

**THE IMPACT OF THE NKANGALA REGION MINE CLOSURE ON
THE FORMER MINE EMPLOYEES AND THEIR DEPENDENTS**

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DECLARATION

I, **SIPHIWE LORRAINE THATO MATHE**, certify that the thesis "**THE IMPACT OF THE NKANGALA REGION MINE CLOSURE ON THE FORMER MINE EMPLOYEES AND THEIR DEPENDENDS**" submitted herein for the **MASTER'S IN DEVELOPMENT STUDIES** degree at the University of the Free State is my original, independent work and that I have not previously submitted the same work for a degree at another institution of higher learning.

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ABSTRACT

The mine closure represents a turning point in the lives of former miners and those who are dependent on them, having a significant impact on their socioeconomic well-being. In the context of South Africa's Mpumalanga in the Nkangala Region, this study explored the complex effects of mine closure on ex mine workers and their dependents. The study demonstrated that mine closure contributed to psychological discomfort, loss of benefits like housing, medical aid, and life insurance, dysfunctional families, as well as other related social problems, because it also impacted the livelihood of former miners and their dependents negatively. The study suggests social entrepreneurship as a form of intervention that will address the social ills and economic impacts, along with training in transferable skills for industries other than mining.

Key Words, Mine closure, Ex- Mine Works, Impact, Coal mining

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LIST OF ACRONYMS AND ABBREVIATIONS

B-BBEE	Broad-Based Black Socio-Economic Empowerment
BCEA	Basic Conditions of Employment Act
CALS	Centre for Applied Legal Studies
COVID-19	Coronavirus
COR	Conservation of Resources
DMR	Department of Mineral Resources
EAP	Employee Assistance Programme
EMP	Environmental Management Program
IDP	Integrated Development Plans
LED	Local Economic Development
LRA	Labour Relations Act
MHSA	Mine Health and Safety Act
MM	Mine Manager
MMSD	Mining, Minerals and Sustainable Development
MPRDA	Minerals and Petroleum Resources Development Act
NEMA	National Environmental Management Act
NWA	National Water Act
SDA	Skills Development Act
SLP	Social and Labour Plan
SPF	Social Plan Fund

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Mine closures are a global phenomenon that has impacted both the industrialised and developing worlds. Coal mining became one of the most important economic activities in the Western world during the Industrial Revolution.

However, in the 1960s, resource depletion, low economies of scale, rising labour costs and conflict, price fluctuations, the use of alternative fuel sources, and the growing importance of importing cheaper coal from Third World producers, all contributed to a decline in mining, with over a million jobs lost in the Western World between 1955 and 1968 (Nel et al., 2003). Coal mines will likely close worldwide over the next decade as many countries shift their energy systems away from fossil fuels and towards cleaner energy.

The contraction of the mining industry has resulted in mine closures and severe poverty increases in some countries. The collapse of the tin industry had this effect in Bolivia. At the same time, base metal mine closures affected Peru, Zambia, and Romania, and coal mine closures affected the Russian Federation, Poland, Romania, Ukraine, and China. (World Bank 2002).

Coal mines provide jobs for many people in the area, regardless of state or nation. It may be possible to improve mine closures' social and labour implications by anticipating them ahead of time and implementing strategies to manage the impacts better. In most countries, mine closure causes a temporary disruption in the coal mining sector, catching governments, firms, coal workers, and communities off guard and unable to deal with the unexpected shock.

According to research, if a country has a significant population of coal workers, particularly in labour-intensive and inefficient mines, labour divestitures in the coal industry may suddenly unleash massive numbers of people into social support programs, straining and potentially overwhelming the system (World Bank, 2018). Mine closures are imminent in Australia and abroad as energy priorities shift and the switch to renewable energy hastens the inevitable closure of uranium and thermal coal mines.

Seventy-five per cent (75%) of Australian mines close for financial reasons before exhausting the few minerals they extract (Vivido & Kemp, 2019). Communities near mines, mainly those developed specifically to serve the mine, have significant socioeconomic and governance issues, resulting from mine closure. There is concern regarding the sustainability of mines and their legacy (or long-term repercussions) when they have substantially provided regional jobs and economies, sustained population levels, and supported existing infrastructure and services (Kung et al., 2020).

1.2 Background to the study

When ore stockpiles run out, mines close due to one or more of the following factors: deposits become unworkable, low mineral prices, or low mineral grade, making the mine uneconomical to operate (Kung et al., 2020). There is an unsafe working environment, refusal to renew the mining lease, rationalisation and privatisation of the mine, changes in government policies, and the company losing interest in the mine. To reduce the fiscal burden of subsidies, the government may demand the closure of unprofitable mines.

