

**Gordon Institute
of Business Science**
University of Pretoria

**Exploring the socio-economic impacts of South Africa's Just Energy Transition
(JET): A case study of coal-dependent communities in Mpumalanga**

By

Christian Teffo

24078973

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ABSTRACT

The closure of collieries and coal-fired power plants has resulted in social disturbance, reduced employment figures and economic downturns. The challenge in this study focused on a just energy transition in the coal mining sector in South Africa and the reality of implementing such change in communities that rely on coal mining. The focus of the study was to explore the socio-economic impacts of the JET on employment in Mpumalanga. The study has emphasised the importance of companies in the energy sector to consider implementing low-carbon mechanisms to avoid operational disruptions and other risks. The study adopted a qualitative research approach. A sample of 12 participants was selected using the purposive sampling method. Semi-structured interviews were used to collect data, and thematic analysis was used to analyse the study. The study found that the shift from coal to renewable energy resulted in significant job losses and worker displacement. This created challenges in the local coal mining communities affected by JET, such as increased poverty, unemployment, social unrest and a declining regional economy. The study also found that the JET impacts the livelihoods and living standards of coal workers and their families in Mpumalanga. The study concluded that as coal mines and power plants face closure, households are deprived of their primary source of income, resulting in decreased financial capacity to look after their basic needs. The study found that inadequate communication, a lack of awareness and education and poor stakeholder engagement are the significant challenges, resulting in resistance and distrust among the impacted communities. The findings revealed that collaboration among stakeholders, government, industry, labour unions and communities is evolving but still remains fragmented and inconsistent. The chapter concluded that the successful implementation of JET initiatives depends on adequate government backing, diversification, and the integration of social equity principles. The study recommended that reskilling, job creation, training, collaboration, social protection, and vigorous enforcement are vital for effective JET implementation.

Keywords: Socio-economic impacts, just energy transition, coal, renewable energy, Mpumalanga, South Africa

DECLARATION

I declare herewith that this research project is my own work, and I am submitting this document as part of my Master of Business Administration degree at Gordon Institute of Business Science (GIBS), University of Pretoria. This work has not been submitted before for any degree or examination in any other University. I also declare that I have obtained ethical clearance and all authorisation to conduct this research.

Christian Teffo

03 November 2025

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LIST OF ABBREVIATIONS

COO	Chief Operating Officer
DMRE	Department of Mineral Resources and Energy
ILO	International Labour Organisation
IRP	Integrated Resource Plan
JET	Just Energy Transition
JTF	Just Transition Framework
NDP	National Development Plan
NGO	Non-Governmental Organisation
PCC	Presidential Climate Commission
POPIA	Protection of Personal Information Act

CHAPTER 1: NEED AND INTRODUCTION OF THE STUDY

1.1 INTRODUCTION

This chapter provided an introduction to the study, outlining the need to explore the socio-economic effects of the Just Energy Transition (JET) within South Africa's coal industry, particularly in the Mpumalanga province. The shift from coal-based energy to renewable sources advocated by JET has significant social and economic impacts on coal workers, their families, and the wider community. Investigating the effects of this transition on employment, livelihoods, and organisational initiatives is essential. It is also important to recognise the challenges faced during the implementation of the JET framework, focusing on inclusive and sustainable change. Therefore, the chapter outlines the research problem, the context of the study, and its purpose. In addition, the rationale for the research and its structure are provided.

1.2 RESEARCH PROBLEM

According to Heffron and McCauley (2018), JET was established on the energy justice principle for equal distribution of the opportunities and challenges associated with the transition. Winkler (2020) in South Africa emphasises that it is necessary to align policies on climate and the development of the social environment, with significant emphasis on these communities that rely on coal. Also, Burton et al. (2018) alluded to the need for an effective strategy to be implemented before protecting the communities from the impact of decarbonisation. Ramluckun et al. (2024) mentioned that transitioning to renewables is essential for achieving environmental sustainability, and this can be accomplished by implementing strategies designed to mitigate climate change. According to Naqvi et al. (2021), the transition creates challenges for coal mining employees and those who are dependent on the extraction of coal and energy generation. The coal industry contributes to the economy by creating job opportunities (Winkler & Blak, 2024). Thus, the closure of collieries and coal-fired power plants has resulted in social disturbance, reduced employment figures and economic downturns (Ncube, 2022).

The theoretical challenge in this study focuses on the conflict between a just energy transition and the reality of implementing such change in communities that rely on coal mining. The idea of a just energy transition centres on a labour shift and issues surrounding environmental issues; it focuses on the need to protect workers' rights and lifestyle during this transition (Naqvi et al., 2021). Ramluckun et al. (2024) alluded that it lacks theoretical development and implementation. The significant theoretical problem is the divergence between the distributive and procedural aspects of JET in practice. These aspects focus on the distribution of resources and responsibilities and inclusiveness in decision-making. The JET in South Africa has a significant contribution to both distributive and procedural elements, but there is no straightforward approach to the distribution of resources and responsibilities. Thus, there is a need to conduct research on the interests and how the JET is conceptualised in the region of Mpumalanga. The current state of JET revealed that it is failing to address these social challenges and labour shifts in the context of South Africa in Mpumalanga province (Winkler & Black, 2024).

Research by Winkler (2020) upheld that the implementation strategy for JET in South Africa should take into account social equity in coal-dependent communities, such as Mpumalanga, in this case. This is critical to avoid economic deterioration in the region. Also, Swilling et al. (2020) emphasise that failure to implement the transition strategy effectively will lead to deteriorating economic conditions, losing income/revenue, increasing poverty and social instability. Mojapelo (2021) also expressed the concerns that in Mpumalanga, the coal demand is going down, which is also affecting family income and rising unemployment. The content discusses the transition towards a low-carbon economy in South Africa, specifically examining the implications for employment within the local coal sector. The JET initiative is highlighted as a key framework developed to aid communities and workers affected by the closure of collieries.

While research suggested that shifting from coal to renewable energy presents long-term advantages and job opportunities, there remains a significant gap in understanding the socio-economic dynamics and stakeholder perspectives surrounding the JET. Concerns regarding economic displacement among employees and local communities have led to

resistance against this transition. This paper aims to conduct an investigation of the financial and social implications of JET with a particular focus on employment in the Mpumalanga province. Heffron and McCauley (2018) state that inequities in the transition to renewable energy sources heighten poverty in coal-dependent regions. Godinho and Hermanus (2018) also supported that the transition will overlook workers' needs and community members, which can lead to social instability. Newell and Mulvaney (2013) argued that the initiative should focus on reducing emissions and creating a safe environment for the community. Without considering these factors, the transition will cause social instability and ignore the need for equity and community empowerment. Based on the discussion presented above, the JET seeks to provide support for coal workers and communities affected by mine closures. However, there is limited research on its socio-economic impacts and the effects of such transitions on key stakeholders. Concerns over economic displacement could lead to resistance from workers and local communities affected by the transition. This research aims to explore the socio-economic effects of the JET on South Africa's coal sector, with a particular focus on employment in the Mpumalanga coal mining region.

1.3 CONTEXT

1.3.1 JET, background and its pillars/principles

JET is an environmental and social framework developed to guide the change from fossil fuels to renewable energy sources, focusing on ensuring equity and economic viability for its stakeholders. Bond (2018) alluded that JET started in the Global North in the 1990s when the unions and environmental organisations shifted focus to climate initiatives, which also protect the employees' rights and lifestyle. The significance of JET was acknowledged in the Paris Agreement in 2015 (Hermwille et al., 2017). In South Africa, JET has become a sensitive aspect of national climate policy, due to its heavy reliance on coal mining for energy and employment creation (Winkler, 2020). The creation of the Presidential Climate Commission (PCC) focuses on creating a transition framework that aligns with the social and economic realities of South Africa. The JET framework addresses historical inequalities and systemic unemployment. The core aspects of the JET framework are the social inclusion and participation, inclusive of decision-making,

decent employment, diversification, reskilling and adequate support during the transition into the new sustainable, renewable energy environment (Heffron & McCauley, 2018; Swilling et al., 2020)

1.3.2 Legislation and policies driving JET

Paris Agreement, which formally recognised the significance of a "just transition of the workforce" in the pursuit of climate objectives (Hermwille et al., 2017).

National Development Plan (NDP) 2030 emphasises the necessity of moving to a low-carbon emissions economy while simultaneously addressing poverty and inequality (NPC, 2012). It articulates a vision for inclusive economic growth that closely aligns with the principles of JET.

Just Transition Framework (2022), advanced by the PCC, provides a systematic approach to ensuring that climate initiatives benefit vulnerable workers and communities (PCC, 2022).

Integrated Resource Plan (IRP) 2019, created by the Department of Mineral Resources and Energy (DMRE), outlines the future electricity generation landscape of the country and implicitly endorses the shift from coal through planned decommissioning of coal-fired electricity generation plants and investment in renewables (DMRE, 2019).

The Climate Change Bill, which is in the final stages of completion, establishes the legal framework for climate initiatives in South Africa. This legislation encompasses strategies for reducing emissions and enhancing adaptation efforts (Department of Environment, Forestry and Fisheries, 2021).

1.3.3 Constraints around JET

According to Mojapelo (2021), JET implementation in South Africa is constrained by several factors at the community level. Swilling et al. (2020) identified that the primary factor is a lack of community involvement in planning and decision-making processes. Coal-dependent communities are mostly not consulted during research, which causes resistance and negative perceptions regarding the transition (Winkler, 2020). The majority have associated JET with increased unemployment and socio-economic instability. The lack of employment guarantee is the most significant concern, and most of the jobs in the

mining sector are on the verge of ending, leaving the majority unemployed (Burton et al., 2018). The lack of a well-articulated strategy or other employment opportunities for the mining workers has increased the fear of losing employment. Hence, there is heightened resistance, and it is causing disruptions in the communities (Scot et al., 2020). There is a need to encourage community ownership, improved communication and adequate support to ensure JET provides justice and equality.

1.3.4 JET Socio-Economic Implications

The socio-economic consequences of the JET vary as it creates both opportunities and challenges for South African economic growth. The transition from a coal-based process reduces employment opportunities in areas such as Mpumalanga, where the majority of people depend on coal mining employment. As alluded to by Burton et al. (2018), failure to implement effective strategies, approximately 77,000 jobs are at risk of being lost by 2030, which will increase unemployment and inequality. On the other hand, this transition is also likely to create more economic growth and job creation in the renewable energy sector. The ILO (2015) highlighted that many employment opportunities will be made through the transition towards renewable energy. In the South African context, the PCC (2022) stresses that there is an excellent opportunity for growth in local industries as a result of the green economy. More importantly, the transition requires employees to be reskilled and upskilled to align with the new set of skills needed for a green economy. Heffron and McCauley (2018) alluded that socio-economic equities should be considered to reap these benefits. Supported by Winkler (2020), public investment in skills development and education is essential to help local companies and foster economic growth.

1.4 PURPOSE OF THE STUDY

This research aims to examine the socio-economic impacts of the JET on South Africa's coal industry in Mpumalanga province. Burton et al. (2018) highlighted that Mpumalanga is at the centre of South African energy production, producing over 80% of the coal and Eskom's biggest coal power plant. The province is faced with several challenges, which include job losses, economic decline and social instability as the country advocates for

decarbonisation. Many communities in Mpumalanga rely on coal for their living and revenue for the government, which will result in socio-economic decline. Hence, the JET framework should be effectively implemented to resolve all these challenges (PPC, 2022). Additionally, the absence of community engagement in planning and decision-making led to increased distrust, resistance and negative perceptions towards the implementation of JET (Scott et al., 2020). There is a skills gap faced by coal workers to move into the green economy; there is a need for training and improving infrastructure (Winkler, 2020). These issues pointed out that the JET strategy in Mpumalanga is not environmentally sustainable, socially equitable and economically viable.

1.5 THE THEORETICAL AND BUSINESS RATIONALE

1.5.1 Business need of the study

The study will address the socio-economic impact of JET in Mpumalanga. This study will examine how transitioning from fossil fuel dependency to renewables will affect businesses and communities. The study will emphasise the importance of companies in the energy sector to implement low-carbon mechanisms to avoid operational disruptions and other risks (Burton et al., 2018). The study emphasises that businesses should develop risk management strategies by diversifying energy sources and investing in sustainable operations. The study will highlight the importance of community inclusion in planning and decision-making to reduce inequalities and unemployment uncertainty. The study will highlight the significance of corporate social responsibility in fostering sustainable business-society relationships. It also promotes the need for collaboration and improves social resilience. The results of this study will assist participants in addressing the challenges associated with JET implementation and its impact on communities (Winkler, 2020; Swilling et al., 2022).

1.5.2 Theoretical need for the study

The Stakeholder Theory will be used in this study to understand the complexities surrounding the energy transition in South Africa, particularly within the coal industry. Stakeholder theory, as proposed by Freeman (1984), emphasises that companies should take into consideration the interests and the well-being of all stakeholders through

decision-making and meetings. It focuses on long-term success, depending on the effects on the economy, social and environmental responsibilities in the affected areas (Newell & Mulvaney, 2013). It emphasises the importance of recognising all stakeholders, such as employees, communities, local businesses and government departments, during the transition. The research focuses on providing empirical insights into stakeholder engagement practices and power dynamics that influence those who benefit or suffer during the transition. Additionally, theories highlight the specific context of the Global South, focusing on justice and fairness in resource allocation and historical inequalities affecting the communities in Mpumalanga. Ultimately, the study seeks to investigate how people and communities adapt their lives during the disruptions in coal-dependent employment, providing a deeper understanding of resilience and vulnerability during the transition.

1.6 OUTLINE OF THIS STUDY

Chapter 1 focuses on the need for the study and identifies the problems around the JET for communities.

Chapter 2 focuses on a literature review of key constructs and theories.

Chapter 3 focuses on the objective and key research questions.

Chapter 4 focuses on the methodology.

Chapter 5 focuses on the data analysis and results.

Chapter 6 looks into the discussion of the results.

Chapter 7 provides a conclusion and recommendations.

1.7 CONCLUSION

Chapter One has provided the need for this study. Chapter 2 will focus on a literature review on relevant aspects of the topic.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The focus of this section was to present a discussion of the literature on JET, focusing on outlining the key constructs of the study. Firstly, the JET concepts were outlined, the JET implications in Mpumalanga, the social impact of JET, and the economic impact of JET are also discussed. The chapter presents a discussion on the challenges of JET implementation in Mpumalanga, the benefits of JET for communities and the legislation and policies underlying JET implementation. Lastly, the theory of JET underlying this study was also presented.

2.2 KEY CONSTRUCTS

2.2.1 Just Energy Transition

According to Zuk and Zuk (2022), JET signifies a movement from fossil fuels to clean, sustainable energy sources, ensuring that the transition is done fairly and equitably for all stakeholders. The focus was on those communities that solely rely on coal mining opportunities. The initiative aims to curb the effects, on the other hand, improving the advantages of the transition, for example, the creation of jobs and the growth of the economy (Cole et al., 2023). Winkler and Black (2024) identified three key areas of JET impact: sustainable energy generation, interaction with the political economy, and social effects. Several studies have been conducted in countries that have undergone JET through the closure of coal mining power plants. It was found that JET has a significant impact on employment, change in livelihoods and the well-being of people and the decline in trust that people have towards government (Barnes, 2022; Upham et al., 2022; Zuk & Zuk, 2022). It was found in literature that JET has received significant attention towards the development of an economy (McKenna & Ghosh, 2022). However, gaps were vivid in this research regarding the social impacts caused by the JET; the amount of research exploring the socio-economic effects of the South African JET in the coal sector was limited (Mojapelo, 2023).

2.2.2 JET implications in Mpumalanga

The implementation of JET in South Africa was a critical aspect that will move the country to a carbon-free environment. Notably, the JET in Mpumalanga was an essential element of South Africa, which is the spearhead of the JET from a carbon economy into a carbon-free environment. Mpumalanga produces the majority of the coal used in the country, 80% of South Africa's coal. The biggest energy company, Eskom, also has its largest power plant in Mpumalanga, which also fires coal to produce energy for the national grid. This has made the region susceptible to the effects of decarbonisation. This transition to renewable energy and closing down coal-based facilities results in considerable effects on employment and economic stability for many employees and societies that solely rely on coal mining and energy generation (PCC, 2022). Also, the JET implementation in Mpumalanga can create great opportunities to improve the economic situation in the province. The JET is aimed at developing new industries such as renewable energy, sustainable agriculture and environmental protection. Wright et al. (2021) expressed that there is a need to implement initiatives focused on improving the skills of the employees in the coal mining companies and attracting investment in green technology to diversify the local economy. Conducting research in the communities, planning and allocating adequate financial resources are essential to instil trust in employees, their dependents and youth who are being considered in this transition. Also, unions, civil societies and the local communities should be actively involved in the planning and implementation of the JET. This was crucial to foster transparency, equity and prioritisation of the most affected individuals. Thus, this study explored the implications of JET in Mpumalanga with significant attention on employment opportunities.

2.2.3 Social Impacts of JET

2.2.3.1 Loss of employment and social vulnerability

In areas that rely on the coal mining industry, there are significant social impacts of JET that should be considered and rectified to ensure a successful implementation of the initiative. In areas such as Mpumalanga, the most prominent hub of coal mining in South Africa, the significant social effect of JET was the loss of employment for workers in the communities. Burton et al. (2018) alluded that the coal sector sustains thousands of jobs,

contributing significantly to the employment rate of South Africa, and its closure can dramatically affect the employees' lives, increase the unemployment rate and increase poverty in these communities. Thus, the JET initiatives pay special attention to renewable energy so that it does not neglect workers and communities. Moreover, Mpandeli et al. (2018) estimated that almost 77,000 employment opportunities will be threatened by 2030, rendering employment insecurities a significant policy issue. Montmasson-Clair (2021) contend that energy transitions lacking strong labour protection measures intensify inequality and increase vulnerability. Ncube (2022) further emphasises that frameworks for JET must incorporate social protection to prevent the intensification of structural poverty. Similarly, ILO (2015) emphasise that successful transitions are contingent upon prioritising reskilling and social dialogues during implementation.

2.2.3.2 Local economic and structural changes

In addition, the JET initiative has significant challenges to the local economy and the social structure of the communities. Winkler and Black (2024) revealed that informal settlements have emerged around the towns where coal mining activities are taking place. Hence, Ling and Byrne (2020) mentioned that, as the sector closes down, communities will experience reduced population, diminished public service level and closure of small businesses in this coal economy. The situation worsened the disparities in these disadvantaged communities, which already face challenges in accessing quality services such as education, healthcare and improved infrastructure. In support, Mqotyana (2022) contends that unregulated mine closures result in a cascading socio-economic deterioration in communities dependent on coal economies. In the same vein, it is alluded that diminishing municipal revenues associated with reduced coal operations hinder service provision in Mpumalanga. Mojapelo (2023) indicated that if economic diversification was not actively pursued, regional disparities are likely to become more entrenched. Furthermore, Mqotyana (2022) highlight that the shutdown of coal mines, without simultaneous investment in alternative industries, jeopardises both social stability and local development.

2.2.3.3 Migration and demographic change

The closure of coal mines and power stations as part of the JET often leads to out-migration, with workers and their families relocating in search of better employment opportunities. This trend has far-reaching implications beyond immediate job losses, as it alters the demographic makeup of mining towns and impacts community life. Bartholomae et al. (2017) observed that when industrial centres fail, populations decline rapidly, leading to the shrinking of cities with limited chances of revival. As indicated by Sageman (2022), the most apparent sign of demographic decline is in education. As families move away, school enrolments decrease, resulting in the downsizing or even closure of schools. This situation not only affects schools but also the employment of teachers and other staff, thus amplifying the social impact of JET (Mpandeli et al., 2018). Depopulation caused by JET implementation also diminishes municipal revenue, leading to the underperformance of public service providers such as healthcare, housing, and infrastructure, which significantly affects those unable to migrate, typically women, children, and older people (Mbanaso et al., 2023). This creates additional economic and caregiving challenges. The social network and cohesion are disrupted, and family structures become fragmented. While migration was a logical response for individuals facing financial difficulties, it resulted in a collective crisis for communities reliant on coal mining.

2.2.3.4 Social change and equity

JET also creates opportunities for social change. As revealed by Burton et al. (2018), inclusive transition promotes social equity by addressing historical injustices and opening new pathways for employment. Investments in the renewable energy sector, environmental rehabilitation, and the development of green infrastructure also offer new employment opportunities. Simultaneously, there was a need for skills development and retraining initiatives to help workers transition from the fossil fuel industry to the renewables sector (ILO, 2015). It is crucial to invest in empowering youth and women and to ensure that the benefits of JET are shared equally among stakeholders. As stated by Mbanaso et al. (2023), effectively managed transitions have the potential to reshape social relationships by enabling fair participation in developing economies. Mutereko et

al. (2023) indicate that investments in renewable energy within South Africa could promote inclusive growth if paired with skills development programmes and local development. Thus, equitable involvement of disadvantaged groups was central to achieving sustainable transition outcomes.

