confirmed that “ageing and overburdened infrastructure in Emalahleni is the result of inadequate funding for infrastructure maintenance and lack of new investments into infrastructure”.

The study results suggest that if funding and investment challenges were addressed, infrastructure deterioration could potentially be mitigated, and new infrastructure that supports economic diversification could be developed. According to the Framework for a Just Transition

in South Africa (PCC, 2022a), improved connectivity, transportation and digital infrastructure are essential components of successful economic diversification and attract new corporate investments. By focusing on securing sustainable infrastructure funding, expanding investment opportunities and strategically upgrading ageing infrastructure, policymakers can create a stronger, more resilient infrastructure system that supports economic diversification.

4.2.4.2 Infrastructure opportunities for economic diversification in the Just Energy Transition

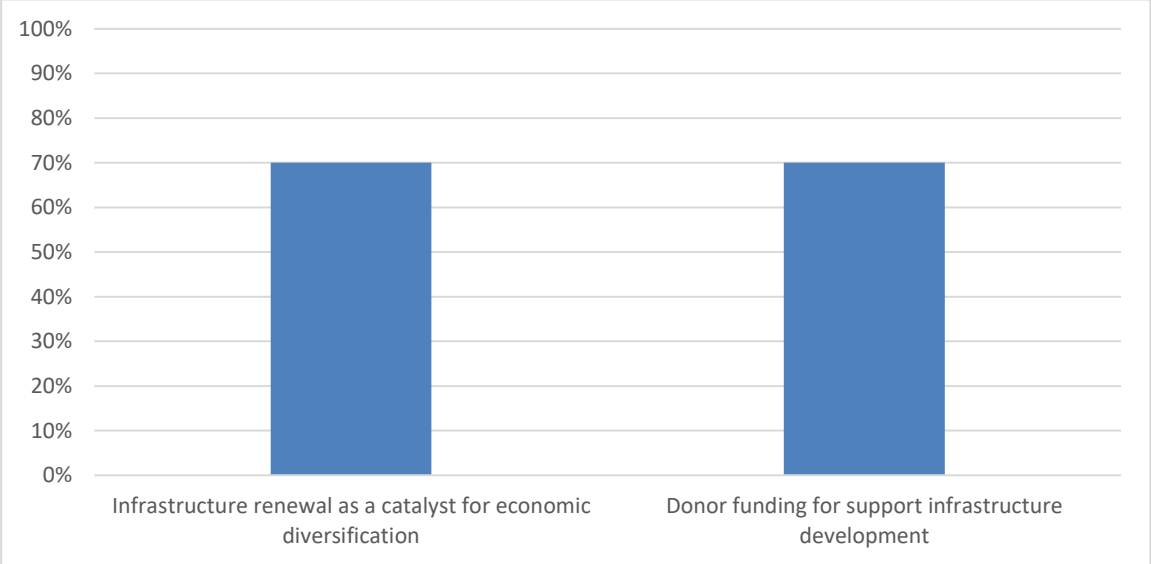

Figure 10: Infrastructure opportunities for economic diversification in the Just Energy Transition

The results shown in Figure 10 reflect the two critical infrastructure development opportunities identified by participants: “Infrastructure renewal as a catalyst for economic growth” and “Donor funding for support-infrastructure development”. Both opportunities were identified by 70% of the participants, representative of all stakeholder groups which indicates that they were perceived as equally important for driving infrastructure improvements and broader economic growth to enable economic diversification. This suggests that the participants viewed both domestic renewal efforts and external financial support as necessary components of an effective infrastructure strategy to enable economic diversification.

Participant 12, from the national sector, stated that “investment in infrastructure renewal is a key driver of economic expansion, improving productivity, connectivity, and industrial development”, while Participant 4, from local government, indicated that “donor funding provides essential financial resources, especially in regions where domestic funding is insufficient to meet growing infrastructure needs”.

4.2.5 The role of funding for economic diversification in a Just Energy Transition

According to the Just Energy Transition Investment Plan (JET-IP) 2023–2027 (PCC, 2022b), major currently existing structural impediments to a just transition in Mpumalanga include structural limitations in the finance sector and limited availability of grant financing. The existing financial ecosystem does not address all the just transition projects.