Mine closure is the process of temporarily or permanently ceasing mining operations. (Manjunath et al., 2016). When a mine becomes unsafe to operate, it closes forever. When commodity prices fall or market conditions deteriorate, mines may temporarily close while stakeholders wait for the situation to improve. However, the closure may become permanent if the circumstances do not improve. Mine closures can be sudden, unplanned, or planned.

1.3 Problem statement

Mining closure has been one of the most challenging problems confronting companies, societies, and countries worldwide. Security, environmental, and social risks can arise for mining companies, and substantial liabilities can occur if the closure goes wrong (Munjunath, 2016).

Mine closure can be highly distressing for mining communities because it poses a danger of economic and social collapse, potentially for an entire country (Munjunath, 2016). Abandoned mines can result in substantial environmental liability and clean-up costs if the state does not

place the proper structures. Mine closures usually result in significant income drops and social and environmental consequences (Munjunath, 2016).

The study aimed to investigate coal mine closure impacts on former mine work employees and their dependents. Economic, environmental, and social challenges inevitably arise as mining activities move from remote areas into peri-urban areas. Mine closure has various impacts, including increased unemployment rates, deteriorating towns, a shrinking economy, and a cycle of poverty.

The rising number of shrinking cities is a noticeable result of mine closure in municipalities. Mine closures result in a lack of agricultural rehabilitation, pollution of rivers by acid mine drainage, air pollution from dust, the associated effects of coal-fired power plants with inadequate pollution control, and coal miners suffering from tuberculosis and other occupational diseases (Munjunath, 2016).

1.4 Aims and objectives

This study aimed to explore the impact of the closure of the Nkangala Region Mine on former mine employees and their dependents and to inform policy and future practice following mine closures.

The emphasis will be on the following objectives:

- Examining the nature and impact of the Nkangala Region Mine closure on former employees of the mine and their independents.
- To explore the support needed by former mine employees following the closure of the Nkangala Region Mine.
- Make recommendations to inform policy and practice on mine closures, including future possible support options that could be provided for former employees of mines after closure.

1.5 Research methodology

This section aimed to provide an overview of the research methodology and design of the study.

1.5.1 Research study area

The research was carried out in two Municipalities, namely Emalahleni and Victor Khanye, in the Nkangala Region, in which the Nkangala Region Mine drew workers from Nkangala is one of three districts in the Province of Mpumalanga. It is the smallest district in the Province. In addition to producing the most significant amount of coal in Africa, eMalahleni also houses the country's second oil-from-coal plant after Sasolburg. Various transport networks and the regional context make Emalahleni Municipality strategically located. Gauteng, Ekurhuleni, Johannesburg, and Tshwane are all close; the N4 and N12 freeways connect these areas. The area is about 2 678km². Victor Khanye (formerly Delmas Local Municipality) is situated on the border of the Gauteng Province, less than 100 kilometers from Pretoria, Johannesburg, and eMalahleni. It is a small municipality among the six in the district. 1 568 km² make up the Municipality's total area. The Municipalities were chosen, based on the number of closed mines in each of these Municipalities. It is the gateway to Mpumalanga.