2.2.3.5 Community engagement and participation

A study by Newell and Mulvaney (2013) revealed that the involvement of the community and social participation were essential in mitigating the negative social impacts. The results from the successful transition in many countries showed that community engagement in planning and making decision create an environment of equity and sustainable results. Also, in South Africa, the PCC (2022) emphasised the importance of an inclusive and participatory approach, taking into account the views and feelings of the affected employees, organisations, and unions, which are essential to the creation and execution of the JET in Mpumalanga province. Jami and Walsh (2017) demonstrated that effective consultation improves community acceptance of renewable energy initiatives. Similarly, Lennon et al. (2019) discovered that a lack of authentic engagement in Mpumalanga mining towns results in distrust and opposition to JET projects. Jami and Walsh (2017) emphasise that procedural transition, ensuring that all affected groups of people have a voice in decision-making. This was important to ensure the legitimacy of the transition and ensure sustainability. Ncube (2022) contends that energy transition requires participation and fairness in the desired outcome. Also, Newell and Mulvaney (2013) underscore that participatory governance fosters trust and improves the long-term sustainability of transition strategies.

2.2.3.6 Health and environmental well-being

JET has the potential to improve public health and community well-being by reducing land and air pollution, as well as environmental degradation (Gul & Das, 2023). Years of dependence on coal mining have caused severe particulate matter issues, which are linked to respiratory diseases. Some studies have shown that air pollution from coal-fired power plants results in premature deaths each year (Ncube, 2022). This poses a significant challenge for families and the public health system (Reitzenstein & Popp,

2022). These health problems disproportionately affect vulnerable groups, including children, the elderly, and low-income communities living near mining areas. By transitioning to renewable energy, JET offers opportunities to alleviate these health issues, thereby reducing healthcare costs and enhancing quality of life. Ansell (2023) mentioned that clean energy reduces emissions of harmful pollutants. In other global studies, countries such as the USA and various European nations show that the closure of coal mines is associated with decreases in asthma cases and hospital admissions (Cortes-Ramirez et al., 2018). In South Africa, restoring degraded areas through JET implementation will benefit the ecosystem and promote healthier living conditions. Additionally, the JET initiative serves as a public health practice that strengthens community resilience and fosters equality.

2.2.4 Economic Impacts of JET

The economic impacts of JET are complicated and affect employment, trends in investments, energy markets and the regional economic status. In South Africa, the economy relies on coal mining for exports and revenue for the government. JET will have a significant impact on economic growth (DEA, 2021). The coal mining sectors have created hundreds of thousands of jobs in South Africa, for example, in Mpumalanga province. These employment opportunities are either directly or indirectly linked to coal. This means that coal has sustained multiple economic activities which rely on the production of coal products and energy. Burton et al. (2018) highlighted the concern that when coal-based companies close down, alternative sources of energy and employment should be created to avoid a decline in economic activities. Therefore, this study revealed the economic opportunities around the region that can help in creating alternative jobs for the workers and families who solely depend on coal.

2.2.4.1 Decline of coal-dependent economies

The reduction of economies reliant on coal mining is a significant impact of the JET initiatives (Scot et al., 2020). For example, local governments in mining regions depend heavily on coal royalties, business activities, revenue from electricity generation, and tax income, which are vital for adequate service provision. As coal mining companies and

thermal power plants shut down, this adversely affects government revenue streams (Clark & Zhang, 2022). Municipalities and other local authorities find it challenging to maintain good infrastructure and essential services because their primary sources of income are disappearing (Burton et al., 2018). Consequently, this financial crisis often leads to the migration of economically active individuals seeking other opportunities, further straining municipal tax collection. Additionally, small businesses established to serve coal mine workers experience declining customer numbers and demand for goods (Haggerty et al., 2018). This situation significantly contributes to increased unemployment in these communities. Godinho and Hermanus (2018) also noted that the closure of coal-related businesses and jobs results in poverty. Scott et al. (2020) warn that without intentional investments in economic diversification, local development, and green industrialisation to accompany these transitions, local governments may face inactivity and social unrest. This highlighted the importance of integrating JET with regional development strategies to ensure that towns reliant on coal are not marginalised in the emerging new era of energy production.

2.2.4.2 Stranded assets

Stranded assets pose a significant economic threat in the realm of JET, especially in communities where coal mining is the primary economic activity (Rempel & Gupta, 2021). As regulations around the world evolve, most new policies promote a transition from coal to alternative, safe, and pollution-free methods of power generation. As coal mines decline and international climate policies become stricter, investments in coal mining, thermal power stations, and other infrastructure face the risk of limited lifespan and reduced economic returns (Mugadziwa, 2024). This risk is further amplified by the increasing competitiveness of renewable energy sources, which accelerates the obsolescence of coal-based assets (Clark & Zhaung, 2022). In countries like South Africa, research has revealed that by 2030, the majority of coal infrastructure will be inactive. This happened when the goal of having a carbon-free nation had been achieved. Hence, investments in coal-related infrastructure will be stranded, with no revenue generated from coal activities (Stambo et al., 2024). Additionally, the financial repercussions of idle coal infrastructure could lead to economic instability, reduce coal mine investors'

confidence, diminish pension funds, and lower revenue for local municipalities that depend heavily on coal-related activities. This highlighted the importance of strategic planning regarding asset retirement while simultaneously investing in alternative long-term sustainable energy sources.

2.2.4.3 Economic displacement

Economic displacement represents a significant social and economic impact of the JET initiative, particularly affecting small businesses and informal traders in these regions relying on coal activities (Strambo et al., 2024). These businesses and individuals are susceptible to the downturn of the coal industry. In local governments like in Mpumalanga, they are economically linked to the wages of the local coal workers, which in turn supports the demands for the retail outlets, food vendors, transportation services and informal markets. As coal mines and thermal power plants stop operating, the resulting job losses lead to decreased household incomes and migration. This diminishes the consumer base for local businesses and hinders local economic activities (Tsukudu, 2024). This situation not only leads to the closure of companies but also reduces municipal income, creating a cycle of economic decline and inefficient service delivery. Research indicated that without simultaneous investments in economic diversification and assistance for small businesses (Chizungu & Wafer, 2024), coal-dependent communities can face a high risk of prolonged stagnation and heightened poverty. Therefore, it was crucial to deal with these displacements through focused entrepreneurship initiatives, local procurement in renewable energy practices and projects and social safety to ensure JET achieve the desired fair results.

2.2.4.4 Skills mismatch

Another significant economic impact of JET is the disparities in skills between workers in the coal mines and those demanded in the emerging green energy sector. Many employees involved in coal mining and thermal power generation possess specialised skills that are not easily transferable to renewable energy or any other industry of choice (Rempel & Gupta, 2021). This, as indicated by Tsukudu (2024), increases the risk of a more extended period of unemployment as people seek new skills to meet the needs of

other industries. Mugadziwa (2024) added that a smooth and fair transition should be put in place to ensure the risk of elevated unemployment is reduced. In South Africa, the coal industry sustains a significant portion of employment; thus, the skills mismatch threatens to worsen structural unemployment, especially in areas like Mpumalanga, where coal mining is the primary source of jobs (Tsukudu, 2024). Research indicates that renewable energy initiatives often require high levels of technical expertise, digital literacy, and engineering capabilities, which many coal workers may currently lack (Chizungu & Wafer, 2024). In the absence of focused retraining and upskilling programmes, the transition may exacerbate inequality and heighten poverty in communities that rely solely on coal. Consequently, comprehensive skills development initiatives, aligned with local labour demands and investments in renewable energy, are essential to ensure that displaced employees are not excluded from the new economic opportunities. Tsukudu (2024) supported that this was important to ensure there is a smooth and fair transition and that no employees are marginalised.

2.2.4.5 Economic diversification

Economic diversification represents one of the most significant economic impacts and opportunities arising from the JET initiatives, especially for communities that rely on coal mining (Clark & Zhaung, 2022). As the coal sector experiences a downturn, it is feasible to diversify into alternative industries to prevent economic stagnation and social deterioration. Researchers contend that coal-dependent communities must transition towards sectors like renewable energy, manufacturing, sustainable agriculture, tourism, and green infrastructure to foster more resilient and inclusive economies (Rempel & Gupta, 2021; Mugadziwa, 2024). In South Africa, the PCC (2022) emphasised that diversification strategies should not only focus on job creation but also aim to rectify spatial and historical inequalities by investing in community-owned businesses and local value chains. For instance, investments in renewable energy could invigorate secondary industries, such as component manufacturing and maintenance services, while land rehabilitation may open up new agricultural and eco-tourism opportunities (Strambo et al., 2024). The transition was not guaranteed without the support of regulatory policies and financial investments; coal-reliant communities may find it challenging to attract new

investors, create new industries, and combat a declining economy (Mojapelo, 2021). Consequently, diversification within the framework of JET should be intentionally and strategically supported by local policies to ensure affected individuals can adapt to change and benefit from it.

2.2.4.6 Reduced cost of energy

A significant long-term economic benefit of JET is the reduction in energy costs driven by the rapid expansion of renewable energy technologies (Tiwari et al., 2023). Over recent decades, global prices for solar and wind energy have plummeted, making renewables often the most affordable option for new power generation (Scott et al., 2020). This trend is expected to continue as technological advancements, economies of scale, and improved storage solutions further reduce costs. In South Africa, where electricity tariffs from Eskom's coal operations have increased due to ageing infrastructure, maintenance challenges, and environmental compliance costs, transitioning to renewable energy offers a way to stabilise and ultimately decrease energy prices for households and businesses (Winkler & Black, 2024). More affordable and reliable electricity enhances industry competition, attracts investments, and fosters economic development, especially in energy-intensive sectors. Furthermore, the transition can enhance macroeconomic stability by reducing volatile fossil fuel markets and lowering costs, including those related to health issues and environmental damage (Schafer et al., 2019). Reducing reliance on fluctuating fossil fuel markets helps protect the economy from global price volatility, boosting resilience. Swilling et al. (2022) noted that decentralised renewable systems, such as community-owned solar grids, can improve access to cheap energy in communities, promote fair access, and reduce power shortages. From an economic perspective, failure to adopt an effective transition strategy could leave the country isolated from global markets, which aim to impose carbon border taxes to incentivise the use of renewable energy resources (Montmasson-Clair, 2021). Therefore, although the initial costs of the transition are significant, its long-term benefits, namely decreasing renewable energy prices, offer a compelling economic rationale for intensifying South Africa's efforts towards decarbonisation.

2.2.4.7 Improved worker productivity

JET also has a significant impact on worker productivity. Imarhiagbe et al. (2024) alluded that JET can enhance worker productivity by fostering healthier environments and mitigating pollution-related health issues. In a similar vein, in communities reliant on coal, air pollution from coal-fired power plants has been associated with elevated rates of respiratory diseases, which adversely reduce the labour force and increase absenteeism (Naidoo et al., 2021). These health challenges not only decrease productivity but also impose considerable financial burdens on households, businesses, and the public health infrastructure. By gradually eliminating coal and investing in renewable energy sources, JET can reduce exposure to harmful pollutants, resulting in fewer sick leaves, increased efficiency, and improved economic performance (Badreddine & Cherif, 2024). Global evidence indicates that communities transitioning to cleaner energy sources witness tangible improvements in labour productivity and reduced healthcare costs (Ting & Byrne, 2020). For South Africa, productivity has already been affected by structural unemployment and health-related issues; these developments enhance competitiveness and promote inclusive growth (Swilling et al., 2016). Therefore, JET should be regarded as a public health and economic development initiative, capable of maintaining long-term productivity and sustainable energy production.

2.2.5 Challenges of JET Implementation in Mpumalanga

The focus of this section is to present and discuss the challenges faced by organisations during the implementation of JET in Mpumalanga.

2.2.5.1 Community resistance

During the implementation of the JET initiative, community resistance is a significant challenge that implementors face. This is especially in coal-dependent areas where coal mining activities are directly linked to the livelihoods of the local people (Smith et al., 2017). Numerous communities view JET as a direct threat to their economic stability due to the expected job losses, business closures and reduced service delivery that accompany the shutdown of coal mines and coal-powered plants (Swilling et al., 2016; Burton et al., 2018). This anxiety is intensified by a legacy of exclusion from decision-

making processes, where impacted workers and residents frequently feel marginalised in policy and planning discussions, resulting in a lack of trust towards both the government and the companies leading the transition (PCC, 2022). As highlighted by Swilling et al. (2020), without genuine community involvement, JET initiatives are likely to be perceived as imposed from the outside, which can lead to resistance, protests and even sabotage of renewable energy projects. Furthermore, communities are concerned that emerging green industries may not offer comparable job opportunities or fair benefits, which reinforces feelings of injustice (Sharno & Hiloidhari, 2024). To effectively address resistance, it was essential to engage in transparent communication, foster inclusive dialogue and implement participatory planning that empowers local voices to influence both the speed and benefits of the transition, thereby transforming resistance into a sense of ownership and support.

2.2.5.2 Uncertain policy environment

An unpredictable policy environment presents a significant challenge to the successful implementation of the JET initiatives in South Africa. Kumar (2024) alluded that it diminishes investor confidence and reduces the likelihood of achieving a carbon-free nation. Frequent changes in government policies, regulatory reforms, and inconsistent communication among stakeholders in the mining industry also perpetuate uncertainty regarding the timing and extent of coal mining closures (Winkler & Black, 2024). This lack of clarity discourages private sector investments in renewable energy initiatives and complicates long-term business planning and sustainability, also impacting municipalities that rely on coal revenues (Swilling et al., 2020). The Integrated Resource Plan has faced criticism due to inconsistency in establishing timelines for coal retirement, leaving communities and enterprises uncertain about the exact time when the transition is going to take place (PCC, 2022). Furthermore, the lack of clear, enforceable policies for social protection and reskilling creates uncertainty for workers about their future employment and lifestyle. It also intensifies anxiety and resistance to change (Burton et al., 2018). As noted by Zuk and Zuk (2022), addressing policy uncertainty through transparency, consistency, and participatory governance was essential for mobilisations of finances,

promoting trust and ensuring that JET has achieved its socio-economic and environmental goals.

2.2.5.3 High transition costs

Smith et al. (2017) alluded that high transition costs are the main challenge faced during the implementation of the JET initiatives. This implies that the shift from fossil fuels to renewable energy requires substantial initial investments in infrastructure, technology and workforce development (Piwowarska, 2023). The establishment of renewable energy systems, including solar, wind and green hydrogen, is not only capital-intensive but also improves grid modernisation, rehabilitation of the environment and development of storage facilities that guarantee reliability (Winkler & Black, 2024). In coal-dependent communities, these costs extend to financing social protection and reskilling programs for affected workers. This is important to prevent a continuous increase in unemployment and inequality (ILO, 2020; Burton et al., 2018). This challenge is intensified by fiscal constraints and competing development priorities of the local governments, which lack the financial capacity to fund the process (Mojapelo, 2021). Moreover, policy uncertainty and prolonged acquisition of international investors hinder the effectiveness of resource mobilisation to facilitate the transition (Winkler & Black, 2024). Consequently, high transition cost was a challenge that impeded the rate of implementing the JET.

2.2.5.4 Financial constraints

Additionally, financial constraints remain a major challenge highlighted by most scholars in implementing JET, especially in coal-dependent communities. Ting and Byrne (2020) stated that transitioning from fossil fuels to renewable energy requires effective financial planning and budgeting to ensure sufficient resources are available before the transition begins (World Bank, 2022). Expenses related to infrastructure development, environmental preparations, workforce training, and social protections should be established to support displaced workers (PCC, 2022). The JET process has been hampered by inadequate financial resources allocated by the government. Furthermore, Badreddine and Cherif (2024) noted that corruption has significantly impacted the effectiveness of JET initiatives. Political influence has also played a key role in criticising

the budgets allocated to JET, often aimed at gaining political support in these coal-reliant communities. The South African Government (2022) emphasised that a sustainable and adequate financing plan must be established for the successful implementation of JET in coal mining regions. Funding was identified as a critical element of successful JET in Mpumalanga (World Bank, 2022). Although South Africa has received international support for JET, it was essential to develop programmes that further improve the financial framework, prioritising transparency and accountability.

2.2.5.5 Maintaining public trust

Chizungu and Wafer (2024) have revealed that maintaining public trust is another challenge faced during the implementation of JET, as communities ask questions about the benefits that will follow after the transition. In South Africa, there have been instances of incomplete developmental commitments and service delivery, which have given rise to scepticism among community members regarding JET initiatives (Mojapelo, 2021). This distrust is further exacerbated when decision-making processes lack transparency and fail to incorporate the perspectives of workers, unions, and local communities, instilling the impression that JET is being imposed rather than collaboratively developed (Ting & Byrne, 2020). Hence, meaningful community engagement remains problematic. Communities affected by these changes often lack sufficient access to information and opportunities to participate in planning discussions, resulting in scepticism and diminished local investment in JET. Swilling et al. (2020) indicated that a failure to uphold trust can jeopardise the legitimacy of the JET policies, leading to resistance, social unrest, and delays in the implementation. Also, perceptions of unfair benefit distribution heighten fears that JET will bring inequality (Kumar, 2024). Establishing and maintaining trust necessitates participatory governance, transparent allocation of resources, and robust accountability mechanisms that showcase tangible improvements in livelihoods, ensuring that communities perceive the transition as equitable and inclusive.

2.2.5.6 Ensuring social protection

Ensuring social protection is a fundamental challenge in implementing the JET. Nel et al. (2023) alluded that in South Africa, communities reliant on coal face high levels of poverty

and unemployment. The closure of coal mines and power plants threatens thousands of jobs. However, current social protection systems such as unemployment insurance, pensions, and retraining programmes are limited in scope and capacity (Burton et al., 2018; ILO, 2015). Without adequate safety nets, affected workers risk falling into long-term unemployment, which worsens inequality and undermines the core principles of justice during the transition (Swilling et al., 2016). This issue is further complicated by the widespread use of informal and contract labour within the coal value chain, where workers often find themselves excluded from formal benefits and compensation systems. Moreover, municipalities dependent on coal revenues face challenges in funding local service delivery programmes (Mojapelo, 2021). Ting and Byrne (2020) highlight that without deliberate investments in reskilling, upskilling, income support, and social protection, JET can worsen socio-economic challenges in coal mining regions. It was vital to develop protection policies for workers and communities against the adverse effects of JET initiatives while promoting access to new opportunities within the emerging green industry.

2.2.6 Benefits of JET for Communities

The section presents the benefits associated with effective JET implementation for the communities.

2.2.6.1 Creation of sustainable jobs

One of the significant benefits of the diversion from coal to clean energy is the creation of sustainable employment opportunities for workers (Sharma et al., 2022). Renewable and clean energy sources include wind, solar and green hydrogen. According to ILO (2020), through effective implementation of the transition, the sector can create hundreds of thousands of jobs in areas such as construction, maintenance and manufacturing by offsetting job losses in coal-reliant communities. In addition, the transition brings skills development opportunities and educational initiatives to prepare employees for their new roles in the latest and advanced clean industry (Czako, 2022). Studies indicate that although job losses in the coal sector are unavoidable, renewable energy provides more sustainable employment opportunities if adequate investments and worker improvements

are implemented (Bond, 2018; Sharma et al., 2022). Also, JET was perceived as an opportunity to promote economic diversification in coal-dependent communities to engage in other sectors like agriculture, tourism and green infrastructure (Swilling et al., 2020).

2.2.6.2 Equity, inclusion and empowerment

JET offers avenues to tackle enduring social and economic challenges. By facilitating inclusive engagement in both planning and execution, the transition can empower youth, women, and historically marginalised groups to reap the benefits of green industries and participate in the decision-making process (ILO, 2015; PCC, 2022). Researchers contend that inclusive transition strategies promote social equity by redistributing opportunities and rectifying historical injustices linked to extraction industries like mining (Heffron & McCauley, 2018). Specifically, renewable energy initiatives owned by the community can have direct economic benefits and promote social unity while providing local individuals with a stake in the emerging economy.

2.2.6.3 Stability and economic growth

Montmasson-Clair (2021) alluded that these initiatives foster stability in economic growth for the communities. JET will also address the historical social and economic injustices in these coal-based communities with a focus on youth, women and informal workers in decision-making processes and inclusion in critical economic growth activities (PCC, 2022). This initiative improves social equity, as previous energy transitions have frequently exacerbated inequalities when affected communities were excluded from the emerging sectors (Czako, 2022). Inclusive participation helps to improve community ownership and promote sustainable transition policies (Heffron & McCauley, 2018). In addition, JET provide a framework for labour market transformation focusing on the development of new skills aligned with the latest green industry. The redistribution of new opportunities and ensuring equal access to the benefits of JET promote economic competitiveness and social cohesion in marginalised communities.

2.2.6.4 Environmental development

Another benefit of JET is the enhancement of environmental quality and resilience in communities affected by coal mining. Reducing coal use decreases air pollution, as well as soil and water contamination, enabling people to access safer and healthier living conditions (Mpandeli et al., 2018). Burton et al. (2018) noted that coal-dependent communities, for example, in Mpumalanga, suffer from air and water pollution, which leads to various disease outbreaks in the region. Sharno & Hiloidhari (2024) also pointed out that JET can decrease population levels in the province, thereby improving living standards and aiding environmental rehabilitation (Ansell, 2023). The rehabilitation of affected land opens up new opportunities for agriculture and tourism, contributing to economic diversification and ecological restoration. The transition to sustainable energy sources enhances community resilience to climate change and helps protect lives and infrastructure over the long term (Swilling et al., 2020).