4.2.5.1 Funding challenges to economic diversification in a Just Energy Transition

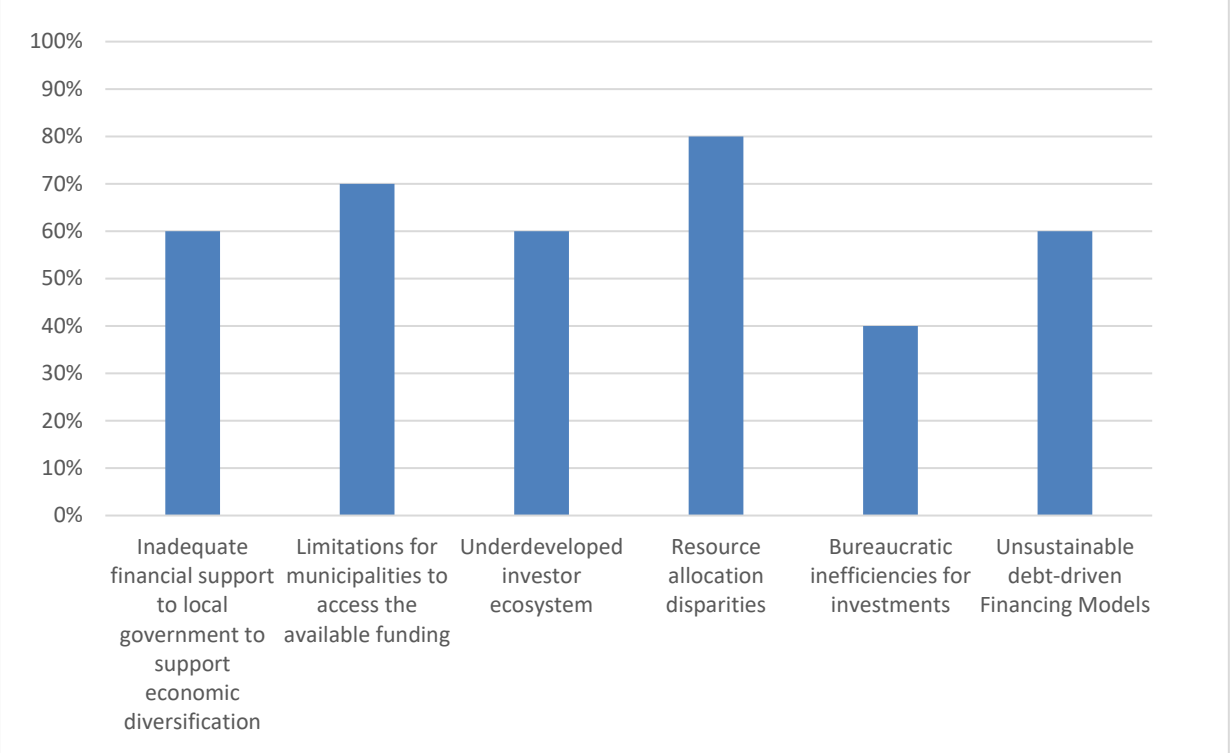

Figure 11: Funding challenges to economic diversification in the Just Energy Transition

The results identified several financial challenges that affect municipalities in relation to economic diversification in the Just Energy Transition. The challenge that was identified by most participants (80%) which represented all the stakeholder groupings was resource-allocation disparities (Figure 11), which suggests a critical concern around the unequal or inefficient distribution of financial resources across local government. Participant 7, from the local government sphere, said: “the resource allocation disparities point to systemic inequities that may hinder certain municipalities from delivering services effectively or investing in local development, which is critical for economic diversification.”

Closely following the challenge concerning resource allocation are the challenges of limitations for municipalities to access the capital market, inadequate financial support to local government,

an underdeveloped investor ecosystem and unsustainable debt-driven financing models. These were identified by 60% of the participants and above, which reflects consistent concern over limited funding channels. Participant 5, from the provincial government, commented: “the underdeveloped investor ecosystem is because both public financing and private investment streams are underperforming or inaccessible, especially for municipalities that may not have the creditworthiness or administrative support to attract investment.”