2.2.6.5 Improve the quality of life

The shift away from coal offers significant public health benefits. Communities in coal-producing areas like Mpumalanga experience some of the highest global rates of illness related to air pollution (Krawchenko & Gordon, 2021). Reducing coal combustion and investing in clean energy sources, JET initiatives can decrease health costs and boost overall quality of life. Wright et al. (2023) indicated that these improvements lead to increased worker productivity, fewer sick leaves, and better well-being for households, resulting in social and economic advantages. Additionally, this will improve quality of life and create new opportunities for effective environmental management (Swilling et al., 2020). Marwaha et al. (2021) found that community-based energy production empowers individuals, reduces poverty, and provides stable incomes for households, companies, and municipalities.

2.2.6.6 Improve energy accessibility and affordability

Additionally, the transition from coal to renewable sources improves energy accessibility and affordability. Kabeyi and Olanrewaju (2022) alluded that the long-term benefit of JET to communities is the potential to lower energy costs by using renewable and accessible

sources. Wang et al. (2022) indicated that fluctuations in global market prices have heavily impacted coal energy. Sources like solar, wind, and water are not affected by changes in international markets, which makes them more affordable and suitable for use in both households and industries (IRENA, 2022). The rise in affordability helps reduce energy poverty, especially among low-income families. More affordable energy boosts the competitiveness of small businesses, giving them the opportunity to invest in growth and create jobs (Swilling et al., 2020). Additionally, reliable and cost-effective energy supplies provide long-term economic stability for communities (Krawchenko & Gordon, 2021). Therefore, JET not only addresses environmental issues but also enhances the financial resilience and social welfare of communities that rely on coal.

2.3 JET LEGISLATION AND POLICIES

There are several pieces of legislation and policy documents associated with JET in South Africa that have been developed to guide the country's transition towards a decarbonised economy. The primary legislation in the Just Transition Framework established by the President's Climate Commission (PCC, 2022), focuses on the principles, goals and organisational structure required for the effective execution of the JET. This is with the focus to ensure that no one person is left behind, particularly those workers and communities who rely on coal as a source of family livelihoods and jobs. Also, in 2022, the Just Energy Transition Investment Plan was established with an initial financial outlay of R1.5 trillion for a five-year investment strategy. This investment was targeting the development of energy infrastructure and employees' skills development (South African Government, 2022).

The National Development Plan 2030 highlighted sustainable development and climate resilience as essential goals for South Africa. It created an inclusive economy with greater employment opportunities to enable the transition to an economy that is decarbonised (National Planning Commission, 2012). In addition, the Integrated Resource Plan (IRP) in 2019 guided South Africa towards a renewable energy-powered electricity generation strategy, showing a significant move from coal-fired electricity plants (Department of Mineral Resources and Energy, 2019). This policy does not clearly outline JET's

approach; it only emphasises the key elements of energy industry planning to align itself with the primary mandate of JET.

The Climate Change Bill being considered by the Parliament is a significant measure focused on creating a binding legal framework for reducing carbon emissions and adapting to advanced climate technology (Willis, 2018). It includes the requirements for carbon budgets and industry-specific required levels of emissions. This necessitates the consideration and implementation of the JET. The legislation and other regulatory laws and policies provide a solid strategy to achieve better climate goals and promote social and economic equality.

2.4 THEORIES/ MODELS AND FRAMEWORKS

2.4.1 Stakeholder theory

Stakeholder theory functions as a framework within management and organisational studies that emphasises the importance of considering the interests and needs of all parties affected by a business or policy decision, rather than focusing solely on shareholders (Reitzenstein & Popp, 2022). The theory was developed by Edward Freeman in 1984, and it challenged the conventional shareholder-centric view of corporate responsibilities by asserting that organisations bear ethical and strategic responsibilities towards a diverse range of stakeholders, including employees, customers, suppliers, communities, governments, and the environment (Freeman, 1984). The core idea is that the long-term success of an organisation depends on creating value for all stakeholders, because neglecting any single group may lead to risks, conflicts, or a decline in legitimacy.

The JET, especially in coal-reliant areas like Mpumalanga, South Africa, is successfully contextualised by stakeholder theory, which views coal policies from a broader, holistic capitalistic angle. Freeman (1984) introduced the notion that the organisation and policy decisions ought to incorporate a myriad of stakeholders such as employees, residents, government agencies, energy corporations, eco-centric NGOs, civil organisations and global affiliates. All these stakeholders broadly focus on transitions that will provide new

employment, support communities to mitigate adverse climate effects and serve as funds for further economic initiatives.

Using stakeholder theory (Freeman, 1984) on JET highlights the importance of full participation and accountability of governance. Newell and Mulvaney (2013) find that energy transitions are more just and sustainable when the planning and policy execution actively incorporate a wide range of stakeholders, particularly those historically silenced. This is consistent with South Africa's JET framework, which seeks governance where affected people shape the transition and its results.

In addition, stakeholder theory (Freeman, 1984) explains the importance of trust, cooperation and shared value propositions concerning stakeholder buy-in, as in places like Mpumalanga, where scepticism exists towards change. After all, applying stakeholder theory in this case encourages a more socially responsible and democratic transition to energy for the particular region because it underlines that the primary goal of any venture must be the accommodation of the needs and the obligations, rather than mere economic efficiency or environmental concerns.

2.5 BEST PRACTICE/ INTERNATIONAL PRACTICE

For South Africa, particularly in coal-dependent areas like Mpumalanga, the best international practices for implementing a JET offer crucial insight. Structured and inclusive frameworks that strike a balance between environmental goals and socioeconomic stability have been established by nations like Germany and Canada (Reitzenstein & Popp, 2022). A cooperative approach to creating coal phase-out plans is demonstrated in Germany by the establishment of the Coal Commission, which consists of government representatives, trade unions, industry representatives, and civil society. This model successfully manages opposition and fosters agreement on difficult trade-offs by encouraging openness and stakeholder participation (Islam & Roy, 2023). As part of its strategy, Canada created the Task Force to enable the transition to clean energy for their coal industry workers and communities, by conducting consultations across all affected areas. Retraining social support and economic diversification were the main

topics of the Task Force recommendations, which emphasised the significance of specialised policy responses (Krawchenko & Gordon, 2022). Comparably, Spain's talks with coal unions produced a just transition agreement that included investments in green projects meant to revitalise impacted areas, early retirement benefits, and retraining programs. The need for long-lasting social safety nets, localised economic planning and significant public investment is highlighted by their cases (ILO, 2020). The Just Transition Mechanism of the European Union, which offers financial assistance to member states to promote the shift to sustainable economies while maintaining social cohesion, further demonstrates the importance of institutional and legal frameworks in promoting JET (European Commission, 2020). These international best practices indicate that inclusive future-ready economies are just as important to successful transitions as decarbonisation initiatives. Investigating skills development, encouraging inclusive governance and making sure workers and communities that are impacted by the transition receive fair compensation are all ways that South Africa can benefit from these lessons.

2.6 SUMMARY

The chapter's main aim was to present a snapshot of the discussion of the literature regarding JET initiatives in coal-dependent communities. The chapter presented the concept of JET, a debate on the implications of JET in Mpumalanga, the social impacts of JET and the economic impacts of JET. Furthermore, the chapter also discussed the challenges of JET implementation in Mpumalanga, and they were revealed as resistance from residents due to fear of losing jobs, livelihood degradation, lack of diversification and lack of governance and collaboration. In addition, the chapter presented the benefits of JET for communities and the legislation and policies that govern or guide the JET program. Lastly, the theoretical orientation of the study and best practices for JET were discussed briefly. The next chapter will present the research methodology to be used for gathering the data from the participants.

CHAPTER 3: RESEARCH QUESTIONS

3.1 AIM OF THE STUDY

The study was focused on exploring the socio-economic effects of the JET within South Africa's coal industry, particularly in the Mpumalanga province.

3.2 SCOPE OF THE STUDY

The study focused on the JET in Mpumalanga, a province central to South Africa's coal economy and significantly impacted by the shift towards cleaner energy sources. Mpumalanga was home to the majority of Eskom's fossil fuel generation plants and its coal-supplying mines, thus the importance of understanding the positives and negatives associated with JET. The region faces considerable socio-economic risks, including potential job losses, economic decline, and social disruption, due to its heavy dependence on coal for employment and local development. Despite these challenges, Mpumalanga served as a critical testing ground for national JET policies, providing insights into how transition efforts can be structured to ensure fairness, inclusivity, and long-term sustainability. The study added to both policy and academic discussions on implementing a just transition that safeguards vulnerable communities while advancing national climate objectives.

3.3 RESEARCH QUESTIONS

This study answered the following research questions;

1. How did the transition from coal to renewable energy impact employment in Mpumalanga?
2. How did the JET impact the livelihoods and living standards of coal workers and their families in Mpumalanga?
3. What were the challenges faced in implementing the JET in Mpumalanga?
4. How are stakeholders working together to reduce the negative impacts of the JET on coal-dependent workers and communities in Mpumalanga?

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter provided a comprehensive examination of the research methodology employed in this study. The investigation was centred on analysing the social and economic impacts of the JET within the coal industry, with a specific focus on the Mpumalanga province. Hence, the chapter outlined the qualitative research methodology that was used. The research approach, philosophy, methodological choice, design, strategy and the time horizon were outlined. Additionally, the population, unit of analysis, sampling method, and sample size were provided. Furthermore, the chapter focused on describing the data measuring instrument, data gathering process, data analysis approach and quality controls. Limitations, data storage and protection and ethical considerations were also described.

4.2 CHOICE OF RESEARCH METHODOLOGY AND DESIGN

4.2.1 Research Approach

According to Ellis and Hart (2023), the research approach refers to the overall plan utilised to answer specific research questions. It outlines the procedures that were used by the researcher in gathering the research data, analysis and interpretation of the findings (Mullisa, 2022). This study employed a qualitative research method to examine the socio-economic impacts of the JET in coal-dependent communities in Mpumalanga, focusing on the feelings, experiences, and behaviour of employees in coal-based mines (Nag & Ahmad-Malik, 2023). The main objective of this study was exploratory, aiming to understand new perspectives, insights, and concepts related to the social and economic impact of JET on employment within coal-dependent communities in South Africa. Thus, as indicated by Carter, Andersen, Stagg & Gaunt (2023), the use of a qualitative approach in this study was crucial to provide thoughts, feelings and experiences of different stakeholders in this study who helped to shape the effectiveness of transition.

4.2.2 Research Philosophy

According to De Oliveira (2023), research philosophy encompasses the set of beliefs, assumptions, and practice principles that guide the methodology employed in investigating a specific research problem. Aligned with the qualitative research approach was the interpretivist research philosophy. As highlighted by Ellis and Hart (2023), the interpretivist research philosophy provides the opportunity to gain new insights and perspectives regarding participants' lived experiences. The interpretivist research philosophy helped to reveal aspects of human behaviour regarding JET initiatives. Tamminen & Poucher (2020) also indicated that interpretivist philosophy provides the opportunity for a subjective interpretation of the situation and the study's findings. It also provided the researcher with the opportunity to be involved in the study (Saliya, 2023). Thus, participants had the chance to share their lived experiences and express their feelings about the problem under exploration. This philosophical stance of this study was also aligned with the view of Ellis and Hart (2023), who expressed interpretivism as the investigation of social phenomena within the real contexts, obtaining conclusions through interpretations and opinions of the participants involved.

4.2.3 Approach to Theory Development

As mentioned by DeVellis & Thorpe (2021), the inductive approach is usually applied when the research is dealing with complex issues or focusing on sensitive problems. The choice of inductive approach was rooted in the views of Saliya (2023), who indicated that this approach allows for the generalisation of the study's findings. The inductive exploratory approach allowed for the development of patterns and themes from the data set collected (Varpio et al., 2020). In this study on the impacts of JET in South Africa, the analysis of the data set was focused on identifying emerging patterns and themes regarding JET implementation and employment in Mpumalanga. Thus, the research was solely based on the views, thoughts and experiences of the participants.

4.2.4 Methodological Choice

The methodological choice adopted in this study was mono-research. This concept of mono-method refers to the strategy in research that is solely based on a single research method or methodology (Olawale et al., 2023). Thus, the research can only use one

specific method, either qualitative or quantitative research, for the collection and analysis of data. In this case of using a single process, qualitative research was necessitated by the need to simplify the research design, data collection tool and analysis, as well as the interpretation of the findings. While some scholars supported the advantages of using multiple or mixed methods, a preference persists among some researchers for mono-method approaches, especially those that are qualitative (Wohlin & Runeson, 2021). Using a mono-methodological choice in this study was justifiable because the study was done over a limited period of time. However, using the mixed methods would have resulted in failing to finish this research. Thus, in this case, the qualitative methodology was utilised; it was more time efficient, cheaper and did not require significant resources. This was advantageous to the mixed methods as it would have required the collection of two sets of data: qualitative and quantitative.

4.2.5 Purpose of Research Design

According to Olawale et al. (2023), research design is defined as a plan detailing how to answer research questions. The research design aims to establish a systematic framework that guides the study to address the research problem effectively. It describes the methodologies, processes and strategies for gathering and evaluating data, thereby guaranteeing that the research is organised, dependable and credible. An effective research design reduces bias, improves precision and ensures that the results can be utilised to formulate significant conclusions and meet the objectives of the study. The research employed an exploratory design. Cronje (2020) emphasised that an exploratory research design enabled a thorough examination of participants' perspectives on JET implementations and their economic and social impacts on community-dependent regions.

4.2.6 Research Strategy

A research strategy defines the key components of a research project, including the focus and area of the research topic, the perspective adopted, the research design, and the methods used. The study employed a case study research strategy, concentrating on coal-dependent communities such as Mpumalanga. Lavarda & Bellucci (2022) noted that

this approach enables in-depth exploration of the economic and social challenges faced by these communities. The study specifically examined Mpumalanga, where the impacts of JET are evident. Using a case study approach, the study gained valuable insights into the lived experiences of the participants (Potokri, 2023). The researcher was able to evaluate the social and economic effects of JET implementation in Mpumalanga. The case study was essential when focusing on a single research area or issue, providing a detailed understanding of the lived experiences within the real-world context (Mullisa, 2022).

4.2.7 Time horizon

This refers to the frame of time that will be taken to conduct the research (O'Mahony, 2021). In this study, the cross-sectional time horizon was used. In the research context, a cross-sectional time frame refers to the use of cross-sectional data in assessing and interpreting problems occurring at a distinct point in time (Pokori, 2023). To obtain interventions regarding the population, it is essential to examine the sample of participants or themes at a specific point in time. (O'Mahony, 2021). The importance of cross-sectional authenticity in maintaining the integrity of time series data within its cross-sectional examination. The collected data for this study were acceptable as of 2025. The time horizon aligned with the exploratory design of this study, as the intention was to explore the socio-economic effects of the JET within South Africa's coal industry. The aim of this was to obtain a comprehensive understanding of the problem being studied at a certain point in time and provide recommendations to deal with the surrounding issues. The cross-sectional time horizon is justified for this study since the researcher intended to collect data from participants on a one-off basis rather than having multiple visits in the future. Because of the financial constraints and limited timeframe required for this study, a cross-sectional approach is sufficient for the study. It is a cost-effective and straightforward way to address the research questions, providing a way for future longitudinal studies.

4.2.8 Techniques and procedures

The researcher identified the problem, and it was defined. The research questions were developed. The choice of methodological approach and the data collection technique was selected and motivated. The researcher gathered data through interviews, which were then analysed using thematic analysis software. The results were interpreted and analysed. Finally, the research report was compiled (Islam & Roy, 2023).

4.3 SAMPLING STRATEGY

4.3.1 Population

According to De Oliveira (2023), the target population refers to the group or subgroup of a population that the study is exploring. In this study, the target population involved individuals from coal-dependent communities in Mpumalanga who are affected and have an interest in JET initiatives. These groups included mining companies, the community and unions. These groups of individuals were involved and affected by the implementation of the JET. These people were well vested in the JET initiatives; they have experienced both the implementation as part of the mining companies and the consequences as societal members. Suitability for this research was drawn using the demographics part, which requires the participants to indicate whether they represent the company, community or the union. Questions focused on exploring the understanding, perceptions and feelings of the participants regarding the JET initiatives were also suitable for the study.

4.3.2 Unit of analysis

The unit of analysis included individuals from coal-dependent communities in Mpumalanga who are affected and have an interest in JET initiatives, and thus, a mining company, the community representatives, and a union representative were included in the study. Gathering data from these groups of people helped the study to understand its objective on the impacts of JET in the South African context, with a special focus on employment, hence also involving the union's view in this study.

4.3.3 Sampling method and size

Given the study's nature, purposive sampling was used. This technique falls under the non-probability sampling method. Douglas (2022) explained that non-probability sampling uses the researchers' judgment to select participants in the study. Thus, Mbanaso et al. (2023) alluded that purposive sampling involves the researcher using subjective judgment and choosing participants who have the right and required knowledge about the research objectives. All participants in the selected groups do not have an equal opportunity to be included in the survey (Cronje, 2020). Therefore, in this study, only participants who have direct experience in JET were included. Additionally, using the purposive sampling technique in this study is to ensure that the right participants with direct experience in JET are interviewed. This provides the study with detailed and real-world lived experience and the status of the socio-economic impact of JET in Mpumalanga. Thus, in this study, participants were not randomly chosen; instead, the researcher used a meticulous method based on their significant contributions to the study, particularly with their involvement in JET initiatives. The researcher gave careful consideration to ensure that the selected participants provided critical insights, given their roles in the coal mining industry, to ensure effective implementation of JET and fairness in the treatment of employees, as well as corporate social responsibility.

A detailed explanation and description of first-hand information regarding the effects of JET in coal-dependent communities is provided from different levels of involvement in the development of JET policies. The sample size of this qualitative research was flexible. The sample size was determined by saturation. Hennink and Kaiser (2022) expressed saturation as the moment when further data collection regarding a theoretical construct ceases to provide new information. Thus, at this stage, all themes and patterns are thoroughly explored, and enough supporting evidence has been gathered. One of the techniques to determine saturation is code frequency across all transcripts until now; a new code is emerging, which means saturation level has been achieved. In this study, code frequency was used to determine saturation. Thus, the sample size was eleven participants, including the representatives from a mining company, the community in Mpumalanga and a Trade Union, as alluded to by Braun and Clarke (2021), who argues

that saturation is usually achieved within the first twelve interviews in a more focused scope and homogenous population. Also, Hennink and Kaiser (2022) supported the notion that saturation depends on the depth and richness of the codes. Based on this, saturation was achieved with participant eleven; hence, the sample used in this study was eleven participants. The following table summarises the composition of the sample.

Table 1: Sample composition of the study

Mining Company	Community	Unions
4 Managers involved in JET	3 Ex-Mine employees	1 Trade Union Representative
	3 Local Community members	

Source: Researcher's Work (2025)

4.3.3.1 Access to Participants

The researcher is part of the professional network of the targeted respondents through advocacy work in the mining industry. This includes established access to the Chief Operating Officer (COO) of a coal mining company's employees, union representatives, and community councillors in Mpumalanga. The COO agreed and facilitated access to the organisation to conduct the interviews. The researcher contacted the participants from the organisation and informed employees about the research, securing their consent and confirming their willingness to participate. Permission was granted from the trade union, and the researcher also received contact information for the potential employees and informed them about the research, securing their consent and willingness.

In addition, through the office's ongoing community engagement work in Mpumalanga, the researcher has access to local councillors. The councillors helped in providing access to the researcher to conduct interviews with the selected community members. The researcher first obtained signed consent from community members to share their contact information. This process ensured full compliance with the Protection of Personal Information Act (POPIA) by securing voluntary, informed consent before any personal

data was shared. All participants were approached only after the company sign-off and individual consent were confirmed.

4.4 MEASUREMENT INSTRUMENT

Ji and Singh (2023), a measurement instrument is the tool used by the researcher to gather in-depth, descriptive data about the populations' perceptions, feelings, meanings and experiences. Tools such as interview guides, focus groups, and observations are commonly used. They capture detailed data, aligned to the real settings of the research, and they are subject to each participant's lived experience and perceptions. Thus, interviews were used to collect data in this study. Mbanaso et al. (2023) highlighted that those interviews provide detailed data, capturing the verbatim sentiments from the participants regarding their feelings, thoughts and experiences. Interviews were regarded as the most suitable data collection method for this study through their flexibility, providing the opportunity to get detailed responses on research questions (Rafanell et al., 2020). The study used semi-structured interviews. This method is best suited for qualitative research that seeks to obtain detailed information on a specific problem under exploration (Saliya, 2023). The research questions were used to guide the conversation between the researcher and the participants. These questions were used as the frame for the interactions and guided the direction and aim of data collection. Semi-structured interviews were flexible and gathered detailed data (Ji & Singh, 2023).

To develop the questions used in the interview guide, the researcher reviewed the literature discussed in Chapter 2. Key constructs of the study were discussed in detail, and the gaps were identified. The focus of the study was to close the gaps found in prior research; hence, questions were drafted to address the gaps. The interview guide was structured in a manner that ensures all the research objectives are achieved. The presentation of the findings from the gathered data clearly points to which research objective the theme or sub-themes address. See Appendix A for the interview guide. Questions were posed in English as the Business Language of South Africa. Seventeen questions were posed. The questions were used to probe further into the themes. The interview guide consisted predominantly of open-ended questions.

4.5 DATA GATHERING PROCESS

The data collection for this study took a two-fold approach; firstly, the pilot study was done to test the suitability of the measurement instrument and to improve all the recommendations from the participants. Secondly, the main data collection was done to provide the actual data analysed and presented in this study.