While the challenge of bureaucratic inefficiencies for investments was identified by 40% of the participants, it is nevertheless a notable challenge. Participant 6, from local government, indicated that: “whilst red tape is an issue, it is less urgent compared to structural financing deficits or disparities in allocation.”

Comparing these challenges reveals a layered financial ecosystem with the two dominant concerns of an inequitable resource allocation and inaccessible investment mechanisms. These results highlight that the financial ecosystem as a whole is under strain. The comparison between these results paints a picture of funding imbalances and systemic exclusion from financial instruments as the most pressing issues, with operational inefficiencies such as red tape being secondary.

4.2.5.2 Funding opportunities for economic diversification in a Just Energy Transition

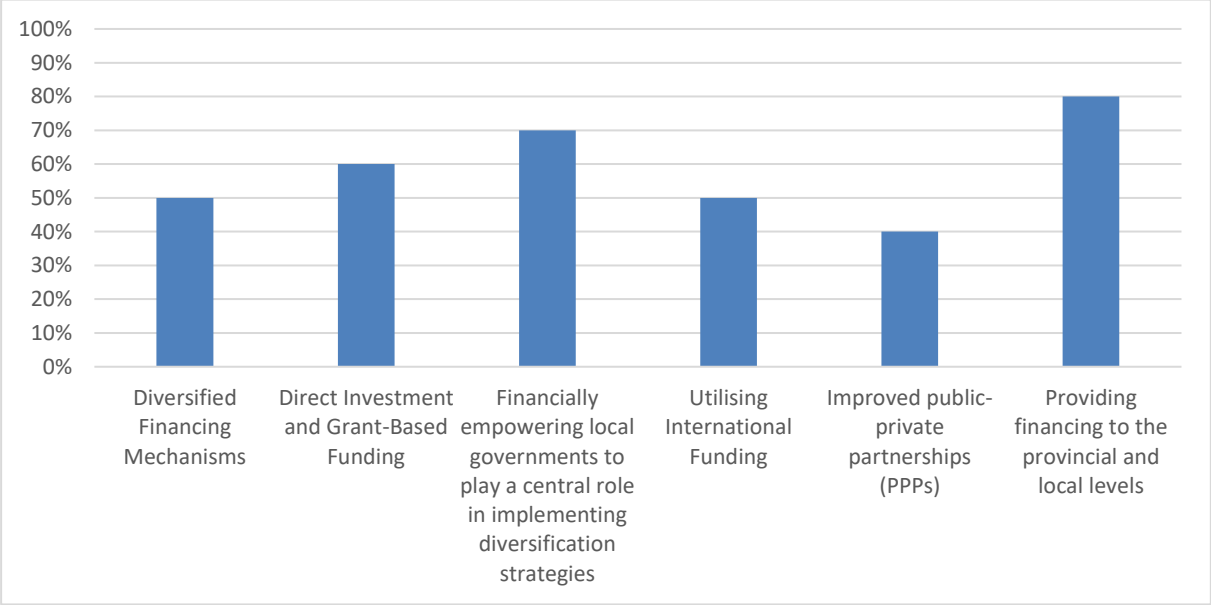

Figure 12: Funding opportunities for economic diversification in the Just Energy Transition

The results, as shown in Figure 12, reflect various opportunities identified by the participants that are aimed at strengthening the financial capacity of local governments. 70% of the

participants identified financially empowering local governments to plan and mobilise resources as an opportunity (see Figure 12). Participant 1, from the local government sphere, indicated that “there is value in the ability of local governments to independently raise, allocate, and manage funds”, and that “a bottom-up financial empowerment is key to economic diversification, especially because local governments are closer to service delivery and community needs”.

An opportunity identified by 60% of the participants was direct investment and grant-based funding, which is a straightforward funding mechanism, particularly where local capacity to raise funds is limited. The opportunities, diversified financing mechanisms, and utilising international funding were both identified by half of the participants, with Participant 1, from the local government sphere, pointing out that: “there is a lack of clarity, accessibility, or proven effectiveness of international funding.”