4.5.1 Pilot test

A test of the measurement instrument was done on a small sample of three participants from each category involved in this study, thus, the mining company, the union and the community. The purpose of conducting the pilot study was to ensure clarity of the questions, how feasible they were, the suitability of the data collection method, and to identify the potential challenges or any other ethical concerns that may arise in the study (Shakir, 2022). A draft of the questionnaire was done, with open-ended questions. A sample of three participants was purposively selected, following the same procedures outlined for the main study. This helped to establish the duration of the interview as attention was given to effective time management. A pilot study was conducted on 20, 21 and 22 August 2025. A preliminary analysis was done to verify if the collected data was meaningful. All questions on the interview guide managed to capture meaningful information aligned with the research objectives. Therefore, there were no modifications made to the measurement instrument; it was used for the main study as it was in the beginning. The findings from the pilot study provided the researcher with a green light to continue to the primary data collection phase.

4.5.2 Primary data collection

After the pilot study, the researcher engaged in the main research data collection. Consent was obtained from the mining company and the Trade Union. Community members were provided consent on the day of the interview, before the interviews were conducted. Those mentioned above were attached to this dissertation as follows;

See Appendix B: Company consent

See Appendix C: Union consent

See Appendix D: Consent letter for community participants

The informed consent explains the nature, purpose and objective of the study, emphasising the anonymity and confidentiality of collected data. Participants were told that participation was voluntary, and they could withdraw at any time. Written consent was obtained from all participants in the study. Since the participants were selected purposively, the chosen participants were under no obligation to consent if they felt uncomfortable taking part in the survey.

The researcher carried out the interviews through face-to-face and in some instances, Microsoft Teams when the participant was not physically accessible, utilising video conferencing. Audio recordings were taken during interviews, with the consent of the participants, to guarantee precise data collection. Important phrases were recorded manually using a pen-and-paper method. These recordings were managed with utmost confidentiality and anonymity.

Face-to-face interviews were most suited for this study as they provided the researcher with a high rate of responses. It also facilitated the collection of rich data and trustworthiness (Schober, 2018). The researcher was also able to identify non-verbal cues during the interviews that also indicate the feelings and emotions, as well as misunderstandings of the subject by participants. Nonverbal gestures also helped in determining whether the participants were comfortable with the questions asked or whether they would probe further to gather additional information (Hawkins, 2018). Face-to-face also helped the researcher to track the speed of the interviews. Twelve interviews were conducted from the 10th of September to the 09th of October 2025.

The interviews were carried out at different locations, which involved the mining company, the community halls and the unions' offices. The researcher did not propose these venues; the more convenient and comfortable venue was selected by the participants. Measures to protect participants will be established. The researcher was personally at the venues, collecting data directly from the participants. There was no third party involved. The reason was to ensure that the researcher was fully immersed in the collected data and had a clear understanding and flow of the conversations.

Also, the data collection instrument will be created, consisting of questions that are universal, not sensitive, and they will be semi-structured. Each interview will be scheduled for no more than one hour.

4.6 DATA ANALYSIS APPROACH

The researcher recorded the responses from the interviews, which were securely stored on a password-protected computer to ensure confidentiality. To guarantee the effectiveness and accuracy of the findings, Atlas.ti was utilised, assisting the researcher in identifying key patterns in the collected data. This also helped establish the saturation point of data collection. Thematic analysis was conducted to enable the emergence of themes from the participants' different insights. Thematic analysis was employed to explore the collected data effectively and thoroughly, uncovering themes, patterns, and supporting scripts aligned with the topic. Therefore, the thematic analysis process was essential to this study in understanding the complex dynamics of the effects of JET in the context of employment in Mpumalanga. The focus of thematic analysis goes beyond merely summarising the data; it aims to identify and interpret key characteristics relevant to the research. Not all scripts were captured in this study. The researcher aimed to provide a thorough and high-quality analysis through establishing assurance measures in the thematic analysis.

The researcher followed the steps established by Braun and Clarke (2024), highlighting six stages of thematic analysis that were utilised in this study to ensure an effective data analysis process.

Familiarisation – at the first stage, the researcher focuses on understanding the collected data. This was done through reading and reading, reviewing and assessing the data. The keywords and phrases will be identified.

Generating codes – the researcher categorised the identified keywords and phrases in the familiarisation stage into codes. The researcher made use of the Atlas.ti software to code the words and phrases.

Identifying themes – this phase focused on examining the identified codes and putting them into categories to establish patterns and themes. These themes were categorised according to the research objectives of the study.

Reviewing themes – at this stage in the analysis of the study, the identified patterns and themes were examined. The researcher established their alignment with the identified codes as well as the research objectives. The support data was established during this stage. The study ensured that themes capture all the critical aspects of the collected data.

Defining and naming themes – the themes were assigned names. The assigned names should cover all the codes in a specific category. The main themes and subthemes were named accordingly, where applicable.

Interpret themes – The researcher created a report showing how the themes address the research objectives and fill the literature gap, using verbatim for support.

The researcher analysed the script of the participants separately. The process was continuously repeated, whereby the researcher read the transcripts and listened to the recordings multiple times so that the coding, grouping of categories and the subsequent development of themes were in sync. Repeating ensured that the researcher gained a complete understanding of the data and the meanings emanating from it.

4.7 QUALITY CONTROLS

This study implemented quality control measures to ensure the reliability and credibility of the qualitative findings. The researcher was involved throughout the study, which introduced potential bias. To reduce the researcher's bias and improve the quality of data, the researcher engaged in reflective practices regarding the collection and analysis of data to establish awareness of the prejudice and the effects it has on the findings. To effectively uphold the quality of data, the following quality control criteria were implemented.

Credibility refers to the consistency between the responses given by participants and the interpretation made by the researcher (Haq et al., 2023). In order to establish credibility, the researcher did a peer review process. This review focused on establishing the suitability of the qualitative methods used. It also focused on examining the transparency

of the techniques used, such as the sampling method, data collection tools, and the ethical issues, considering possible bias. Additionally, to ensure credibility, the researcher will interview multiple sources to support the conclusions.

Dependability pertains to the degree to which readers or other researchers can systematically and accurately track a study (Cohen et al., 2017). The research process must undergo auditing. To ensure dependability, the researcher conducted an audit trail. A detailed record of all collected data and analysis procedures was kept, along with semi-structured interviews to maintain uniformity across participants.

Confirmability pertains to the extent to which research findings truly reflect the views of the participants, not the assumptions and thoughts of the researcher (Haq et al., 2023). To ensure confirmability, the researcher kept a reflective journal, which included the record of the researcher's developing insights and all the activities done during the research process. All the choices made regarding the methodological aspects were justified, which helps the audience and other researchers to understand the stance of the researcher and the bias exerted on the findings.

Transferability pertains to the degree to which the findings of the study are applicable to different settings and contexts (Weise et al., 2020). In this current study, transferability was ensured by offering a detailed description of the data collection settings, the background of the participants, and the context in which the research was conducted. The researcher used verbatim or quotes as a way to guarantee that the opinions, views and perspectives presented in the study are based on the participants, not the researcher.

4.8 DATA STORAGE

Data storage encompasses the collection and maintenance of information, with a significant emphasis on data protection as outlined by Saunders et al. (2016). This involved adhering to legal frameworks and agreements aimed at safeguarding personal data. In the study, data were collected through a series of interview questions, with responses organised into digital folders. The notes were converted into PDF format, and security measures, including strong passwords, were implemented to protect the data. Physical data was stored in a lockable facility, and access was limited to the researcher only. Electronic files were securely stored on a compact USB device and Google Drive,

which was also protected by robust passwords. Access to the research data was strictly limited to the researcher, ensuring that no unauthorised individuals could access the data. Physical documents and any related evidence were scheduled for disposal after a ten-year retention period.

4.9 ETHICAL CONSIDERATIONS

Ethical clearance was obtained through the GIBS Ethics Committee. In all research, ethical issues should be identified and addressed. In this study, firstly, informed consent was obtained from the participants to determine their consent to participate in this study. All relevant information regarding the study was provided, and all questions from the participants were answered before consent to participate. Participants were made aware that participation was voluntary, and they could withdraw at any time during the research.

Vulnerable groups, like senior citizens, children and youth, were not included in this study. Only four managers involved in JET from the mining company, three ex-mine employees, one trade union representative and three members from the community were interviewed.

Anonymity and confidentiality were also ensured through the use of pseudonyms to represent the identity of the participants. No personal information was collected and published in this report. The collected data was protected through passwords. Overall, the required permission letters were obtained. All letters were received before the commencement of the data collection process.

4.10 LIMITATIONS

The qualitative approach used in this study was one of the limitations identified in this study. This approach did not allow the findings from this study to be generalised to other provinces or organisations in a similar environment because they were based on participants' specific feelings, thoughts and lived experiences. The participants in this study were purposively chosen to represent the entire population in Mpumalanga. Also, the sample size used in this study was small. However, the study was focused on providing a thick description of the findings, the research processes involved, and the

tools and techniques adopted to enhance adaptability and applicability to another environment outside Mpumalanga.

4.11 CONCLUSION

The focus of the chapter was to outline the research methodology that was used in this study on the socio-economic impact of JET in South African coal-dependent communities such as Mpumalanga. The chapter described the key aspects of the qualitative research methodology adopted for this study. The interpretivism research philosophy was explained, the theory development approach was outlined, and the methodological choice was identified. The exploratory research design, the case study research strategy adopted, was described; the time horizon, techniques and products were outlined as well. Furthermore, the non-probability sampling strategy adopted for the study was outlined, including the population, unit of analysis, and sample size. The data collection instrument was selected and justified for this study, and the thematic analysis process to be used was explained in detail. Quality control measures, data storage strategies, ethical considerations and limitations of the study were outlined. The following chapter focused on presenting the findings of the study.

CHAPTER 5: ANALYSIS AND RESULTS

5.1 INTRODUCTION

This chapter presented and interpreted the insights from the data collected during interviews with 12 participants, including four managers involved in JET, three former mining employees, one trade union representative, and three community members. The researcher used thematic analysis with the Atlas.ti software to analyse the data. Therefore, this chapter provided a concise presentation of the findings to address the four research questions outlined in Chapter 3. It focused on exploring the socio-economic effects of the JET within South Africa's coal industry, particularly in the Mpumalanga province. The research questions aimed to understand the impact of renewable energy on employment, livelihoods, and living standards; the challenges faced in JET implementation in Mpumalanga; and how stakeholders can effectively collaborate to mitigate the negative impacts of JET on coal-dependent workers and communities. The key themes discussed in this chapter include: (1) job losses and employment risks, (2) impacts on livelihoods and living standards, (3) challenges in implementing JET, and (4) stakeholder collaboration.

5.2 PARTICIPANTS OF THE STUDY

The sample size for this study was 12 participants. The study used purposive sampling to select the most suitable individuals within each category. The aim was to involve those who were engaged with and experienced in the JET. The group included managers involved in JET, three former mining employees, one trade union representative, and three community members. Pseudonyms such as Participant 1, Participant 2, and so on, were used to identify participants, in line with ethical considerations of anonymity and confidentiality. Table 5.1 below presents the demographic characteristics of the participants, including gender, age, categories, and qualifications.

Table 2: Summary of participants' characteristics

Participant Code	Gender	Age	Category	Qualifications
Participant 1	Male	40-45	Union	Matric

Participant 2	Male	56-60	Union	Masters
Participant 3	Male	46-49	Community member	Masters
Participant 4	Female	50-54	Community member	Masters
Participant 5	Male	46-49	Ex-employee	Honours
Participant 6	Female	36-40	Manager	Bachelors
Participant 7	Female	46-49	Manager	Bachelors
Participant 8	Female	50-54	Manager	Bachelors
Participant 9	Male	40-44	Community member	Bachelors
Participant 10	Male	46-50	Ex-employee	Bachelors
Participant 11	Male	56-60	Ex-employee	Masters
Participant 12	Male	36-40	Manager	Bachelors

The demographic profile of the participants in this study highlights a diverse range of stakeholders involved in and impacted by the JET within the coal mining industry, especially in Mpumalanga. The sample included 12 participants, such as union representatives, community members, former employees, and managers of the mining company. This provided a comprehensive view of both the social and organisational aspects of the JET. Regarding gender distribution, seven participants were male and five were female, reflecting a male dominance typical of the coal mining industry. However, the presence of female managers and community members is crucial and offers valuable insights into gender-specific experiences and the important role of women in managing the socio-economic changes linked to JET. The age range of participants (36 to 60 years) indicates a mature group with significant work and life experience, thus strengthening the credibility of this study by capturing informed perspectives on employment transition, community impacts, and leadership challenges. The varied educational backgrounds, from matric to master's degrees, further enhanced the quality of data collected. This reflected the different levels of technical, managerial, and experiential knowledge relevant to the transition process. Including a range of voices and perceptions from union representatives and former employees provided strong insights into labour insecurity and job displacement. Meanwhile, managerial and community members contributed

perspectives on organisational adaptability, community engagement, and environmental sustainability.

5.3 THEMES IDENTIFIED

Thematic analysis was conducted using Atlas.ti, leading to the identification of four main themes. First, the researcher repeatedly reviewed the completed interview guide and listened to recordings of the interviewees to ensure a comprehensive understanding of the data. Next, standard terms, phrases, and points were coded. These codes were then grouped into categories to form themes, which were named and reviewed to ensure they aligned with the research questions and accurately reflected the collected data.

The first theme identified relates to job losses and employment risks. Participants highlighted a thorough understanding of JET's impact on job risks, driven by the closure of coal mines and power plants, which increased unemployment, social insecurity, and economic vulnerability. The second theme concerns the influence of JET on livelihoods and living standards. This theme addresses how the closure of coal-dependent economies affects local businesses, household incomes, and access to essential services, thereby increasing poverty and inequality in already hardship-affected communities. The third theme covers challenges faced in implementing JET. It focused on organisational, financial, and governance issues, such as inadequate policies, lack of social protection measures, and community resistance. The final theme emphasised stakeholder collaboration. It highlights the importance of inclusivity among government, labour unions, corporations, and communities to ensure an effective JET process.

These four identified themes illustrate the interconnectedness of social, economic, and organisational factors influencing JET's effectiveness in South Africa, offering a detailed understanding of the opportunities and challenges necessary for fostering equitable and sustainable development.

5.4 THEME 1: JOB LOSSES AND EMPLOYMENT RISKS

A central theme across interviews was the fear of job losses. Participants repeatedly emphasised that the coal industry supports numerous direct and indirect jobs in Mpumalanga. At the same time, renewable energy projects tend to provide only short-term construction roles and fewer highly skilled operational positions. Older employees were seen as particularly vulnerable, as they might find it challenging to transition into new technological roles. Participants also observed that the loss of coal wages will affect local businesses and municipal revenues, worsening socio-economic conditions. While some mentioned national policies aimed at skills development, they argued that implementation remains slow and inconsistent. Table 5.1 below presents a summary of theme one, illustrating the participants' quotes and the key findings from the collected data.

Table 3: Job losses and employment risks

Sub-theme	Participant quote	Key findings
Job loss	Participant 1: <i>“If we close the coal mines, it will be a disaster. Eskom and the community depend on coal. Mpumalanga will become a ghost province, as everyone will be unemployed.”</i> Participant 4: <i>“An operator will not be able to continue working if we transition into renewable energy, and these skills will have to be replaced by other jobs, making reskilling essential for the future.”</i> Participant 5: <i>“Closing the mines and power stations will result in significant job losses in both the mining sector and</i>	The key findings indicate that participants are concerned that the shift from coal to renewable energy will result in job losses in communities around Mpumalanga. This is because the renewable energy sector is unable to accommodate workers displaced from the coal industry completely. Furthermore, they highlighted the need for reskilling, upskilling and improving the involvement

	<i>energy generation. Renewable energy will not be able to create all these jobs.”</i> Participant 7: <i>“There are still more jobs on the coal side. While coal will eventually be reduced, more jobs are expected to be created through renewables.”</i> Participant 9: <i>“There will be job losses when coal mines and power generation facilities close or cut back on their work.”</i> Participant 11: <i>“They are not engaging people on the policies they are creating and showing people how the JET will be implemented to remove the fear of job losses.”</i>	of the government to alleviate employment anxieties and facilitate a fair transition.
Employment risks	Participant 1: <i>“Currently, the government is not aware of the impact because they did not do adequate research, and this will have socio-economic consequences.”</i> Participant 3: <i>“Only a few jobs will be retained through retraining, but more than 90% of jobs will be lost.”</i> Participant 5: <i>“Currently, the government is advancing strategies that ultimately destroy jobs, and this will have political consequences, as job losses will also affect elections.”</i>	The key findings indicated that participants view government policies as insufficient and ineffectively implemented, with inadequate research and poor strategies to deal with employment risks. Participants are of the opinion that significant job losses are unavoidable, as the renewable energy sector is unable to create jobs for

	Participant 6: <i>“Renewable energy will not be able to absorb all the jobs currently created by coal.”</i> Participant 10: <i>“This lack of enforcement will create challenges.”</i> Participant 12: <i>“Government policies deal with employment risks mainly through auditing, guidelines from the DMRE direct miners on what to do. However, the targets set by the government are too low, while CEOs set higher internal targets.”</i>	the displaced employees from the coal industry.
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5.4.1 Findings for Theme 1

5.4.1.1 Sub-theme 1: Job losses

The results revealed that participants are significantly concerned about the potential job losses resulting from the shift from coal to renewable energy in Mpumalanga. Several participants emphasised the province's and communities' heavy reliance on coal mining, with many closed mines likely to turn into ghost towns due to widespread unemployment. Participants pointed out that the current skills of workers in coal mining and energy production may not easily transfer to the renewable energy sector, making reskilling and upskilling essential for future job prospects. Although some participants recognised that renewable energy might generate new employment opportunities, the consensus was that these jobs are unlikely to replace those lost in coal-dependent industries entirely. Moreover, participants expressed concerns about inadequate government involvement and communication regarding JET policies, suggesting that improved consultation and policy implementation could reduce fears and uncertainties about job security. The findings underscored the need for targeted workforce development programmes and increased government engagement to ensure a fair transition.

5.4.1.2 Sub-theme 2: Employment risks

The results suggest that participants view government policies related to JET as inadequate and poorly implemented. They contend that the government has not carried out sufficient research to grasp the full socio-economic impacts of the transition, leading to ineffective strategies for managing employment risks. Several participants voiced concerns about the vulnerability of existing policies and enforcement mechanisms, which provide limited practical measures to safeguard jobs or ensure accountability. Participants also stressed that the shift to renewable energy will lead to considerable job losses, as the sector cannot accommodate all workers currently involved in coal mining and power generation. Some noted that, although retraining a small proportion of workers might be possible, the majority will face displacement. Additionally, there is a widespread belief that significant political considerations influence current government policies, as extensive job losses could undermine public trust and influence electoral outcomes.

5.5 THEME 2: IMPACTS ON LIVELIHOODS AND LIVING STANDARDS

The second theme concerns livelihoods and living standards. Participants highlighted economic dependence and livelihood insecurity, as well as a lack of awareness and education on JET, skills development, and technological readiness. They also emphasised the need for organisational and stakeholder support. The participants pointed out that entire families rely on coal wages, with one salary often supporting multiple dependents. The expected decline in coal threatens food security, housing stability, and access to education and healthcare. Small businesses and service providers dependent on the coal economy are also at risk. A minority of participants recognised potential entrepreneurial opportunities in renewable industries. However, these were seen as limited in scale and generally accessible only to those with higher education or resources for skills. The following Table 5.2 illustrates the subthemes, participants' quotes, and key findings.