Less than half of the participants identified improved public-private partnerships (PPPs) as an opportunity, suggesting a relatively lower confidence in this approach. Participants 1 and 6, both from the local government sphere, indicated that challenges related to regulatory complexity, risk-sharing or weak institutional frameworks hinder effective PPP implementation. Participant 7, in the local government sphere, said: “in most of these PPP agreements, the risk is borne by government and not shared.” Participant 7, in the local government sphere, further pointed to concerns over donor-driven conditions and a lack of alignment with local priorities. Overall, these results emphasise a preference for empowering local governments and ensuring stable, direct funding channels, while more complex or externally driven options are viewed with caution or scepticism.

4.3 Recommendations for responding to the challenges and utilising the opportunities for economic diversification in the Just Energy Transition in the Emalahleni municipality (Research objective 3)

The following recommendations are based on the research results and were put forward by the participants during the research.

4.3.1 Strengthening policy coordination and implementation

To address the fragmented coordination among government institutions which was identified as a challenge, Participant 6, from the local government sphere, proposed “a unified national framework for economic diversification to be established, which would integrate national, provincial and municipal policies to ensure alignment with the Just Energy Transition objectives.” Participant 7, from the local government sphere, suggested: “most importantly, government must have a common definition and targets for economic diversification.” Lastly, Participant 1

further indicted that: “capacity-building programmes should be implemented to enhance municipalities’ ability to execute complex diversification initiatives effectively, and Emalahleni local municipality must be adequately resourced in terms of human and financial resources to enable the municipality to lead its economic diversification programme.”

4.3.2 Increasing infrastructure development

Given the outdated infrastructure that exists in Emalahleni and has been identified as one of the challenges for economic diversification, Participant 6, from the local government sphere, put forward the idea that “targeted investment in transport, water, and energy infrastructure is necessary to support economic diversification.” This participant also suggested that: “infrastructure renewal projects should prioritise sectors with high growth potential, such as renewable energy and advanced manufacturing.” Participant 12, from the national government sphere, recommended that: “Public-private partnerships [PPPs] should be leveraged to mobilise financial and technical resources for infrastructure expansion while considering the risks to which Emalahleni could be exposed.”

4.3.3 Promoting private-sector engagement

The private sector plays a crucial role in economic diversification. The partnering of government with the private has been identified as an opportunity and Participant 12, from the national government sphere, suggested that to ensure to ensure optimal partnership with the private sector, “the government should establish clear multi-sphere engagement of the private sector to encourage private sector participation in emerging industries, and there should be efforts to foster collaboration between government spheres and the private sector through structured engagement platforms and investment forums.” Participant 3 from the provincial government sphere recommended that “the private sector must bring investment for economic diversification to enable the growth of alternative sectors.”

4.3.4 Improving financial accessibility for economic transition

To overcome financial barriers which are a challenge to economic diversification, Participant 1, from the local government sphere, put forward the idea that: “government institutions should develop innovative funding mechanisms, including municipal financing initiatives, and blended finance models and that international donor funding should be directed towards infrastructure and enterprise development, rather than exclusively towards capacity-building initiatives.”

4.3.5 Strengthening institutional capacities at municipalities

Local governments require additional technical expertise and financial resources to implement economic-diversification initiatives effectively. The lack of technical expertise and financial resources has been identified as a challenge for economic diversification. Participant 1, from the local government sphere, suggested that training programmes for municipal officials should be established that focused on governance, investment facilitation and policy implementation. Participant 2 recommended that “municipalities must be provided with critical skills, particularly the municipalities that are struggling to recruit because of the municipal grading system.”

4.4 Theory test results

4.4.1 Theory 1: Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on collaboration between different spheres of government.

The government needs to adopt policies and get the fundamentals right to create an enabling environment for economic diversification (UNFCC, 2019). Government intervention that is needed includes maintaining macroeconomic stability, investing in infrastructure, improving the business climate, encouraging private investment and investing in people. Evident from the interviews is the government’s fragmented response to a Just Energy Transition, which could compromise the impact of the role that is played by the government. There is a need to streamline the work of the government on economic diversification in such a way that the objectives are understood and embraced by all spheres of government and the private sector. The results showed a lack of coordination between national, provincial and local governments. In addition, findings revealed that policies and support systems are often disconnected from the real needs on the ground, which poses challenges in implementing meaningful change.

Various challenges and opportunities regarding the role of government were evaluated in the findings. However, these did not support the theory that economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only influenced by collaboration between different spheres of government. This theory is thus not supported.

4.4.2 Theory 2: Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on the collaboration between the government and the private sector.

The research identified several opportunities to increase private-sector engagement in the context of economic diversification during a Just Energy Transition. The research results emphasised that collaborative efforts between the government and the private sector are more effective than the government relying solely on financial incentives or regulatory reforms. The participants viewed strategic partnerships, joint initiatives and shared accountability as more impactful and sustainable approaches. This perspective reflects a preference for building long-term, cooperative relationships rather than offering temporary incentives, with participants suggesting that meaningful engagement and trust-building are central to encouraging private-sector participation.

On the other hand, fewer participants saw traditional incentive-based mechanisms as a sufficient means to attract private-sector involvement. Many felt that such incentives do not address the more fundamental issues, such as a lack of trust, weak communication and limited opportunities for sustained collaboration. One of the key challenges identified was the government's weak engagement, and participants noted a fragmented approach to engagement.

Various challenges and opportunities regarding the role of the private sector were evaluated in the findings. However, those did not support the theory that economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on the collaboration between the government and the private sector. This theory is thus not supported.

4.4.3 Theory 3: A policy and regulatory framework is the only requirement for economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation.

Policies and regulatory frameworks provide the foundation for this Just Energy Transition, yet they are often hindered by fragmented governance, limited implementation capacity and inadequate alignment with the local needs. What was of interest was the difference between the literature review and the interview findings. The literature indicates the lack of policies as a challenge, with Matallah (2020:3) asserting that a lack of clear guidelines on diversification is a challenge for countries that are seeking to diversify their economies. However, during the interviews, it was evident that South Africa has several policy documents on the Just Energy Transition. Yet, policies such as the Just Energy Transition framework lack detail on what the

country means when referring to economic diversification, such that stakeholders define the concept differently. The existing policies mostly focus on economic diversification in relation to the introduction of alternatives to coal energy sources. Another challenge is that the policies in South Africa are not adequately implemented for several reasons, including the lack of resources to implement them, the fragmented government approach and the inconsistent understanding of the concept of economic diversification.

There are various challenges and opportunities regarding policies and legislative frameworks that were evaluated in the findings. However, these did not support the theory that a policy and regulatory framework is the only requirement for economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation. This theory is thus not supported.

4.4.4 Theory 4: Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on local infrastructure investment.

The findings highlight two key opportunities for infrastructure development: infrastructure renewal as a driver of economic growth and donor funding to support infrastructure projects. These perspectives suggest that both domestic efforts to upgrade existing infrastructure and external financial assistance are seen as essential components of a successful infrastructure strategy that is aimed at promoting economic diversification. Participants emphasised that renewing infrastructure plays a vital role in stimulating economic activity by increasing productivity, improving regional connectivity and enabling industrial expansion. Additionally, donor funding was recognised as a critical source of financial support, particularly in areas where local governments struggle to meet the growing infrastructure demands with limited domestic resources.

Despite these opportunities, participants also identified challenges that affect public infrastructure, such as poor funding support, limited investment in both new infrastructure and the upkeep of existing facilities, and the widespread presence of outdated or overloaded infrastructure. Many participants pointed to a direct link between funding constraints and the decline in infrastructure quality, which suggests that resolving financial barriers could help to address both the deterioration of existing infrastructure and the absence of infrastructure that is critical to supporting economic diversification.

Various challenges and opportunities concerning local infrastructure were evaluated in the findings. However, these did not support the theory that economic diversification in a Just

Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on local infrastructure investment. This theory is thus not supported.

4.4.5 Theory 5: Economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is dependent on the availability of adequate and accessible financial resources only.

The findings from this study concur with the UNFCCC (2023:21) study on best practices, which identified a shortage of finance as a key challenge to the implementation of economic diversification. What makes this research interesting, though, is how the impact of that funding was interpreted by participants from the different spheres of government. Participants observed that the funding does not directly fund infrastructure projects in municipalities and has only been used to do capacity building. In addition, some of the participants viewed the impact of capacity building as questionable.