Table 4: Impacts on livelihoods and living standards

Sub themes	Participant quote	Key findings
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Economic dependence and livelihood insecurity	Participant 3: <i>“In South Africa, there are about 90,000 coal workers, but we know that around 500,000 people depend directly on coal mining... On average, one employed person supports about five others, which means several people will lose their breadwinners.”</i> Participant 5: <i>“These families often depend on a single breadwinner who may have up to eight mouths to feed. If jobs are lost, this will translate into widespread poverty for these families, and mining towns will face much higher unemployment rates.”</i> Participant 6: <i>“For every worker who loses their job, about six additional people will also be impacted. Shop owners, salon owners, and taxi drivers will have fewer customers, creating a ripple effect across the community.”</i> Participant 8: <i>“Our families will be negatively affected. Many people work for the coal mines and power stations, and other employers, such as the government and other industries, will not be able to absorb all the employees who lose their jobs.”</i> Participant 9: <i>“JET directly undermines the economic stability of coal miners and coal power stations and their families by taking away jobs, lowering household incomes,</i>	The key findings from the interviews revealed that JET has a severe impact on the economic stability and livelihoods of families and communities that depend on coal mining. A significant number of families and businesses depend on coal mining workers. The findings also indicate that the loss of mining workers’ jobs will have a substantial impact on society and give rise to poverty. The rapid shift will also cause a rise in unemployment in Mpumalanga and diminish municipal service provision. Most of the participants viewed JET as a destabilising initiative that does not focus on protecting and improving livelihoods
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	<i>and making it harder to get services that were once supported by the coal economy.”</i> Participant 10: <i>“It negatively impacts livelihoods, as coal mines and power stations employ the majority of residents.</i>	and community well-being.
Lack of awareness and education on JET	Participant 1: <i>“I have not seen any training, education, or awareness initiatives. People are depending on mining.”</i> Participant 3: <i>“No, because the general worker at Eskom or in coal mines does not receive this information... There should be someone at lower levels who can explain the JET to inform people directly on the ground.”</i> Participant 4: <i>“Communities must be educated on the possibilities for future work and guided through training programmes.”</i> Participant 6: <i>“Many people still believe that coal mining will remain for a longer period.”</i> Participant 8: <i>“We have not received any awareness, education, or training on the Just Energy Transition (JET). We have only heard about it on the radio and television, but we do not have complete information about what it entails.”</i> Participant 10: <i>No, I am not aware of any such training or education programmes for workers or communities. Some television programmes share information on the JET,</i>	The key findings indicate that the majority of the community members and workers lack awareness and education about the JET. The majority expressed that they have not received any information or communication regarding the JET initiatives, and only see it in media sources. They emphasised the importance of clear communication and effective training programmes to educate people about the key opportunities of JET. Only a few participants indicated regular community

	<i>but these are not sufficient to adequately inform communities.”</i> Participant 11: <i>“Our company has community consultative forums that meet monthly, where they inform communities on what they are doing with regard to the Just Energy Transition.</i>	forums; however, efforts are inconsistent.
Skills development and technological readiness	Participant 2: <i>“We have to look beyond the green economy... we have not tapped into other industries like the wild game economy, which was worth R600 million.”</i> Participant 4: <i>“We also need initiatives to train school children in opportunities within the renewable energy industry, ensuring that the mindset of the younger generation is shaped around the new skills.”</i> Participant 7: <i>“The key activities should be aligned so that coal-skilled employees can be retrained with the skills required at the renewable energy site.”</i> Participant 8: <i>“The skills required for renewable energy are more technologically advanced than those in coal mining.”</i> Participant 9: <i>“Some important skills are installing solar panels, maintaining wind turbines, managing battery storage, and electrical engineering.”</i>	The key findings indicate that there is an urgent need for new skills and diversification into other initiatives that support JET. Participants emphasised that employees and communities should be educated and trained in new tech skills. The majority of the participants expressed retraining coal-skilled employees to match the demands of renewable energy and establishing educational programmes that provide people with the skills required for

		effective JET and renewable energy sustainability.
Need for organisational and stakeholder support.	Participant 1: <i>“As a union, we need information to plan what we will do in the future and how we will support the people connected to us.”</i> Participant 3: <i>“People can also be retrained to become farmers, provided there is available land and adequate funding from the government.”</i> Participant 4: <i>“Communities should be supported through change management knowledge and community programmes to help socialise them into the transition.”</i> Participant 7: <i>“The communities need programmes to address their skills needs. The Government, Community Forums, and Companies should involve people in the changes that are happening.”</i> Participant 11: <i>“Communities need education and training, and awareness on JET. The training should tell communities that JET is not a threat. It can provide more jobs for the unemployed. We must make communities understand that JET is not a threat to their livelihoods.”</i>	The key findings indicated that successful JET implementation requires a strong organisational and stakeholder support. The majority of the participants indicated that collaborative planning and equal participation should be prioritised through clear communication between stakeholders. This emphasised the importance of retraining. Creating other sources of revenue/income for families and businesses is essential to adapt to the change.

5.5.1 Findings for Theme 2

5.5.1.1 Sub-theme 1: Economic dependence and livelihood insecurity

The research shows that the JET poses a significant risk to economic stability and the livelihoods of communities in Mpumalanga that depend on coal. Most participants stressed that thousands of workers, families, and dependents rely directly on coal mining for their livelihood. The expected loss of coal-related jobs is likely to have a major impact on local economies, affecting not only miners but also small businesses that depend on workers' incomes. Many families rely on a single breadwinner to support multiple dependents, indicating that job losses could lead to widespread poverty and social challenges. Participants also noted that the government or private sectors may not be able to absorb the displaced workforce, which could result in higher unemployment and a decline in municipal service delivery.

5.5.1.2 Sub-theme 2: Lack of awareness and education on JET

The results show a widespread lack of awareness and education about the JET among workers and community members in Mpumalanga. Most participants reported that they had not attended any formal training, received official communication, or taken part in educational programmes that explained the nature of the JET and its effect on their livelihoods. Information about the transition mainly comes from media sources, which participants consider inadequate and unclear. Many emphasised the need for engagement and organised training programmes to inform communities about new employment opportunities and other benefits of JET. However, a few mentioned existing community consultative forums that provide updates on JET-related activities; these were seen as limited and inconsistent. The findings reveal a communication gap that hampers understanding, participation, and trust during the transition.

5.5.1.3 Sub-theme 3: Skills development and technological readiness

The results highlight the vital need for skills enhancement and technological readiness to support THE jet. Participants emphasised that the shift towards renewable energy requires a workforce with new and more advanced technical skills than those traditionally used in coal mining. They underscored the importance of retraining coal-skilled workers

to meet the demands of renewable energy sectors, while also advocating for the integration of renewable energy education in schools to prepare younger generations for emerging opportunities. Furthermore, participants proposed expanding industries beyond the renewable sector to boost employment opportunities and promote economic sustainability. Therefore, the findings underline the urgent need for targeted training and educational programmes, as well as upskilling initiatives, to ensure workers and communities are sufficiently prepared for the technological and structural changes driven by the JET.

5.5.1.4 Sub-theme 4: Need for organisational and stakeholder support

The results showed that the successful implementation of JET depends heavily on strong support from both organisations and stakeholders. Participants highlight the importance of collaboration among government bodies, labour unions, corporations, and community forums to enable inclusive planning, ensure transparent communication, and promote equal participation in decision-making. They noted that communities require both financial resources and organisational support to manage the transition, including funding for retraining programmes, access to land for alternative livelihoods such as agriculture, and other initiatives that encourage social adaptation. Additionally, participants emphasise the vital role of education and awareness campaigns to help communities realise that JET can create new opportunities rather than threaten their current livelihoods.

5.6 THEME 3: CHALLENGES IN IMPLEMENTING JET

Participants identified several challenges in implementing JET. These included a lack of awareness and understanding, socioeconomic concerns, poor communication, resistance from communities and workers, stakeholder engagement and inclusion issues, and a gap in policy implementation. This suggests that communities still hold uncertainty about the benefits of JET, making it more difficult to build trust and collaboration. Additionally, limited access to training and upskilling opportunities for affected workers worsens the risk of unemployment and economic instability during the transition. The following Table 5.3 presents the subthemes, participants' quotes, and the key findings.

Table 5: Challenges in the implementations of JET

Subtheme themes	Participant quote	Key findings
Lack of awareness and understanding	Participant 1: <i>“It is being presented as a threat because we don’t know much about it. The media keeps saying that coal is being stopped and renewables are being introduced, which makes it sound like a threat instead of an opportunity.”</i> Participant 4: <i>“There is not much communication about the JET, as only a few people currently have this information. We need to communicate JET information clearly to our communities.”</i> Participant 7: <i>“Communities need to be educated about the true intent of such changes.”</i> Participant 11: <i>“We need to do more to make the community understand, which will give them a clear understanding of what the project is all about.”</i>	The key findings indicate that inadequate communication and restricted access to information result in a negative community perspective regarding JET. The majority of the participants noted that media narratives frequently highlight the discontinuation of coal without focusing on the benefits of renewable sources.
Socioeconomic concerns	Participant 3: <i>“The province is heavily dependent on revenues from mining, with coal mining primarily intertwined with Mpumalanga. Mining has been ongoing for decades, and introducing new income streams will be difficult.”</i> Participant 5: <i>“Economically, the province is heavily reliant on coal revenues, and diversifying or reskilling the economy will be difficult. Operators and miners have</i>	The findings revealed that Mpumalanga’s economy significantly depends on coal mining. These are the significant challenges faced by JET. The social framework is also linked to mining revenues. Many of the

	<i>particular skills, which may be hard to transfer. Socially, people are vulnerable, relying on social grants and the salaries of mine workers, meaning there will be a large social imbalance.”</i> Participant 7: <i>“Job security is a major concern, as people often fear the worst about new technologies.”</i> Participant 9: <i>“A lot of people are afraid of losing their jobs, their identity, and the economy getting worse.”</i>	worker have coal-centric skills which impede their efforts for diversification. This heightened the anxiety regarding job losses, economic decline and social unrest.
Poor communication	Participant 2: <i>“The people who discuss issues do not take back the information to the communities to inform them of what’s happening. Lack of capacity in the state shows why we are slow in communication.”</i> Participant 3: <i>“At present, there is no information available, and because it is withheld, there is no trust.”</i> Participant 4: <i>“The communication around JET must reach the ordinary person on the ground.”</i> Participant 7: <i>“A lack of information makes the process difficult. Community forums should be given access to information and allowed to participate in decision-making.”</i> Participant 8: <i>“The lack of communication will affect implementation because people do not know enough about the JET.”</i>	The findings revealed that inadequate communication and insufficient sharing are significant challenges in the implementation of JET. The majority of participants indicated that information frequently does not reach communities, resulting in distrust and resistance. Participants stressed the importance of clear, consistent and inclusive communication. Also, community forums and involvement in

	Participant 11: <i>“Communication is critical to building trust and support for JET implementation, and it must be transparent and honest.”</i>	decision-making help to improve communication.
Community and worker resistance	Participant 2: <i>“There is an article on News24 where the current MEC in Mpumalanga said that they will not agree to compromising jobs in the Mpumalanga province.”</i> Participant 4: <i>“No resistance has been experienced. At a previous employer, when we opened a solar plant, the community was socialised on the project.”</i> Participant 5: <i>“Yes, there is a lot of criticism about how this transition will play out. A coal power station has already been closed, and we can clearly see the negative impact it has had. Communities do not trust the transition.”</i> Participant 6: <i>“As a result, communities will resist because they do not feel ownership of the solutions. This resistance could lead to strikes and instability.”</i> Participant 9: <i>“People often resist when they are unsure, left out of decision-making, or when promises are broken.”</i> Participant 12: <i>“Yes. The communities are the most resistant and unwilling to change. The unions are supportive, but they mainly act in ways that please their</i>	The findings show resistance to JET within the coal-dependent communities around Mpumalanga. The majority of the participants had a negative perception towards the transition because of the high risk of job losses, being excluded from making decisions, and unmet promises. The participants also feared loss of ownership. Although the unions typically endorse the process, their efforts are towards safeguarding the interests of their members.

	<i>members and align with company priorities.”</i>	
Stakeholder engagement and inclusion	Participant 1: <i>“Trust can be built by engaging with all stakeholders.”</i> Participant 5: <i>“Inclusivity is at the centre of this process.”</i> Participant 6: <i>“Communities and workers are not included when policies are drafted.”</i> Participant 9: <i>“Talk that includes everyone who is affected... Open communication about plans, risks, and advantages.”</i> Participant 10: <i>“Policies are being drafted without meaningful engagement with communities about their needs and concerns. There should be a review of policies to ensure local voices are included.”</i> Participant 11: <i>“Companies and government should explain to all stakeholders what the JET is about and what it offers going forward.”</i> Participant 12: <i>“Communication is more effective in Bethal, where the community understands JET because they are engaged through SLPs and consulted by an organisation.”</i>	The results indicate that fostering trust and backing for JET necessitates inclusive and transparent engagement with stakeholders. Participants underscored that communities and workers frequently find themselves excluded from the development of policies, which diminishes trust and comprehension. They highlighted the significance of maintaining open communication regarding plans, risks and benefits.
Policy implementation gap	Participant 2: <i>“No, they are not; we are referred to an unequal society, so the JET is not closing the Gini coefficient gap.”</i>	The findings show that the policies and regulations for the JET are inadequate in

	Participant 6: <i>“The policies and regulations need to be implemented, but monitoring and enforcement remain a challenge. We often draft strong regulations but fail to implement them effectively.”</i> Participant 7: <i>“No, the policies that have been created are not sufficient. Companies must now take these policies and apply them in ways that suit their communities.”</i> Participant 9: <i>“The current policies have a strong theoretical basis, but they are not being put into practice.”</i> Participant 10: <i>“I am concerned that policies are being drafted without meaningful engagement with communities about their needs and concerns.”</i> Participant 11: <i>“No, the policies are not adequate to address the JET challenges. Companies need to do more, but the government has to put more interventions in place to deal with the challenges.”</i>	addressing its challenges. The majority of participants noted that policy implementation, monitoring and enforcement are not effective. Organisations often fail to adopt policies for the populations. The findings revealed insufficient engagement with affected populations. Participants emphasised a disparity between policy formulation and real-world results, resulting in social and economic inequalities remaining largely unaddressed.
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5.6.1 Findings for Theme 3

5.6.1.1 Sub-theme 1: Lack of awareness and understanding

The research shows that a lack of awareness and understanding about JET has led to widespread misconceptions and anxiety among communities dependent on coal. Participants stated that limited communication and restricted access to reliable information have caused many people to see the transition as a threat rather than an opportunity. They noted that media often focus on the closure of coal mines without

sufficiently highlighting the possible benefits of renewable energy, which reinforces negative attitudes and uncertainty. Participants emphasised the importance of clear, consistent, and transparent communication to inform communities about the aims and advantages of JET. Raising awareness and improving understanding are seen as essential for changing public perceptions, building trust, and gaining community support for the transition.

5.6.1.2 Sub-theme 2: Socio-economic concerns

The findings show that the JET reveals significant socioeconomic problems in Mpumalanga, where the economy mainly depends on coal mining. Participants highlighted that the province's economic and social frameworks heavily rely on coal revenues, making diversification and reskilling particularly challenging. Many workers possess coal-specific skills that are hard to transfer to other sectors, raising concerns about unemployment and financial instability. On a social level, communities depend on mine workers' salaries and social grants, as well as the loss of coal-related income. Participants also expressed worries about job insecurity, loss of identity, and the potential for social unrest as individuals try to adapt to economic and technological changes. Therefore, JET not only causes financial difficulties but also serious social issues for communities that depend on coal.

5.6.1.3 Sub-theme 3: Poor communication

The research found that inadequate communication is a major obstacle to the successful implementation of the JET. Participants pointed out that information about the transition often does not reach communities, leading to confusion, distrust, and opposition. They observed that discussions and decisions concerning JET frequently occur without mechanisms for feedback to involve affected stakeholders, highlighting a deficiency in communication within government policies. This limited flow of information prevents communities from understanding the decision-making process. Participants emphasised that clear, consistent, and inclusive communication is vital for building trust, securing community support, and facilitating smoother implementation. Improving community

forums and establishing open channels for dialogue were seen as essential strategies to enhance communication and collaboration during the transition.

5.6.1.4 Sub-theme 4: Community and worker resistance

The results show that resistance from the community and workers is a significant challenge during the implementation of JET. The study found that communities dependent on coal are concerned about the closure of coal mines, job losses, and unfulfilled promises. The lack of inclusion and transparency has reduced trust and fostered scepticism towards the transition. Some resistance also arises from fears that participants will lose ownership and control over the local economy, which could lead to increased protests and social unrest. The unions' actions to support JET mainly aim to protect workers' interests. The study suggests that resistance can be mitigated through effective communication and involving stakeholders. Therefore, the findings emphasise that building trust, encouraging participation, and highlighting the benefits of JET are crucial to overcoming resistance.

5.6.1.5 Sub-theme 5: Stakeholder engagement and inclusion

The findings revealed that effective engagement and inclusion of stakeholders are essential to instil trust and support the JET. The study found that open, transparent, and inclusive dialogue is crucial to ensure that all groups, especially workers and local communities, are informed and actively participate in the development of transition policies. The findings highlighted that the current policy-making process ignores key stakeholders, resulting in distrust, confusion, and inadequate support from the community. The study emphasises the need to foster an environment for open communication where plans, risks, and potential advantages can be discussed candidly and collaboratively. The findings demonstrate that inclusive stakeholder engagement is vital to achieve a fair, transparent, and broadly supported transition.

5.6.1.6 Sub-theme 6: Policy implementation gap

The findings highlight a significant gap in JET implementation policies. The study showed that although policies and regulations are designed to facilitate the transition, their

implementation, management, and enforcement are ineffective. It revealed that while the policies are theoretically sound, they are not effectively enacted to create an impact on the community. The poor implementation of these policies leads to limited achievement of social and economic benefits. Participants stated that the transition is not bridging the current divides in society. Moreover, insufficient engagement with local stakeholders during policy formulation has fostered trust issues and resistance between the government and community expectations. The study stresses that stakeholders need to intensify efforts to implement effective JET policies, ensuring they are applied appropriately within the local context and address the challenges faced by the people.

5.7 THEME 4: STAKEHOLDER COLLABORATION

The final theme focused on collaboration among stakeholders. Although companies, unions, and government bodies organise engagement forums, these are often disjointed and do not involve communities meaningfully. The sub-themes include coordination and joint action, stakeholders' roles and responsibilities, community participation and engagement, and enhancing collaboration for future resilience. Participants highlighted the importance of co-designed solutions and transparent communication to foster trust. The following Table 5.4 presents the sub-themes, participants' quotes, and key findings.

Table 5.4: Stakeholder collaboration

Theme	Participant quote	Key findings
Coordination and joint action	Participant 1: <i>"Mining houses and unions are working together to ensure that coal mining continues, and this works against the JET."</i> Participant 3: <i>"While the government may bring some stakeholders together, not all are included. Organised labour is also not engaged as much on these issues."</i>	The results indicate that collaboration among stakeholders regarding the JET is limited and inconsistent. Although there are multi-stakeholder forums, parties are not regularly involved. Participants observed that mining

	Participant 4: <i>"All stakeholders must be given accurate information on the JET so that they are able to plan their lives based on this information."</i> Participant 9: <i>"The Presidential Climate Commission is one example of a multi-stakeholder forum that brings together government, labour, business, and civil society."</i> Participant 12: <i>"Collaboration is not yet fully effective. Stakeholder engagements are beginning to make progress, but there is still a need to include all CCFs to improve understanding."</i>	companies and unions frequently cooperate to sustain coal operations, which affects JET. It is essential to provide accurate information to all stakeholders.
Roles and responsibilities of stakeholders	Participant 3: <i>"The Government should ensure that there are sustainable policies and regulations in place. At the local level, platforms should be created to inform communities."</i> Participant 5: <i>"The Government is the custodian of policy, so it needs to create the right frameworks for regulation and funding, as well as mobilise resources for these initiatives."</i> Participant 7: <i>"If we unpack which skills and roles are needed, then the government can propose learnerships, and companies can engage with schools to address the gaps."</i> Participant 12: <i>"Government needs to work with companies to promote</i>	The findings show the importance of government involvement in JET through policies, regulatory requirements and mobilisation of resources. The majority of participants expressed the importance of local platforms to educate communities, along with initiatives aimed at identifying the skills and roles that are needed.

	<i>upskilling and prepare communities for the future. Policies must support this."</i>	
Community participation and engagement	Participant 1: <i>"Include the community in the JET planning process, as this will ensure that people are informed and able to defend the JET."</i> Participant 4: <i>"The level of participation can be improved by ensuring that community leaders are included in the discussions. The JET must then be socialised with the community in a way that they can understand."</i> Participant 6: <i>"... Communities must also receive feedback, as many do not know what has happened with the projects."</i> Participant 8: <i>"The community should be involved in all engagements that executives hold. Transparency is key to ensuring that people are aware of both the positives and negatives of the JET."</i> Participant 10: <i>"By ensuring community shareholding and participation in decision-making processes, communities can have a voice in JET and play an active role in shaping outcomes."</i>	The findings suggest that significant involvement of the community is crucial for the effective implementation of JET. The majority of participants highlighted the importance of incorporating community members and leaders in the planning and dialogue processes, offering clear updates on project developments and maintaining transparency. Involving communities in an accessible manner fosters awareness, trust and the ability to advocate for and uphold the transition.
Strengthening collaboration for future resilience	Participant 2: <i>"Unity of purpose will lead us to better collaboration; division in purpose will make us compete, which is negative."</i>	The findings indicated that effective implementation of JET requires strong collaboration,

	Participant 5: <i>"The key issue is agile collaboration, with the JET positioned as the main point on the agenda... Multi-stakeholder governance is required, and this will need to develop gradually over time."</i> Participant 8: <i>"Education of our people is required. This will promote transparency and enable individuals to decide on their next course in life or the industries they can join."</i> Participant 11: <i>"Make multi-stakeholder partnerships official by setting up shared accountability systems... Work together to establish community benefit agreements and transition roadmaps."</i> Participant 12: <i>"Collaboration can be strengthened by being transparent with communities and listening to their needs. Often, mines assume what the community needs, but it is better to ask directly."</i>	transparency and inclusion of different stakeholders. Participants stated the importance of a common goal, flexible governance and accountability. Education and transparent communication with communities enable them to make informed decisions and feel involved.
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5.7.1 Findings for Theme 4

5.7.1.1 Sub-theme 1: Coordination and joint action

The findings revealed that coordination and joint action among stakeholders in JET remain limited and inconsistent. Participants noted that while platforms like the PCC offer avenues for stakeholder engagement, not all relevant parties, particularly organised labour and community groups, are consistently involved. The study also showed that the partnership between companies and unions mainly concentrates on maintaining coal operations, which hampers the transition to renewable energy—this lack of collaboration

results in fragmented efforts in implementing JET. Additionally, the study indicated that effective coordination requires transparent communication, active participation from all stakeholders, and the dissemination of accurate information to help workers adapt to change. Overall, the findings underscore the need for stronger, more consistent collaboration to ensure JET is carried out reasonably and efficiently.

5.7.1.2 Sub-theme 2: Roles and responsibilities of stakeholders

The findings indicate that clearly defined roles and responsibilities among stakeholders are vital for the successful implementation of JET. The study demonstrated that the government plays a key role as the steward of policy through its formulation, enforcement, and mobilisation of resources to facilitate an effective transition. The findings also highlighted the importance of collaboration between government organisations, businesses, and academic institutions to acquire necessary skills and prepare workers and communities for future employment opportunities. At the community level, participants stressed the importance of creating platforms to inform and educate the public about JET. Overall, the findings emphasise that effective coordination of roles, robust governance policies, collaboration, and stakeholder engagement are crucial for the successful implementation of JET.

5.7.1.3 Sub-theme 3: Community participation and engagement

The findings demonstrate that significant community involvement and engagement are vital for the effective implementation of JET. They emphasise the importance of active community participation in planning, consultation, and decision-making processes to facilitate a smooth transition. The findings also highlight the need to involve community leaders in discussions and to communicate information clearly and comprehensively to all community members. Regular feedback and transparency are recognised as crucial for building trust and encouraging community participation. Additionally, the findings suggest that strategies such as community involvement and participation empower individuals to influence the outcome of JET directly. Overall, the findings underscore that transparent, ongoing, and inclusive community engagement is essential for fostering trust and supporting a sustainable transition.

5.7.1.4 Sub-theme 4: Strengthening collaboration for future resilience

The findings indicate that improving collaboration among stakeholders is vital for building future resilience and ensuring the successful implementation of JET. They emphasise that a shared vision and a unified purpose are essential to overcoming competition and fragmentation among stakeholders. The findings also underscore the importance of flexible and transparent multi-stakeholder government policies that promote accountability and collective decision-making. Forming partnerships is regarded as necessary to foster responsibility and sustainable collaboration. Training and open communication are crucial to empower participants and engage them in decision-making. Overall, the findings highlight that collaboration based on trust, transparency, and inclusivity enhances resilience and leads to sustainable, effective JET.

5.8 RESEARCH QUESTIONS RESULTS

5.8.1 How will the transition from coal to renewable energy impact employment in Mpumalanga?

The findings directly answer the research question by showing that participants believe the shift from coal to renewable energy is likely to have a significant negative impact on employment in Mpumalanga. Most participants emphasised that the closure of mines and thermal power stations will lead to job losses that renewable energy cannot absorb. They also highlighted the province's reliance on coal, which could cause economic decline and higher unemployment. Some participants saw the creation of new jobs as a potential benefit of JET. They stressed the importance of reskilling and training coal workers to enable them to work in renewable sectors. Additionally, participants criticised the lack of government engagement and effective policy enforcement, which fuels fear and uncertainty about the future of coal workers and their communities.

The analysis clearly indicates that participants consistently linked the JET to improved economic vulnerability and loss of employment opportunities. Furthermore, the study revealed that although there exists an opportunity for job creation, the potential has been overshadowed by challenges such as inadequate planning, lack of sufficient reskilling

programmes and lack of organisational support. The study emphasises that the lack of transparent communication and coordinated government action has exacerbated uncertainty, diminished trust, and heightened fears of social and economic instability in communities, and reliance on coal. In summary, the analysis illustrates that in the absence of inclusive planning, practical skills development and effective policy execution, the transition may worsen unemployment and inequality in Mpumalanga instead of promoting a just and sustainable shift.

5.8.2 How will the JET impact the livelihoods and living standards of coal workers and their families in Mpumalanga?

The findings of the research show that the shift from coal to renewable energy has an adverse impact on the livelihoods and living standards of coal workers and their families in communities around Mpumalanga. The findings emphasise that the transition will lead to socio-economic challenges. This is because many families relying on coal-related activities will lose their primary source of income that sustains them. The perceived job losses in the coal industry are likely to affect small businesses that depend on coal workers' spending. The lack of education, awareness, and training regarding JET leaves all stakeholders without adequate information about their future. Although some recognised the potential for reskilling and alternative economic opportunities, such as in renewable energy, they stressed that these initiatives are not being effectively implemented. The findings suggest that without proactive measures in education, retraining, and economic diversification, the JET risks worsening poverty, unemployment, and social instability in communities dependent on coal mining.

This is evident through the analysis, which revealed a strong connection between JET and the decline in household incomes, diminished access to essential services and heightened economic vulnerability in areas reliant on coal. The analysis emphasises that the closure of mines affects the financial activities and small businesses that depend on the income spent by coal workers. The study shows that inadequate government planning, lack of public awareness and ineffective implementation of reskilling programs contribute to a prevailing sense of uncertainty and fear within the affected communities.

Moreover, the findings suggest that without focused interventions such as education, vocational training and local economic development, the transition may exacerbate social inequalities and obstruct sustainable livelihoods. In summary, the analysis reveals that effective management, community engagement, and inclusive policy frameworks are crucial to ensure that the JET does not undermine the welfare and resilience of coal-dependent families in Mpumalanga.

5.8.3 What are the challenges faced in implementing the JET in Mpumalanga?

The findings offer a comprehensive response to the research questions concerning the challenges faced in implementing the JET in Mpumalanga. They highlighted various interconnected issues such as ineffective communication, lack of awareness, and minimal stakeholder involvement, which caused misunderstandings and resistance among communities and workers. The findings emphasised that the JET is perceived as a threat due to inadequate information and the limited involvement of key stakeholders in decision-making. Most communities depend on coal activities, which further complicates the transition since workers have skills specific to coal mining. This shift will render their skills irrelevant. The findings also identified ineffective policy implementation, poor monitoring, and weak enforcement, all of which impede the successful rollout of JET-related policies. Overall, the findings underline that poor communication, inadequate stakeholder engagement, and ineffective government policy execution hinder the successful realisation of JET in Mpumalanga.

This is evident through the analysis, which indicated that the study consistently voiced their frustration regarding the government's lack of transparency, inadequate coordination, and minimal consultation with impacted communities during the implementation of the JET. The analysis revealed that these challenges have created mistrust, confusion, and resistance among mine workers about their future employment. The study also showed that inconsistency in policies and a lack of monitoring systems further affected confidence in the transition process. Additionally, the analysis highlighted that the absence of targeted reskilling programmes and social protection measures increases anxiety about employment. In summary, these findings affirm that the execution

of JET in Mpumalanga is affected by structural, institutional, and communication gaps that need to be addressed through participatory governance, clear policy frameworks, and enhanced stakeholder collaboration.

5.8.4 How are stakeholders working together to reduce the negative impacts of the JET on coal-dependent workers and communities in Mpumalanga?

The findings successfully addressed the research questions regarding the collaboration of stakeholders in mitigating the adverse effects of the JET on coal-dependent workers and communities in Mpumalanga. The findings recognised that, although cooperation among government, labour, business, and communities is developing, it still lacks consistent collaboration and coordination. Initiatives such as the PCC were recommended by participants as collaborative efforts to involve multiple stakeholders. The findings revealed a lack of locally organised groups. Open communication, inclusive systems, and feedback mechanisms foster trust and understanding. The study also identified collaborative planning and skills development programmes where government, corporations, and educational institutions work together to create new opportunities for workers. The findings indicated that coordination, joint action, clarity of roles and responsibilities, community participation, engagement, and strengthening collaboration for future resilience are essential to ensuring practical cooperation and alleviating the social and economic challenges posed by the JET in Mpumalanga.

This is evident through the analysis, which indicated that participants recognised the importance of inclusive and well-organised collaboration among all stakeholders to ensure the success of the JET. The study emphasised that limited communication channels and the absence of community-led forums have undermined trust and reduced collective ownership of the transition process. Furthermore, the analysis revealed that the study considers open dialogues, collaborative planning, and clearly defined roles among government, labour, business, and educational institutions as vital for fostering accountability and effective implementation. In summary, the analysis demonstrates that improving collaboration, promoting transparency, and maintaining ongoing stakeholder

engagement are essential for building trust, fostering social stability, and supporting an equitable transition for coal-dependent communities in Mpumalanga.

5.9 SUMMARY OF FINDINGS

5.9.1 RQ1: How will the transition from coal to renewable energy impact employment in Mpumalanga?

The results suggest that the shift from coal to renewable energy is perceived as a significant threat to jobs and livelihoods in Mpumalanga, with participants expressing concerns about job losses that the renewable sector may not adequately compensate for. While some recognised the potential for new opportunities through the JET, participants pointed out that insufficient reskilling, inadequate planning, and poor government coordination are significant challenges. Additionally, limited communication and a lack of stakeholder engagement have exacerbated uncertainty and distrust within the affected communities. In summary, the study indicated that without inclusive planning, practical training, strong policy implementation, and reduced inequality, a fair and sustainable transition is unlikely.

5.9.2 RQ2: How will the JET impact the livelihoods and living standards of coal workers and their families in Mpumalanga?

The research reveals that the transition from coal to renewable energy has negatively impacted the livelihoods and living conditions of communities in Mpumalanga that rely on coal. The closure of mines and the scarcity of reskilling opportunities have resulted in loss of income, decline in business, and increasing uncertainty for workers. Insufficient government planning and ineffective policy implementation have additionally affected the ability of communities to adapt. In summary, the study asserts that in the absence of adequate education, training and inclusive management, the JET could exacerbate poverty and inequality instead of fostering sustainable livelihoods.

5.9.3 RQ3: What are the challenges faced in implementing the JET in Mpumalanga?

The results indicated that the implementation of JET faces many challenges, such as a lack of adequate communication, a lack of collaboration and ineffective policy implementation. Participants perceived the JECT as a threat due to a lack of sufficient information, and their limited involvement in decision-making further increases mistrust and confidence of workers and the community. Inconsistent policies, insufficient monitoring and a lack of reskilling and social protection initiatives have heightened uncertainty regarding future job prospects. The study concluded that effective governance, well-defined policies and inclusive collaboration among stakeholders are crucial for the successful execution of JET in Mpumalanga.

5.9.4 RQ4: How are stakeholders working together to reduce the negative impacts of the JET on coal-dependent workers and communities in Mpumalanga?

The findings indicate that although collaboration among government, labour, business and communities in Mpumalanga is beginning to take shape, it is still inconsistent and lacks proper coordination. The study emphasised the importance of inclusive dialogue, locally organised groups and effective communication to foster trust and a sense of shared ownership regarding the JET. The research found that collaborative planning, skills development and clearly defined roles among stakeholders are vital for generating new opportunities and ensuring successful implementation. In summary, the findings suggest that enhancing collaboration, encouraging transparency and sustaining ongoing stakeholder engagement are essential for realising a just and resilient transition for coal-dependent communities in Mpumalanga.

5.10 CONCLUSION

The study showed that South Africa's JET faces serious social and economic risks if job losses and livelihood impacts are not managed proactively. Effective implementation relies on embedding justice principles, fostering strong stakeholder collaboration, and ensuring inclusive, transparent governance. Without these measures, vulnerable communities risk further marginalisation.

CHAPTER 6: DISCUSSION OF FINDINGS

6.1 INTRODUCTION

The focus of this chapter is to present a comprehensive discussion of the findings. In brief, the findings have indicated that JET offers prospects for sustainable development, but it simultaneously presents considerable socioeconomic difficulties for communities depending on coal in Mpumalanga. The shift has a significant impact on livelihoods, jobs and local economies, particularly as a result of insufficient stakeholder involvement, ineffective communication and limited enforcement of government policies. Nevertheless, findings revealed that inclusive governance, clear communication, and focused reskilling initiatives can alleviate these issues. For the JET to be effective, it must emphasise providing adequate social protection, economic diversification and the active engagement of affected communities and workers to ensure that the transition provides both environmental sustainability and social equity. A discussion of the results in relation to the research questions is provided below. The literature supports this.

6.2 HOW WILL THE TRANSITION FROM COAL TO RENEWABLE ENERGY IMPACT EMPLOYMENT IN MPUMALANGA?

The findings indicate that participants view the transition from coal to renewable energy as a significant threat to employment in Mpumalanga. The majority of participants emphasised that the shutdown of coal mines and power plants will inevitably lead to extensive job losses, which the renewable energy sector will not be able to provide for the displaced coal workers fully. These findings align with Burton et al. (2018), who argue that the coal industry supports a substantial portion of South Africa's industrial workforce and that its rapid decline will result in severe economic and social challenges. These challenges include increased poverty levels, unemployment, social unrest, and a shrinking economy in the province. The over-reliance of communities around Mpumalanga on coal mining for their economic activities increases the risks. When a coal mine closes, it affects jobs and secondary employment in areas like transport services, maintenance, and other local businesses. Mpandeli et al. (2018) highlighted that around 77000 jobs are likely to be lost by 2030, which supports the concerns of participants that

the JET could lead to increased unemployment and heightened poverty in the province. This underscores the caution expressed in the literature that energy transition, although beneficial for the environment, can also lead to inequalities and social unrest if not governed by fair and equitable policies. Montmasson-Clair (2021) also suggested that inadequate planning of JET can cause economic vulnerability for affected workers and communities, especially when there is insufficient organisational coordination and safety nets.

Despite these concerns, both the literature and the primary findings recognise that the JET offers potential opportunities if properly managed. Some participants acknowledge that developing renewable energy could create new employment opportunities; however, they emphasise that this would require extensive reskilling and retraining programmes. This aligns with the ILO (2015), which highlights that a successful transition from coal to renewable sources depends on social dialogue, capacity building, and labour market policies that enable workers to adapt to new industries. Similarly, Ncube (2022) argued that policies for the JET must include social protection and fair participation to prevent the entrenchment of structural poverty. Participants' critiques of the government's limited involvement and ineffective policy enforcement highlight a disconnect between the recommendations and actual implementation. The gap between the theoretical aspirations of policies and their enforcement has sparked fear among workers, communities, and other stakeholders. This increases uncertainty among workers and communities regarding employment prospects. Participants' perceptions support the literature's findings that transparent communication, proactive reskilling, and inclusive collaboration among stakeholders are essential to address unemployment risks and ensure social acceptance of the JET initiatives. Ineffective implementation of these strategies undermines the JET's primary promise of fair and equitable displacement of workers and risks destabilising coal-dependent communities in Mpumalanga.

6.3 HOW WILL THE JET IMPACT THE LIVELIHOODS AND LIVING STANDARDS OF COAL WORKERS AND THEIR FAMILIES IN MPUMALANGA?

The research findings suggested that the transition from coal to renewable energy is imposing significant social challenges on the communities in Mpumalanga that rely on coal-related activities. These findings align with the existing literature regarding the closures of coal mines and the shift to renewable energy sources such as solar, wind, and hydro. As shown by the study, coal workers and their families are at risk of losing their primary sources of income, which poses a direct threat to household welfare and the stability of local economies. This situation was also observed by Scott et al. (2020), who contend that communities that solely depend on coal mining experience a rapid decrease in economic activities as mines and power plants shut down, leading to disruptions in employment and government revenue streams. In a similar stance, Clark and Zhang (2022) revealed that local governments that also depend on coal royalties and revenues from electricity generation also face a significant decline in revenues, resulting in decreased ability to maintain infrastructure, health facilities, educational facilities, and provide essential services, clean water and sanitation. This economic failure, as indicated by Burton et al. (2018), leads to the outmigration of economically active people, further undermining municipal taxes. This is due to the irrelevant skills possessed by coal workers to the newly created renewable energy industry that will cater for new relevant skills. This causes the majority of coal workers to be stranded, looking for new opportunities around the country. The study also found that there are concerns regarding the struggles of small businesses due to diminishing demand, which resonates with the findings of Haggerty et al. (2018), who noted that retail companies, transportation services and informal markets are adversely affected when miners and their families lose their source of power and decreased purchasing power. Furthermore, Godinho and Hermanus (2018) emphasised that job losses in coal-related sectors create a significant effect that exacerbates poverty throughout the community. The interplay of unemployment, declining municipal revenues and business downturns amplifies participants' understanding that JET requires care and effective management. Failure to do so, JET can destabilise the entire local economy.

Moreover, the results illustrate the complexities of economic displacement, as the closure of coal-related businesses disrupts not only formal employment but also the livelihoods

of informal workers and service providers. Strambo et al. (2024) and Tsukudu (2024) affirm that with the closure of coal operations, reduced household income and migration diminish the consumer base for local businesses, leading to ongoing economic stagnation. The findings from the study regarding the lack of education, awareness, and training related to the JET are consistent with these studies, indicating that communities are not adequately equipped for the transition. At the same time, some participants acknowledged that potential reskilling and employment in renewable energy are poorly coordinated and inadequately executed. This observation sparked fear among coal workers and community members about the uncertainty of their employment; this will destabilise their families' lifestyles and access to essential services. The findings from Chizungu and Wafer (2024) contend that without proper investments in economic diversification and support for small businesses and workers, communities reliant on coal activities only will face prolonged livelihood suffering and inequality in access to services. In a similar stance, Scott et al. (2020) emphasise that economic diversification, local entrepreneurship, and green industrialisation are vital to addressing social inequalities in these communities undergoing transition. Therefore, in line with both the literature and the primary findings, the results indicate that without cohesive social protection, education, and local economic development strategies, the JET may inadvertently exacerbate poverty and unemployment instead of fostering equitable and sustainable growth in Mpumalanga.

6.4 WHAT WERE THE CHALLENGES FACED IN IMPLEMENTING THE JET IN MPUMALANGA?

The findings of the study revealed that the execution of the JET in Mpumalanga faces several interconnected challenges, notably community opposition stemming from insufficient communication, exclusion from the decision-making process, and anxiety about job security. This aligns with the findings of Smith et al. (2017) and Swilling et al. (2016), who argue that communities in coal-dependent areas perceive JET as a direct threat to their livelihoods due to the anticipated closure of mines and the resulting socio-economic upheavals. The concerns expressed by participants about not being adequately informed or consulted reflect the observations of PCC (2022) and Swilling et al. (2020),

which emphasise that limited community involvement in policy formulation breeds mistrust and resistance. Consequently, the findings reinforce the idea that clear communication and genuine stakeholder engagement are essential for mitigating opposition and fostering local ownership of the transition. Similarly, the belief that renewable energy may not offer comparable job prospects aligns with the views of Sharno and Hiloidhari (2024), who indicate that communities often question the fairness of benefits and fear increased inequality. Lack of collaborative and participatory inclusive planning, Swilling et al. (2020) emphasise, risks causing JET initiatives to be perceived as highly imposed endeavours, leading to protests and diminished cooperation.

Other significant challenges highlighted in the findings are unpredictable policy frameworks and inadequate organisational implementation of policies related to the JET. Participants emphasised their dissatisfaction regarding inconsistent policy communication, lack of monitoring, and ineffective implementation, which aligns with the views of Kumar (2024) and Winkler and Black (2024). They argued that policy unpredictability diminishes investor confidence and affects long-term energy planning. The PCC (2022) highlighted that the vagueness in South Africa's IRP indicates that ambiguous timelines for coal phase-outs have left both communities and industries uncertain about the speed of the transition. The remarks from participants regarding ineffective government coordination reflect the worries expressed by Burton et al. (2018) and Zuk and Zuk (2022), who stress that transparency, consistency, and participatory governance are crucial for the legitimacy of policies. This lack of clarity further complicates resource distribution and destroys community trust, ultimately hindering the progress of the JET. Furthermore, high transition costs and limited financial capacity were also revealed as significant challenges affecting JET implementation. As highlighted by Smith et al. (2017) and Mojapelo (2021), these constrain the government's capacity to invest in renewable energy infrastructure, retrain workers, and provide social protection for affected communities. The lack of financial resources was found to be influenced by political interests and corruption (Badreddine & Cherif, 2024). This underscores participants' perception that governments are inadequately equipped to implement JET effectively and guarantee sustainability.

Lastly, the findings emphasise the ongoing challenges of maintaining public trust and providing adequate social protection for affected workers and communities. The study showed that poor communication and lack of stakeholder engagement have eroded public confidence, consistent with the findings of Chizungu and Wafer (2024) and Mojapelo (2021), who noted that unmet government promises and unclear decision-making foster scepticism. Swilling et al. (2020) similarly warn that a decline in trust may lead to resistance, inequality, and social unrest. The results also reveal that the limited transferability of skills among coal workers worsens concerns about the future, reflecting the views of Ting and Byrne (2020) and Burton et al. (2018), who highlight that inadequate reskilling and safety nets undermine the fairness of the transition. According to Nel et al. (2023) and the ILO (2015), existing social protection systems fall short in supporting displaced workers, especially those in informal or contractual roles. This scenario underlines the study's call for improved labour protections, retraining programmes, and transparency in implementation. Consistent with the literature, the study demonstrates that fostering trust, ensuring participatory governance, and expanding social protection policies are essential for overcoming the structural and organisational challenges currently hindering the effective rollout of the JET initiative in Mpumalanga.

6.5 HOW CAN STAKEHOLDERS WORK TOGETHER TO REDUCE THE NEGATIVE IMPACTS OF THE JET ON COAL-DEPENDENT WORKERS AND COMMUNITIES IN MPUMALANGA?