A shortage of funding also directly affects the construction of enabling infrastructure by municipalities, as while there is an expectation that municipalities will create enabling infrastructure, funding mechanisms apart from the existing grants are not provided through the Just Energy funding. Funding plays an important role in enabling the economic diversification necessary for a Just Energy Transition by supporting new industries, upgrading infrastructure and mitigating socio-economic impacts. However, the financial ecosystem presents substantial challenges that need to be addressed to unlock the opportunities for sustainable growth and community resilience.

Various challenges and opportunities related to funding for economic diversification were evaluated in the findings. However, these did not support the theory that economic diversification in a Just Energy Transition in a medium-sized town dependent on coal mining and energy generation is only dependent on the availability of adequate and accessible financial resources. This theory is thus not supported.

4.4.6 Theory 6: Economic diversification in a Just Energy Transition in a medium-sized town reliant on coal mining and energy generation is dependent on a comprehensive approach that integrates intergovernmental and private-sector collaboration, robust policy and regulatory frameworks, infrastructure investment and adequate financial resources.

If national government policies are better aligned between the government spheres and are adequately resourced for implementation, they will contribute towards the successful implementation of economic diversification. A clear policy on economic diversification and better

coordination can help to ease the transition. The provincial government also has a role to play by promoting PPPs to attract investment in renewable energy, infrastructure and skills development programmes. At the local level, Emalahleni has a unique opportunity to take charge of its own transformation. Investing in new infrastructure and maintaining the current infrastructure could attract new businesses while improving everyday life for residents. This investment would also encourage SMEs in areas such as tourism, agriculture and clean energy. Additionally, finding alternative sources of municipal revenue will be critical in maintaining financial stability.

With enough human and financial resources, collaboration between government spheres, the acceptable engagement of the private sector, adequate financial and infrastructure investments, and clear and sufficient policy implementation, the municipality can move beyond coal and build a more economically diverse and resilient economy in the Just Energy Transition. There are various challenges and opportunities related to all the above factors that were evaluated in the findings. The research findings have shown opportunities in intergovernmental and private-sector collaboration, robust policy and regulatory frameworks, infrastructure investment and adequate financial resources, thus promoting a comprehensive approach that addresses all the above factors as identified in the literature. This theory is thus supported.

4.5 Chapter summary

Chapter 4 provides a comprehensive analysis of the challenges to and opportunities for economic diversification in a Just Energy Transition. Emalahleni's heavy dependence on coal necessitates proactive strategies for diversification, including infrastructure renewal, policy reform and investment incentives. The findings of the study highlight the need for a coordinated effort across government spheres, private-sector engagement and strategic funding mechanisms to ensure a sustainable and equitable transition.

A successful Just Energy Transition requires an integrated approach that makes use of government policies, private-sector investments and community engagement. The transition must balance environmental sustainability with socio-economic development and must ensure that affected communities are not left behind.

Addressing the identified challenges demands policy coherence, increased capacity-building at the municipal level and substantial investment in infrastructure development. The role of the private sector cannot be overstated, as its involvement in innovation, financing, and job creation is key to the success of economic diversification efforts.

Furthermore, funding mechanisms should prioritise long-term economic sustainability over short-term interventions. Prioritising long-term sustainability would include a shift from debt-driven projects to grant-funded and locally led initiatives that promote resilience and growth. PPPs, blended financing models and innovative revenue streams must be explored to bridge funding gaps and enable sustainable economic transformation.

The insights derived from this study serve as a foundation for evidence-based policymaking in economic diversification within South African municipalities.

The recommendations drawn from these findings are used in shaping the recommendations made in Chapter 5, with the aim of ensuring that Emalahleni and similar municipalities transition towards a diversified and sustainable economy (ChatGPT Plus, 2025).

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter tests the data collected against the theories that were developed from the literature review and reaches conclusions that are based on the findings. The chapter concludes by presenting recommendations for future research.

5.2 Conclusions

From the main results and discussions presented in Chapter 4, it can be concluded that the research objectives of the study were successfully achieved.

5.2.1 Identify the economic diversification challenges and opportunities for a Just Energy Transition (Research objective 1).

Research objective 1, to identify the economic diversification challenges and opportunities for a Just Energy Transition, was achieved by conducting a review of relevant literature, which is presented in Chapter 2. The literature highlighted five aspects of economic diversification: government institutions, the private sector, infrastructure, the policy and legal framework and funding. The literature presented both the challenges and the opportunities presented by the five aspects.