The findings regarding stakeholders working together in dealing with the effects of JET on coal-dependent workers and communities in Mpumalanga are aligned with global best practices. As evidenced in Germany and Canada, well-structured, inclusive and participatory policies are essentially facilitating a smooth transition that reconciles environmental and social priorities (Rietzenstein & Popp, 2022; Krawchenko & Gordon, 2022). In South Africa, however, the findings indicate that collaboration among government, labour, business and communities is still fragmented, characterised by limited coordination and inconsistent communication. Insights from Germany's Coal Commission illustrate that the creation of a collaborative entity representing all key

stakeholders can effectively manage resistance, enhance transparency and foster consensus on coal phase-out strategies (Islam & Roy, 2023). Similarly, implementing a structured, open and well-coordinated dialogue process in Mpumalanga could cultivate trust, enhance understanding, and align the varied interests of affected groups towards a unified vision for a just transition.

Moreover, the findings emphasise the significance of inclusive systems, feedback mechanisms and community involvement in promoting effective collaboration. This aligns with Canada's Talk Force model, which emphasises direct consultation with the affected coal communities to create retraining, reskilling and economic diversification programs tailored to local requirements (Krawchenko & Gordon, 2022). Such models highlight that transparent communication and ongoing stakeholder engagement are not just procedural formalities but essentials for ensuring that communities view the transition as equitable and advantageous. Similarly, Spain's agreements with coal unions, which encompass compensation, retraining and investment in local green initiatives, illustrate how participatory strategies can mitigate social and economic challenges while fostering local empowerment (ILO, 2020). By adopting these participatory methods, South Africa can convert fragmented engagement into unified collaboration, thus minimising community resistance and encouraging shared ownership of the JET purpose.

Lastly, the findings emphasise the importance of coordination, clarity in roles, and enhancing organisational policies to guarantee accountability and resilience in collaborative governance. The JTM of the European Union serves as a practical example of how financial and managerial support can foster inclusivity, policy coherence, and long-term stability during energy transitions (European Commission, 2020). This indicates that the effectiveness of the JET in Mpumalanga demands not only collaboration but also sufficient financial resources and policy alignment to sustain collective efforts towards a green economy. Creating locally organised groups or forums and reinforcing partnerships among government, corporations, and educational institutions can facilitate skills development and guarantee new employment opportunities, ensuring that no community is overlooked. By learning from these international examples, South Africa can establish

a model of cooperative transition governance that is inclusive, transparent, and resilient, adequately addressing the socioeconomic and environmental aspects of the JET.

6.6 SUMMARY

In summary, the findings discussed above show that the shift from coal to renewable energy in Mpumalanga poses both socio-economic challenges and potential opportunities. The study emphasised the significant concerns that the shutdown of coal mines and power plants leads to job losses, increased poverty and economic instability, as the renewable energy sector cannot currently absorb the displaced workers. The livelihoods of families that rely on coal activities are affected due to loss of income, decline in business and reduced municipal revenues, resulting in increased community vulnerability and social unrest. In addition, the study found that lack of awareness, ineffective communication, inconsistencies in policy implementation and lack of stakeholder engagement affect the implementation of JET. These challenges have reduced trust between communities and the government, increasing uncertainty regarding future employment and livelihoods. The findings of the study suggested that with appropriate planning, reskilling programs, social protection measures and inclusive collaboration among stakeholders, the JET can foster new opportunities and promote equitable growth. International case studies from Germany, Canada and Spain show that effective collaboration, open dialogue and coherent policies can assist South Africa in establishing a more inclusive and sustainable transition framework. In conclusion, it is essential to strengthen the stakeholder relationship and provide adequate funding to achieve effective JET. The next chapter presents the conclusion and recommendations of the study.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

The process of this research project revealed the different perceptions that stakeholders have of JET initiatives and their impact on employment in Mpumalanga and beyond. The study showed that JET presents both challenges and opportunities for employment in coal-dependent areas. This chapter concludes the study by synthesising the views from participants with the literature review findings, offering a clear overview of stakeholders' perceptions regarding JET in South Africa. The findings suggest several practical and policy implications. For the government, there is a need to strengthen localised policies, enhance municipal capacity, and improve transparency in communication. For the industry, greater emphasis should be placed on portable skills training, entrepreneurship support, and community education. Labour organisations should advocate for retraining initiatives that promote fairness and inclusivity. Communities themselves should be directly involved in co-design processes to foster ownership of transition outcomes. Collectively, these measures align with global lessons emphasising the importance of participatory governance, adequate funding, and multi-stakeholder collaboration in achieving a just transition (Newell & Mulvaney, 2022). Heffron and McCauley (2018) articulated that JET is based on the principle of green energy, which ensures a fair distribution of both the benefits and challenges of the transition. In the South African context, Winkler (2020) emphasised the need for balanced government policies that support socio-economic development in communities reliant on coal mining activities. Similarly, Burton et al. (2018) stress the importance of well-structured strategies to protect communities from the negative impacts of JET. The transition to renewable energy is essential for attaining environmental sustainability through effective climate mitigation strategies. Naqvi et al. (2021) and Winkler and Blak (2024) highlight that the transition poses significant challenges for coal workers and communities, as the shutdown of mines and power plants results in job losses, social inequalities, and economic downturns. In summary, JET has a substantial impact on employment and the livelihoods of people in coal-dependent communities. All the research questions in this study were designed in depth to understand the socio-economic implications of JET on jobs in Mpumalanga. A

detailed account of the responses is provided in Chapter 5, with discussions in Chapter 6. All chapters demonstrate that the study has adequately addressed the research problem. Therefore, this chapter presents the conclusions and recommendations of the study.

7.2 ALIGNING FINDINGS TO RESEARCH QUESTIONS

7.2.1 How did the transition from coal to renewable energy impact employment in Mpumalanga?

The research findings indicated that the transition from coal to renewable energy has significantly impacted employment in Mpumalanga, a province where the economy depends on coal mining-related activities and other dependent industries like power plants. The findings emphasise the concerns that the closure of coal mining and power plants results in a significant loss of jobs, which the new initiatives will not be able to deal with. These findings were consistent with the observations by Burton et al. (2018), who highlighted that the downturn of the coal industry jeopardises many direct and indirect jobs, leading to increasing unemployment and economic distress. Mpandeli et al. (2018) projected that by 2030, more than 77000 people will lose their jobs as a result of the shift from coal to renewable energy. This will also result in increasing poverty and social unrest. Montmasson-Clair (2021) highlighted that the lack of strong planning and social participation strategies will continue to cause coal workers and the communities to experience economic insecurities. The findings show that JET also has a goal to create more employment in the green industry. Still, the current status and the policies of the transition have not yet demonstrated how new employment will be made to compensate for the jobs lost in the closure of the coal industry, thereby posing a significant challenge to employment stability and security in Mpumalanga and beyond.

7.2.2 How did the JET impact the livelihoods and living standards of coal workers and their families in Mpumalanga?

The findings of this study revealed that the JET has negatively impacted the livelihoods and living standards of coal workers and their families. The study emphasised that as coal mines and power plants face closure, households are deprived of their primary

source of income, resulting in decreased financial capacity to look after the basic needs. This leads to increased levels of poverty in those communities that solely depend on coal activities. The literature supports the findings, as Scott et al. (2020) and Burton et al. (2018) noted that the decline in coal-related activities disrupts local economies, undermines municipal revenues and adversely affects small businesses that rely on the spending of coal workers. The reduction in income also triggers migrations and economic stagnation (Haggerty et al., 2018). While findings recognised the potential of renewable energy to create new employment opportunities, they emphasised that insufficient training and a lack of information impede workers' ability to adapt. The lack of focused reskilling and educational programs perpetuates inequality, as unskilled workers continue to be excluded from the new employment opportunities in the renewable energy industry (Tsukudu, 2024). As a result, the JET has increased socio-economic vulnerability, highlighting the necessity for inclusive strategies that safeguard livelihoods and encourage equitable involvement in the renewable energy sector.

7.2.3 What were the challenges faced in implementing the JET in Mpumalanga?

The research found that multiple challenges hinder the implementation of the JET in Mpumalanga. The findings revealed that inadequate communication, a lack of awareness and education and poor stakeholder engagement are the significant challenges, resulting in resistance and distrust among the impacted communities. This aligns with the findings of Smith et al. (2017) and Swilling et al. (2020), who noted that communities frequently view the JET as an imposed initiative rather than involving community members and coal workers in the decision-making process. An additional important factor was the policy implementation gap, lack of sufficient funds and high transition costs (Winkler & Black, 2024; Mojapelo, 2021). The frequent changes in regulations and policies, and the ambiguous timelines regarding the phasing out of coal mining, also affect the confidence of investors and delay the implementation (Kumar, 2024). Furthermore, the lack of strong social protection strategies resulted in the majority of coal workers being susceptible to unemployment and increased poverty (Burton et al., 2018). Consequently, the findings indicated that without effective policy enforcement, enough funding and strong

collaboration, the JET can increase social inequality rather than promote fair, equitable and sustainable energy transition.

7.2.4 How are stakeholders working together to reduce the negative impacts of the JET on coal-dependent workers and communities in Mpumalanga?

The findings indicated that collaboration among stakeholders, government, industry, labour unions and communities is evolving but still remains fragmented and inconsistent. The study emphasises that enhancing platforms such as the PCC can promote coordination and the inclusion of local stakeholders. This is in line with international best practices exemplified by Germany's Coal Commission and Canada's Task Force on JET, which have demonstrated the importance of transparent dialogue, collaborative planning, and economic diversification (Rietzenstein & Popp, 2022; Krawchenko & Gordon, 2022). Likewise, Spain's just transition agreements illustrate how early retirement programs, retraining and local investments can contribute to community stabilisation (ILO, 2020). Within the South African context, the findings highlighted that effective collaboration necessitates open communication, precise role distribution and participatory planning to ensure accountability and trust. Enhancing partnerships among government organisations, businesses, and educational institutions can facilitate the development of localised skills training and entrepreneurship initiatives (Islam & Roy, 2023). Consequently, promoting inclusive and coordinated stakeholder engagement is crucial for alleviating the social and economic challenges of JET and ensuring that Mpumalanga's JET initiatives are fair and sustainable.

7.3 CONCLUSIONS

The study concluded that the shift from coal to renewable energy in Mpumalanga has caused significant socio-economic challenges that affect the stability of these communities. The closure of coal activities led to job losses, destabilising household livelihoods, reducing household income, and closing small businesses that depend on coal mine workers and their families. As coal-related activities and power plants shut down, local economies suffered, living conditions worsened, and poverty increased in communities around Mpumalanga. The study also found that without practical strategies

for economic diversification and social protection, communities face social unrest, inequalities, and economic marginalisation. Additionally, poor communication, lack of awareness and education, and inadequate training programmes have left coal workers without the skills needed for new opportunities in the green energy industry. This has further heightened social inequalities and unemployment. Moreover, the study noted that stakeholder collaboration remains limited and poses a challenge, restricting the effective implementation of JET initiatives. Challenges such as policy uncertainty, financial constraints, weak institutional coordination, and insufficient community engagement have eroded public trust and delayed the transition process. There is a pressing need for government policies that prioritise participatory decision-making and transparent communication. Furthermore, learning from international JET milestones in countries like Canada and Spain, South Africa could benefit from coordinated stakeholder collaboration focused on reskilling efforts and sustained investment in local economies. Overall, the study concluded that the success of JET in Mpumalanga hinges on the integration of social equity principles, the building of public confidence and trust, active community participation, diversification of economic systems, and the establishment of balanced environmental sustainability alongside socio-economic stability.

7.4 VALUE OF THE STUDY

7.4.1 Strategic takeaways

- Strengthen and formalise collaboration among stakeholders to guarantee consistent and effective coordination in the implementation of JET initiatives.
- Address the challenges such as policy ambiguity, financial limitations, and inadequate organisational coordination to improve JET policies' effectiveness.
- Promote inclusive governance that emphasises community participation in decision-making, transparency and community engagement.
- Acquire lessons from global best practices that highlight the importance of collaboration, reskilling and economic diversification.
- Invest resources in targeted reskilling and retraining programs to equip coal workers for opportunities in renewable energy.

- Ensure continuous investment in local economies to alleviate the social and economic impacts of the phasing out of coal mining and related activities.

7.4.2 Recommendations for business

Businesses operating in coal-dependent areas should actively participate in the JET by aligning their strategies with sustainability goals and social equity principles. Firstly, companies should invest in reskilling and upskilling programmes for employees affected by the transition. Partnering with government agencies, training institutions and renewable energy firms can help create structured learning pathways for workers to transition into green industries. Implementation can include on-the-job training, technical workshops, and certification programs focused on renewable energy, farming and construction. This approach implies that it ensures business continuity through a skilled workforce while reducing unemployment and social instability in affected areas. Also, businesses should adopt inclusive collaboration that incorporates local communities, municipal authorities and labour unions in the decision-making processes. This can be done through creating community forums, consultations and ensuring transparency in communications regarding business transitions and employment strategies. Such efforts promote trust, reducing resistance and improving social responsibility. It emphasises good relationships with the community and builds long-lasting relationships, reducing reputational risks, and enabling businesses to function with the JET purpose.

7.4.3 Contribution to theory

The findings from this study make a significant contribution to theoretical frameworks by reinforcing and expanding upon the concepts of JET in the context of South Africa. By emphasising the socio-economic challenges resulting from the transition, the findings can affirm the importance of fairness in both the benefits and challenges associated with transitions.

Evidence from Mpumalanga illustrates how uneven policy implementation and insufficient social protection exacerbated the vulnerabilities within the coal-dependent communities, thereby showing the tangible consequences of neglecting distributive procedural justice in transition. This improves the theoretical discussion on the imperative for energy

transitions to integrate social equity and inclusion as essential components rather than mere considerations in environmental reform. The findings further contribute to stakeholder theory by indicating that successful transition requires collaboration across various levels and participatory governance policies. The recognised challenges in coordination and communication among the stakeholders emphasise the theoretical claim that inclusive decision-making and transparent governance are vital for ensuring policy legitimacy and social acceptance (Winkler, 2020; Swilling et al., 2020). Additionally, the findings improve the theoretical understanding of socioeconomic resilience and adaptive capacity, illustrating how targeted reskilling, economic diversification and sustainable local investment can effectively implement the JET principles.

7.4.4 New learnings

The study provided new insights into the socio-economic realities of the JET in coal-dependent communities. The study revealed that the global shift from coal towards renewable energy sources is critical to ensure sustainability, but it results in unintended effects that affect exposed people and communities. The significant takeaway is that economic diversification and social protection are not merely optional; they are vital foundations for effective transition. The lack of these strategies results in job losses, resistance and local economic deterioration, which increases poverty and inequality, affecting the purpose of JET initiatives. The findings further indicate that skills development and educational preparedness represent critical deficiencies in the transition process, illustrating that technical advancements alone cannot guarantee effective JET unless there is sufficient human capacity building and equal access to the new economic opportunities. Also, governance and collaborative policies play a significant role in the effectiveness of transition policies. Lack of coordination, ineffective implementation of policies and lack of engagement affect public confidence and engagement. This emphasises the notion that JET should also focus beyond environmental policies to include governance, participatory decision-making and transparent communication. There is also a need for a comprehensive vision of the JET that incorporates social equity, community resilience and long-term economic sustainability as fundamental elements of energy policies and implementation.

7.4.5 Recommendations for future study

The future studies should focus on exploring the long-term socio-economic effects of JET on households and local economies in South Africa. This will provide a comprehensive understanding of how employment patterns, community resilience and social equity evolve, guiding a more effective and inclusive transition to policies.

7.5 RECOMMENDATIONS

7.5.1 Recommendations for stakeholders

Government: to formulate and implement clear, inclusive policies that encourage participatory decision-making and transparent communication to foster public trust. Emphasise investments in social protection programs, reskilling initiatives and economic diversification to assist affected workers and communities.

Local communities: Actively participate in decision-making processes to guarantee that regional needs and concerns are taken into account. Community-based organisations should collaborate with NGOs and the government to enhance awareness and education regarding the benefits and opportunities of JET.

Labour Unions: Focus on encouraging fair labour transitions by ensuring that workers' perspectives are included in policy discussions. Partner with training institutions to create reskilling programs that align with the market needs in renewable energy.

Business: Energy companies and investors ought to collaborate with local authorities to generate new job opportunities in renewable energy projects and associated industries. Additionally, businesses should endorse skills development programs that equip coal workers for roles in the green economy.

International partners: Exchange best practices, technical expertise and funding strategies from successful JET implementation in countries like Germany, Canada and Spain to improve South Africa's capacity for a fair and equitable energy transition.

Educational and training institutions: To collaborate with the industry and government to establish targeted training curricula that focus on renewable energy technologies and

sustainable development skills, ensuring that workers can transition seamlessly into new employment sectors.

7.5.2 Recommendations for practice

Implement reskilling programs: Practical training and certification programs should be created to provide coal workers with the skills relevant to renewable energy technologies, manufacturing and maintenance. These programs should align with the labour market needs and should be improved through collaborations between the stakeholders, such as the government, industries and institutions.

Establish social protection: Practitioners should prioritise social safety nets such as unemployment insurance, retrenchment compensation, and housing support for displaced workers and their families to mitigate the immediate socio-economic effects of the transition.

Foster multi-stakeholder collaboration: Establish robust partnerships among government, business, civil society, and labour unions to coordinate resources and responsibilities effectively. Shared platforms for information exchange and accountability can facilitate the streamlined implementation of JET.

Develop an inclusive policy implementation framework: Government and industry practitioners should embrace integrated planning strategies that harmonise social, economic and environmental goals. Policies must incorporate monitoring tools to assess progress in employment, skills development and social well-being.

Strengthen community engagement strategies: It is vital to establish community liaison offices and regular dialogue forums to ensure transparent communication between policymakers, companies, and residents. This approach will build trust, reduce misinformation, and promote active participation in transition planning.

7.6 CONCLUSION

This qualitative study aimed to examine the socio-economic impacts of the JET on South Africa's coal industry in Mpumalanga province. The chapter found that the transition from coal to renewable energy in South Africa, especially in Mpumalanga, has led to job losses, declining local economies, and worsening living standards for workers and their families

in coal-dependent communities. The JET has heightened socio-economic challenges, particularly due to limited reskilling and poor communication, resulting in inequalities among coal workers regarding new opportunities. Implementation challenges such as regulatory uncertainty, limited funding, lack of effective coordination, and inadequate community engagement have fostered ongoing public distrust. While some stakeholders' collaboration strategies are being implemented, they are not yet effective and require better coordination and support. The chapter concluded that the successful implementation of JET initiatives depends on adequate government backing, diversification, and the integration of social equity principles. The study also emphasised the importance of clear communication, inclusive decision-making, and proper investments in local economies. It is recommended that reskilling, job creation, training, collaboration, social protection, and vigorous enforcement are vital for effective JET implementation.

REFERENCES

1. Ansell, P. J. (2023). Review of sustainable energy carriers for aviation: Benefits, challenges, and future viability. *Progress in Aerospace Sciences*, 141, 100919.
2. Badreddine, A., & Cherif, H. L. (2024). Public health improvement by reducing air pollution: A strategy for the transition to renewable energy. *Health Economics and Management Review*, 5, 1-14.
3. Barnes, J. (2022). Divergent desires for the just transition in South Africa: An assemblage analysis. *Political Geography*, 97, 102655.
4. Bartholomae, F., Woon Nam, C., & Schoenberg, A. (2017). Urban shrinkage and resurgence in Germany. *Urban Studies*, 54(12), 2701-2718.
5. Bond, P. (2018). Social movements for climate justice, from international NGOs to local communities. *Rethinking environmentalism: Linking justice, sustainability, and diversity*, 153-182.
6. Braun, V., & Clarke, V. (2021). To saturate or not to saturate? Questioning data saturation as a valuable concept for thematic analysis and sample-size rationales. *Qualitative research in sport, exercise and health*, 13(2), 201-216.
7. Braun, V., & Clarke, V. (2024). Thematic analysis. In *Encyclopaedia of quality of life and well-being research* (pp. 7187-7193). Cham: Springer International Publishing.
8. Burton, J., Lott, T., & Rennkamp, B. (2018). *Sustaining carbon lock-in: Fossil fuel subsidies in South Africa*. Energy Research Centre, University of Cape Town.
9. Carter, S., Andersen, C., Stagg, A., & Gaunt, L. (2023). An exploratory study: Using an adapted interactive research design and contributive research method. *The Journal of Academic Librarianship*, 49(1), 102620.
10. Chidzungu, T., & Wafer, A. (2024). Can Social Impact Assessments (SIAs) be a sustainable strategy to address the skills development gap and community sustainability challenges in Just Energy Transition (JET) policy decision-making? Evidence from the South African mining communities of Kriel and Carolina in Mpumalanga. *South African Geographical Journal*, 106(1), 89-108.