Based on the literature review, theories, as presented in Chapter 3, were developed on the five aspects identified. This was done to test whether successful economic diversification only relies on any one of these aspects, in the absence of the other. The theories were used to develop a questionnaire that was used as the research instrument.

5.2.2 Identify and characterise challenges and opportunities for economic diversification in a Just Energy Transition in the Emalahleni Municipality (Research objective 2).

This research concluded that economic diversification in the Emalahleni Local Municipality faces several significant challenges that hinder its progress with economic diversification within the context of a Just Energy Transition. Foremost among these is the absence of professional skills and competencies within the municipality, which severely constrains its capacity to design and implement complex diversification initiatives. This issue is compounded by inadequate funding, which not only restricts operational capabilities but also contributes to the deterioration of essential infrastructure. Ageing and overburdened infrastructure, resulting from insufficient

maintenance and a lack of new investments, further inhibits the municipality's ability to support alternative economic sectors.

Additionally, the misalignment between the support required by the municipality and the actual support provided creates a persistent implementation gap. This misalignment is exacerbated by the lack of a unified understanding of economic diversification across various spheres of government, undermining efforts to establish a coherent and coordinated policy approach. The lack of policy clarity has an effect on how the government plays its role of support and implementation. There is a link between policy and the role that is played by the government.

Despite these challenges, the research identified several critical opportunities that, if effectively leveraged, could catalyse Emalahleni's economic diversification. These include the provision of specialist human resource support to small municipalities and the allocation of adequate funding, both of which could alleviate underlying structural constraints. Donor funding also presents a strategic opportunity to supplement limited domestic resources, particularly in addressing infrastructure deficits.

The research rejected five of the theories for successful economic diversification, identified during the literature review. The sixth theory that economic diversification in a Just Energy Transition in a medium-sized town reliant on coal mining and energy generation is dependent on a comprehensive approach that integrates intergovernmental and private-sector collaboration, robust policy and regulatory frameworks, infrastructure investment and adequate financial resources was accepted. Consequently, the research findings can be generalised beyond the immediate case study to other municipalities with a similar context.

Successful economic diversification in a Just Energy Transition may, therefore, also be possible in other municipalities with medium-sized towns reliant on coal mining and energy generation, provided that a comprehensive approach that integrates intergovernmental and private-sector collaboration, robust policy and regulatory frameworks, infrastructure investment and adequate financial resources is adopted.

In conclusion, while the challenges facing economic diversification in Emalahleni are substantial, they are not insurmountable. A coordinated effort by all stakeholders, grounded in shared understanding, sufficient resourcing, and targeted capacity-building, can position the municipality to lead the economic diversification agenda within its jurisdiction. Emalahleni remains a crucial actor in shaping its own economic future and must be empowered accordingly to fulfil this role effectively.

5.2.3 Proposed recommendations for responding to the challenges and utilising the opportunities for economic diversification in a Just Energy Transition in the Emalahleni Municipality (Research objective 3).

The recommendations for responding to the challenges and utilising the opportunities for economic diversification in a Just Energy Transition highlight the multi-dimensional strategies necessary to promote economic diversification in the context of a Just Energy Transition. These are based on the literature and the empirical research results.

5.2.3.1 Policy and regulation

In order to guarantee coherent and successful economic diversification, both the research literature and research participants concur that enhanced policy coordination is necessary across national, provincial, and local government spheres.

Research participants proposed that a policy specific to economic diversification, based on a single definition and common objectives must be developed to streamline the work of the government in relation to economic diversification in the Just Energy Transition. Adequate funding for the implementation of this policy must be made available to enable its implementation.

5.2.3.2 Infrastructure development

To shift local economies, such as that of Emalahleni, toward economic diversification, infrastructure must be improved and developed as corroborated by both the academic literature and research participants.

Special funds to develop infrastructure that would enable municipalities to attract new investors should be implemented for the success of economic diversification. Research participants proposed that policies underpinning the allocation of funds for infrastructure should be reflective of the vision of the country for a Just Energy Transition and the infrastructure investment needed to enable economic diversification. Differentiation in the infrastructure funding is required.

5.2.3.3 Intergovernmental support

Research literature and the participants both agree that the national government must coordinate and synchronise all work pertaining to economic diversification to ensure coherence in the support provided to provinces and municipalities. Research participants recommended that local government must be adequately resourced in terms of financial and human resources.

Local government-focused support should be implemented to develop the capacity of the municipalities in managing complex projects.

Lastly, a key element in facilitating successful economic diversification is the development of institutional capacities at the municipal level through focused training, skill enhancement, and equitable distribution of resources. These actions collectively provide a thorough framework to facilitate an equitable and inclusive shift to a resilient, diversified economy.

5.2.3.4 Funding for economic diversification

Furthermore, improving access to finance through innovative funding models and reorienting international donor contributions toward infrastructure and enterprise development is essential for economic diversification as supported by both the academic literature and participants.

Research participants recommended that grant funding should be made available, particularly for municipalities that are in no position to borrow funds for economic diversification. Policy parameters and technical support must be provided to protect municipal entities from exploitation by funders.

5.2.4 Private sector engagement

Equally important for economic diversification is the engagement of the private sector, through structured platforms and investment forums, to stimulate innovation and capital investment in emerging industries as corroborated by both the academic literature and research participants.

Research participants recommended that there needs to be a coherent approach to the engagement of the private sector, which includes all spheres of government.

5.3 Suggested areas for future research

Future research could build on the findings of the current study by applying similar methodologies to other coal-dependent municipalities to ensure a broader understanding of economic diversification in implementing the Just Energy Transition.

The study did not include perspectives from local mining communities, labour unions and mining companies. Further studies could be done to evaluate their views on the research topic.

In addition, there are assertions that there is funding that is available to municipalities for economic diversification and there are differing views on the accessibility and impact of the funding. Future research into the impact of the Just Energy Transition funding on the economic diversification of municipalities is recommended.

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APPENDIX 1

The role of government in economic diversification.

1. How are the government spheres contributing towards creating an enabling environment for economic diversification in Emalahleni?

2. Do you feel that government implementation of economic diversification is sufficient?

3. If not, what can be improved?

4. What are the existing challenges that impede the ability of the government spheres to implement or enable the implementation of economic diversification?

5. What opportunities exist that government spheres could explore to enable and implement economic diversification?

6. What would be your policy recommendations to the government spheres to ensure the implementation of economic diversification in Emalahleni local municipality?

The role of the private sector in the economic diversification process

1. How is the private sector contributing towards diversifying the economy in Emalahleni?

2. Is the role that is currently being played by the private sector in implementing economic diversification adequate?

3. If not, why is it not adequate and how can that be improved?

4. What are the existing challenges that impede the participation of the private sector in implementing economic diversification within the just energy transition?

5. What opportunities exist that could improve the role played by the private sector in implementing economic diversification within the just energy transition?

6. What would be your recommendations for the private sector to ensure the implementation of economic diversification in Emalahleni local municipality?

Policy Framework for economic diversification

1. Are there adequate policies to regulate economic diversification in the context of the just energy transition?

2. If not, which should be introduced?

3. Are the existing policies adequately implemented?

4. If not, what are the reasons for the inadequate implementation?

5. What are the challenges with the existing policy frameworks that could hinder economic diversification?

6. What opportunities could be presented through policy frameworks to ensure the implementation of economic diversification with the just energy transition?

7. What would be your recommendations on the policy frameworks to ensure the implementation of economic diversification in Emalahleni local municipality?

Contribution of local infrastructure to economic diversification.

1. Is the existing infrastructure (in terms of roads, electricity, water, sanitation, digital connection) in Emalahleni sufficient to support economic diversification?

2. If not; what are the challenges?

3. What opportunities could be presented through local infrastructure in to ensure the implementation of economic diversification with the just energy transition?

4. What would be your recommendations on local infrastructure to ensure the implementation of economic diversification in Emalahleni local municipality?

Financing economic diversification

1. What are the existing challenges with funding for economic diversification in Emalahleni?

2. What opportunities could be presented funding opportunities to ensure the implementation of economic diversification with the just energy transition?

3. What would be your recommendations on the funding of economic diversification within the Just energy transition?