11. Clark, A., & Zhang, W. (2022). Estimating the employment and fiscal consequences of thermal coal phase-out in China. *Energies*, 15(3), 800.
12. Cohen, L., Manion, L., & Morrison, K. (2017). Validity and reliability. In *Research methods in education* (pp. 245-284). Routledge.
13. Cole, M. J., Mthenjane, M., & Van Zyl, A. T. (2023). Assessing coal mine closures and mining community profiles for the 'just transition' in South Africa. *Journal of the Southern African Institute of Mining and Metallurgy*, 123(6), 329-342.
14. Cortes-Ramirez, J., Naish, S., Sly, P. D., & Jagals, P. (2018). Mortality and morbidity in populations in the vicinity of coal mining: a systematic review. *BMC Public Health*, 18(1), 721.
15. Cronje, J. C. (2020). Designing Questions for Research Design and Design Research in e-Learning. *Electronic Journal of E-Learning*, 18(1), 13-24.
16. Czako, V. (2022). Skills for the clean energy transition. *European Commission, Petten, JRC129676*.
17. De Oliveira, B. (2023). Participatory action research as a research approach: Advantages, limitations and criticisms. *Qualitative Research Journal*, 23(3), 287-297.
18. Department of Environmental Affairs (DEA). (2021). *Climate Change Bill*. Government Gazette, Republic of South Africa.
19. Department of Mineral Resources and Energy (DMRE). (2019). *Integrated Resource Plan (IRP) 2019*. Pretoria: DMRE.
20. DeVellis, R. F., & Thorpe, C. T. (2021). *Scale development: Theory and applications*. Sage Publications.
21. Douglas, H. (2022). Sampling techniques for qualitative research. In *Principles of social research methodology* (pp. 415-426). Singapore: Springer Nature Singapore.
22. Duong, K., & Flaherty, E. (2023). Does growth reduce poverty? The mediating role of carbon emissions and income inequality. *Economic Change and Restructuring*, 56(5), 3309-3334.
23. Ellis, J. L., & Hart, D. L. (2023). Strengthening the Choice for a Generic Qualitative Research Design. *Qualitative Report*, 28(6).

24. European Commission. (2020). *The Just Transition Mechanism: Making Sure No One is Left Behind*.
25. Freeman, R.E. (1984). *Strategic Management: A Stakeholder Approach*. Boston: Pitman.
26. Godinho, C. and Hermanus, L., 2018. (Re)Conceptualising state capture - with a case study on South African power company Eskom. Johannesburg: Public Affairs Research Institute.
https://www.gsb.uct.ac.za/files/Godinho_Hermanus_2018_ReconceptualisingStateCapture_Eskom.pdf
27. Gul, H., & Das, B. K. (2023). The impacts of air pollution on human health and well-being: A comprehensive review. *Journal of Environmental Impact and Management Policy*, 36, 1-11.
28. Haggerty, J. H., Haggerty, M. N., Roemer, K., & Rose, J. (2018). Planning for the local impacts of coal facility closure: Emerging strategies in the US West. *Resources Policy*, 57, 69-80.
29. Haq, Z. U., Rasheed, R., Rashid, A., & Akhter, S. (2023). Criteria for assessing and ensuring the trustworthiness in qualitative research. *International Journal of Business Reflections*, 4(2).
30. Hawkins, J. E. (2018). The practical utility and suitability of email interviews in qualitative research. *The Qualitative Report*, 23(2).
31. Heffron, R.J., & McCauley, D. (2018). *What is the 'Just Transition'?*. *Geoforum*, 88, 74–77.
32. Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social science & medicine*, 292, 114523.
33. Hermwille, L., Obergassel, W., Ott, H. E., & Beuermann, C. (2017). UNFCCC before and after Paris—what's necessary for an effective climate regime?. *Climate policy*, 17(2), 150-170.
34. ILO (International Labour Organisation). (2020). *Ensuring a just transition in the energy sector: Spain's agreement with coal unions*.

35. Imarhiagbe, O., Nwodo, M. U., & Ogwu, M. C. (2024). Innovations for Cleaner Futures: Emerging Technologies in Air Pollution Mitigation. *Sustainable Strategies for Air Pollution Mitigation: Development, Economics, and Technologies*, 377-407.
36. International Labour Organisation (ILO). (2015). *Guidelines for a just transition towards environmentally sustainable economies and societies for all*. Geneva: ILO.
37. International Renewable Energy Agency (IRENA). (2021). *World Energy Transitions Outlook: 1.5°C Pathway*. Abu Dhabi: IRENA.
38. Islam, S., & Roy, N. K. (2023). Renewables integration into power systems through intelligent techniques: Implementation procedures, key features, and performance evaluation. *Energy Reports*, 9, 6063-6087.
39. Jami, A. A., & Walsh, P. R. (2017). From consultation to collaboration: A participatory framework for positive community engagement with wind energy projects in Ontario, Canada. *Energy research & social science*, 27, 14-24.
40. Ji, G. Z., & Singh, J. (2023). Digitalisation and Its Impact on Small and Medium-sized Enterprises (SMEs): An Exploratory Study of Challenges and Proposed Solutions. *International Journal of Business and Technology Management*, 5(4), 238-255.
41. Kabeyi, M. J. B., & Olanrewaju, O. A. (2022). Sustainable energy transition for renewable and low-carbon grid electricity generation and supply. *Frontiers in Energy Research*, 9, 743114.
42. Krawchenko, T. A., & Gordon, M. (2021). How do we manage a just transition? A comparative review of national and regional just transition initiatives. *Sustainability*, 13(11), 6070.
43. Kumar, J. (2024). Integrating CSR with Rajasthan's Policy Framework: A Strategic Approach to Achieving SDG 16 in the Context of Climate Change. *Journal of East-West Thought (JET) ISSN (O): 2168-2259 UGC CARE I*, 14(3), 341-363.
44. Lavarda, R., & Bellucci, C. F. (2022). A case study is a suitable method to research a strategy from a practice perspective. *The Qualitative Report*, 27(2), 539-555.
45. Lennon, B., Dunphy, N. P., & Sanvicente, E. (2019). Community acceptability and the energy transition: A citizens' perspective. *Energy, Sustainability and Society*, 9(1), 1-18.

46. Marwaha, N., Kourakos, G., Levintal, E., & Dahlke, H. E. (2021). Identifying agricultural managed aquifer recharge locations to benefit the drinking water supply in rural communities: *Water Resources Research*, 57(3), e2020WR028811.
47. Mbanaso, U. M., Abrahams, L., & Okafor, K. C. (2023). Research philosophy, design and methodology. In *Research Techniques for Computer Science, Information Systems and Cybersecurity* (pp. 81-113). Cham: Springer Nature Switzerland.
48. Mbanaso, U. M., Abrahams, L., & Okafor, K. C. (2023). Research philosophy, design and methodology. In *Research Techniques for Computer Science, Information Systems and Cybersecurity* (pp. 81-113). Cham: Springer Nature Switzerland.
49. McKenna, C., & Ghosh, A. (2022). Integrity matters: Net Zero commitments by businesses, financial institutions, cities and regions—report *from the United Nations' high-level expert group on the net zero emissions commitments of non-state entities*.
50. Mojapelo, S. M. (2023). Whopping low reading literacy in South Africa. *South African Journal of Libraries and Information Science*, 89(1), 1-14.
51. Montmasson-Clair, G. (2021). *Realising a Just Energy Transition for South Africa*. Trade & Industrial Policy Strategies (TIPS).
52. Mpandeli, S., Naidoo, D., Mabhaudhi, T., Nhemachena, C., Nhamo, L., Liphadzi, S., & Modi, A. T. (2018). Climate change adaptation through the water-energy-food nexus in southern Africa. *International journal of environmental research and public health*, 15(10), 2306.
53. Mqotyana, Z. A. (2022). *The socio-economic impacts of mine closure: A case study of Ga-Nala in Mpumalanga* (Doctoral dissertation, University of the Free State).
54. Mugadziwa, D. L. (2024). *Pathways to a Just Energy Transition: Changing the Narratives in Zambia* (Master's thesis, The Australian National University (Australia)).
55. Mullisa, F. (2022). When does a researcher choose a quantitative, qualitative, or mixed research approach?. *Interchange*, 53(1), 113-131.

56. Mutereko, S., Shava, E., Musazura, W., Ndebele, N., & Odindo, A. (2023). The Role of the Local Government Sector in Promoting Renewable Energy and the Implications for Skills Development.
57. Nag, M. B., & Ahmad Malik, F. (2023). Research design and methodology. In *Repatriation management and competency transfer in a culturally dynamic world* (pp. 73-92). Singapore: Springer Nature Singapore.
58. Naqvi, S. A. A., Shah, S. A. R., Anwar, S., & Raza, H. (2021). Renewable energy, economic development, and ecological footprint nexus: fresh evidence of renewable energy environment Kuznets curve (RKC) from income groups. *Environmental science and pollution research*, 28, 2031-2051.
59. Ncube, H. (2022). *An investigation into production process challenges faced by junior coal mining companies in Mpumalanga, South Africa* (Doctoral dissertation, University of Johannesburg).
60. Nel, E., Marais, L., & Mqotyana, Z. (2023). The regional implications of just transition in the world's most coal-dependent economy: The case of Mpumalanga, South Africa. *Frontiers in Sustainable Cities*, 4, 1059312.
61. Newell, P., & Mulvaney, D. (2013). *The political economy of the 'just transition'*. *Geographical Journal*, 179(2), 132–140.
62. Olawale, S. R., Chinagozi, O. G., & Joe, O. N. (2023). Exploratory research design in management science: A review of literature on conduct and application. *International Journal of Research and Innovation in Social Science*, 7(4), 1384-1395.
63. O'Mahony, T. (2021). Cost-Benefit Analysis and the environment: The time horizon is of the essence: *Environmental Impact Assessment Review*, 89, 106587.
64. Piwowska, K. (2023). The Impact of Abandoning Fossil Fuels and the Development of Renewable Energy on the Global Labour Market. *Studia Prawnicze: rozprawy i materiały*, 32(1), 103-136.
65. Potokri, O. C. (2023). Research Methodology Choices of Female Postgraduate Students in the Gauteng Province of South Africa. *International Journal of Social Science Research and Review*, 6(11), 260-275.

66. Presidential Climate Commission. (2022). *Just Transition Framework*. Republic of South Africa. <https://www.climatecommission.org.za>
67. Rafanell, I., Sawicka, M., Rafanell, I., & Sawicka, M. (2020). Methodology and Methods of Data Collection. *Emotions in Digital Interactions: Ethnopsychologies of Angels' Mothers in Online Bereavement Communities*, 53-60.
68. Ramluckun, R.; Malumbazo, N.; Ngubevana, L. 2024. A Review of the Energy Policies of the BRICS Countries: The Possibility of Adopting a Just Energy Transition for South Africa. *Sustainability*, 16, 703.
69. Reitzenstein, A., & Popp, R. (2022). German Coal Commission--A Role Model For Transformative Change?.
70. Rempel, A., & Gupta, J. (2021). Fossil fuels, stranded assets and COVID-19: Imagining an inclusive & transformative recovery. *World Development*, 146, 105608.
71. Sageman, J. (2022). School closures and rural population decline. *Rural Sociology*, 87(3), 960-992.
72. Saliya, C. A. (2023). Research Philosophy: Paradigms, world views, perspectives, and theories. In *Social research methodology and publishing results: A guide to non-native English speakers* (pp. 35-51). IGI Global.
73. Saunders, M., Lewis, P. and Thornhill, A. (2016). *Research Methods for Business Students*. 6th ed. England: Pearson Education Ltd. 128-357.
74. Schafer, A. W., Barrett, S. R., Doyme, K., Dray, L. M., Gnadt, A. R., Self, R., ... & Torija, A. J. (2019). Technological, economic and environmental prospects of all-electric aircraft. *Nature Energy*, 4(2), 160-166.
75. Schober, M. F. (2018). The future of face-to-face interviewing. *Quality Assurance in Education*, 26(2), 290-302.
76. Scott, M., Lennon, M., Tubridy, F., Marchman, P., Siders, A. R., Main, K. L., ... & Johnson, C. (2020). Climate disruption and planning: resistance or retreat?. *Planning Theory & Practice*, 21(1), 125-154.
77. Shakir, M. (2022). Conducting a Pilot Study In A Qualitative Inquiry: Learning Some Useful Lessons. *Journal of Positive School Psychology*, 6(10).

78. Sharma, A., Surana, K., & George, M. (2022). Do clean energy trade duties generate employment benefits?. *Renewable and Sustainable Energy Reviews*, 159, 112104.
79. Sharno, M. A., & Hiloidhari, M. (2024). Social sustainability of biojet fuel for net-zero aviation. *Energy for Sustainable Development*, 79, 101419.
80. Smith, P. M., Gaffney, M. J., Shi, W., Hoard, S., Armendariz, I. I., & Mueller, D. W. (2017). Drivers and barriers to the adoption and diffusion of Sustainable Jet Fuel (SJF) in the US Pacific Northwest. *Journal of Air Transport Management*, 58, 113-124.
81. South African Government. (2022). *Just Energy Transition Investment Plan (JET-IP)*. Available at: www.gov.za
82. Strambo, C., Patel, M., & Maimele, S. (2024). Taking stock of the just transition from coal in South Africa. *Stockholm Environment Institute*. [Google Scholar].
83. Swilling, M., Musango, J., & Wakeford, J. (2016). *Developmental states and sustainability transitions: Prospects for a just transition in South Africa*. *Journal of Environmental Policy & Planning*, 18(5), 650–672.
84. Swilling, M., Musango, J., & Wakeford, J. (2020). *Greening the South African Economy: Scoping the Issues, Challenges and Opportunities*. UCT Press.
85. Tamminen, K. A., & Poucher, Z. A. (2020). Research philosophies. In *The Routledge International Encyclopedia of Sport and Exercise Psychology* (pp. 535-549). Routledge.
86. Ting, M., & Byrne, R. (2020). *Just transitions: A review of how social justice considerations are incorporated into energy transitions*: sustainability, 12(18), 7592.
87. Tiwari, R., Mishra, R., Choubey, A., Kumar, S., Atabani, A. E., Badruddin, I. A., & Khan, T. Y. (2023). Environmental and economic issues for renewable production of bio-jet fuel: a global perspective. *Fuel*, 332, 125978.
88. Tsukudu, K. (2024). *Investigating the Impact of the Just Energy Transition (JET) on Employment in South Africa* (Master's thesis, University of the Witwatersrand, Johannesburg (South Africa)).

89. Upham, P., Sovacool, B., & Ghosh, B. (2022). Just transitions for industrial decarbonisation: A framework for innovation, participation, and justice. *Renewable and Sustainable Energy Reviews*, 167, 112699.
90. Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2020). The distinctions between theory, theoretical framework, and conceptual framework. *Academic medicine*, 95(7), 989-994.
91. Wang, Q., Yang, X., & Li, R. (2022). The impact of the COVID-19 pandemic on the energy market—A comparative relationship between oil and coal. *Energy Strategy Reviews*, 39, 100761.
92. Weise, A., Buechter, R., Pieper, D., & Mathes, T. (2020). Assessing context suitability (generalizability, external validity, applicability or transferability) of findings in evidence syntheses.
93. Willis, R. (2018). How members of parliament understand and respond to climate change. *The Sociological Review*, 66(3), 475-491.
94. Winkler, H. 2020. *The case for turning South Africa's coal fields into a renewable energy hub*. Available: <https://theconversation.com/the-case-for-turning-south-africas-coal-fields-into-a-renewable-energy-hub-138315> [2025, September 10].
95. Winkler, H., & Black, A. (2024). Creating employment and reducing emissions: Options for South Africa. *Development Southern Africa*, 41(6), 1078-1097.
96. Wohlin, C., & Runeson, P. (2021). Guiding the selection of research methodology in industry–academia collaboration in software engineering. *Information and software technology*, 140, 106678.
97. World Bank. (2022). *South Africa Economic Update: Securing a Just and Accelerated Energy Transition*. Washington, DC.
98. Wright, J., Calitz, J., & Burton, J. (2021). *South Africa's Just Energy Transition: Insights and Priorities*. University of Cape Town: Energy Systems Research Group.
99. Zuk, P. and Zuk, P. (2022). Energy ageism: The framework of the problem and the challenges of a just energy transition. *Environmental Innovation and Societal Transitions*, 43, pp.237–243.

APPENDIX A: DRAFT COPY OF THE INTERVIEW SCHEDULE

Interview guide (Open-ended guiding questions)
Demographic questions (Circle/write the applicable choice.) Gender: Male Female Age range: 18 to 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years 61 years and above You are a: Union Representative Ex-mine worker Community member Manager in the mine Indicate your highest qualification.
Theme 1: Job losses (4 questions) 1. How do you understand the Just Energy Transition? Explain in detail. 2. Explain how you think JET impacts your work role or division. 3. In your view, how does the transition from coal to renewable energy impact employment in Mpumalanga? Explain. 4. Do government policies and regulations deal with employment risks in the affected communities, like Mpumalanga?
Theme 2: JET impact on livelihoods (4 questions) 5. In your view, how does the JET impact the livelihoods and living standards of coal workers and their families in Mpumalanga?

6. Are there awareness, education or training initiatives for workers and community members to adapt to the changes brought about by JET?
7. What types of skills do you think will be necessary for securing future employment in renewable energy or related sectors?
8. What kinds of support do you think communities need to navigate the impacts of JET?

Theme 3: JET Challenges (5 questions)

9. From your perspective, what are the main challenges in implementing JET in Mpumalanga?
10. Have you observed any resistance from communities, unions, workers, or other stakeholders toward the transition?
11. How can trust and support be built for effective JET implementation?
12. Do you think the created policies and regulations are sufficient to address the JET challenges?
13. Do you think the lack of communication, community participation, engagement and inclusion are factors that contribute to the implementation issues?

Theme 4: Stakeholder collaboration (4 questions)

14. How are the stakeholders working together to reduce the negative impacts of the JET on the coal-dependent workers and communities in Mpumalanga?
15. What roles do stakeholders play, and in what ways can stakeholder groups such as government, industry, labour, and communities collaborate to support affected workers and communities?
16. How can the level of participation of local communities in JET decision-making be improved?
17. Looking ahead, how could stakeholders strengthen their collaboration to manage better the social and economic impacts of JET in affected communities?

APPENDIX B: COMPANY CONSENT

Organisational consent letter

To whom it may concern:

We are aware that **Christian Teffo** is conducting research in partial fulfilment of the Master's in Business Administration (MBA) at the University of Pretoria's Gordon Institute of Business Science. We hereby give permission for Christian to conduct research under the topic: **Exploring the Socio-Economic Impacts of South Africa's Just Energy Transition (JET): A Case Study of Coal-Dependent Communities in Mpumalanga**, within our organisation. We acknowledge that this research will involve collecting data through interviews from a few managers and team members, as well as certain archival company information within the organisation, for a period not exceeding three months from ethical approval by the school. We understand that participation in this research is voluntary and that the principle of informed consent will be applied to each individual involved in the data collection process. We confirm that the researcher has confirmed that they will protect the identity of the organisation and that of the individuals involved in the research, including the company information, by keeping this information confidential in any stored data, reports, or publications that may emanate from this research.

We also confirm that this permission is granted by a person duly authorised to do so.

Signed by: _____

Signature: _____

Name of signatory _____

Title of signatory _____

Place of signing: **Illovo, Sandton**

Date of signing: **28 July 2025**

APPENDIX C: UNION CONSENT

To whom it may concern:

We hereby confirm that we are aware that Mr. Christian Teffo, a student at the University of Pretoria's Gordon Institute of Business Science (GIBS), is conducting academic research in partial fulfilment of his Master's in Business Administration (MBA) degree. The research project is titled: **"Exploring the Socio-Economic Impacts of South Africa's Just Energy Transition (JET): A Case Study of Coal-Dependent Communities in Mpumalanga."**

As an organisation, we hereby grant permission for Mr. Teffo to conduct research within our trade union structures. This consent includes the collection of qualitative data through interviews with trade union officials, shop stewards, and the use of relevant non-confidential archival information where applicable. The data collection will occur over a period not exceeding three months from the date of ethical clearance approval by the university's Ethics Committee.

We understand that participation in this research is voluntary and that the principle of informed consent will be applied to each individual involved in the data collection process. We confirm that the researcher has confirmed that they will protect the identity of the organisation and that of the individuals involved in the research, including the company information, by keeping this information confidential in any stored data, reports, or publications that may emanate from this research.

We also confirm that this permission is granted by a person duly authorised to do so.

Signed by:
Signature _____

Name of signatory _____ Title of signatory: _____

Place of signing: _____ Date of signing: 8/5/2025

APPENDIX D: CONSENT LETTER FOR COMMUNITY PARTICIPANTS

Informed consent for interviews

I am currently a student at the University of Pretoria's Gordon Institute of Business Science, where I am completing my research in partial fulfilment of an MBA.

I am researching the socio-economic impacts of South Africa's Just Energy Transition (JET): A case study of coal-dependent communities in Mpumalanga. This research aims to explore the socio-economic effects of the JET on South Africa's coal sector, with a particular focus on employment in the Mpumalanga coal mining region. Our interview is expected to last about an hour. The interview aims to deepen our understanding of the socio-economic impacts of the JET, particularly given the limited research on the subject.

Your participation is voluntary, and you can withdraw at any time without penalty. All data will be kept confidential.

By signing this letter, you are indicating that you have permission for:

1. The interview is to be recorded.
2. Verbatim quotations from the interview to be used in the report, provided they are not identified with your name or that of your organisation.
3. The data to be used as part of a report that will be publicly available once the examination process has been completed; and
4. All data to be reported and stored without identifiers.

If you have any concerns, don't hesitate to get in touch with my supervisor or me. Our details are provided below.

Researcher name: Christian Teffo

Email: 24078973@mygibs.co.za

Phone: N/A

Research Supervisor name: Sherin Ramparsad

Email: sherin.ramparsad@gmail.com

Phone: N/A

Signature of participant: _____ Date: _____

Signature of researcher: _____ Date: _____