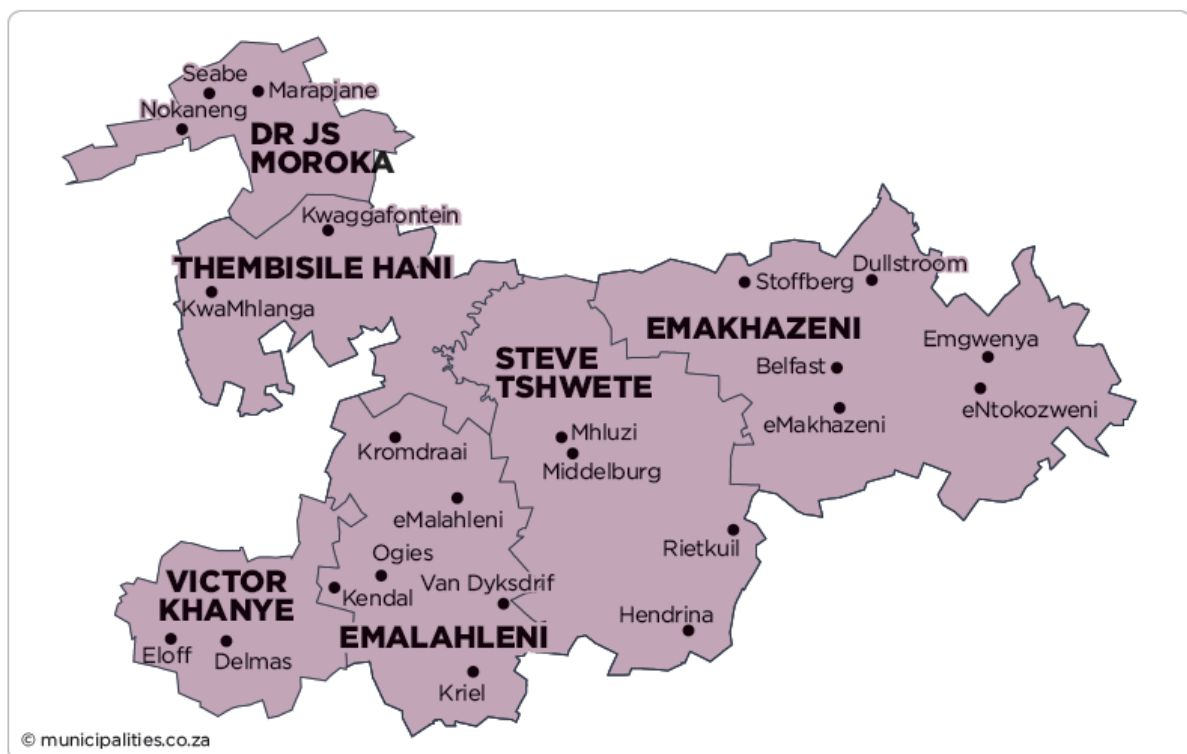


Figure 1: Shows the Nkangala Region in Mpumalanga Province.

The Mpumalanga Province of South Africa's Nkangala Region has a long history of coal mining. Early 19th-century exploration in this area led to the discovery of coal, which significantly impacted the growth of the local economy and infrastructure.

The Highveld coalfields, stretching from Delmas, eMalahleni to Middelburg, contain most of the region's coal reserves. One of the most significant coal reserves in South Africa, the Witbank Coalfield, comprises these smaller coalfields. In the Nkangala Region, small-scale coal mining operations, using manual labour and crude mining techniques, were first carried out.

As South Africa's industrialisation grew in the late 19th and early 20th centuries, coal mining in the Nkangala Region increased quickly. Transporting coal from the area's coal mines to other markets was made more accessible when the railway network was expanded to connect the area's coal mines to the major industrial hubs and ports. The coal mines in the Nkangala Region of South Africa were significant in providing coal to meet the nation's expanding energy needs during the apartheid era. Additionally, the mining sector offered many people employment possibilities, aiding the region's economic growth.

1.5.2 Research approach and design

This study employed a qualitative research approach. Methodologically, qualitative research seeks to comprehend the processes and cultural and social contexts that shape various behaviour patterns, with the primary goal of answering the question, "why" It typically investigates systems or people through interaction and observation in their natural environment, focusing on their interpretations and meanings (Creswell, 2014).

Essentially, qualitative research examines and comprehends the intention that people or groups ascribe to a human or social problem. The process includes developing research questions and procedures, collecting data in a participant setting, inductively building from specific to general themes, and interpreting the data's meaning (Creswell, 2014).

Understanding the effects of mine closure on the lives of mineworkers and their dependents was the primary motivation behind choosing qualitative research. The case study depicts the

experiences and individual viewpoints of a narrative struggle that former mineworkers encountered after being laid off, due to mine closure. The researcher weaved together their tales to demonstrate how various strands of an ex-miner's life are interconnected. This case study could help different stakeholders in the mining industry and other relevant disciplines create new policies and programmes or improve existing ones to support miners before, during, and after mine closure (Creswell, 2013).

This study made use of case study research. Case study research allows for the comprehension and exploration of complex issues, and it is a type of research methodology that entails a thorough evaluation and analysis of a specific phenomenon or instance, such as a person, group of people, community, occasion, or circumstance. It is a reliable research method, especially when a comprehensive, thorough setting investigation is required.

Many social science studies use case studies as a tool. A more prominent role in research is assumed when issues concerning community-based problems, education, and sociology, are raised, such as health and mental health, unemployment, poverty, illiteracy, and drug addiction, and by requiring careful observation, analysis, and reconstruction of the cases under inquiry, the case study aids in explaining both the procedure and the result of a phenomenon (Ziadah, 2007).

1.5.3 Data collection strategy

The following principal semi-structured questions were included in the respondents' questionnaire: Phase 1: Explain your experience working in a mine; Phase 2: Tell us about your experience after losing your mine employment; and after the transcription of each interview, clarifying questions were discussed with the participants. The semi-structured interviews required interviewees to narrate their employment history and mine closure. The semi-structured interviewing method gave the interviewers ample opportunity and time to express thoughts that were required to be expressed in an open-ended setting to express their points of view. A list of questions that was separated into two sections was produced beforehand to conduct an interview.

Given the constraints of in-person interviews owing to COVID-19, interviews were conducted using a combination of in-person or face-to-face interviews, telephone interviews, social media

interviews, Zoom, Facetime, and WhatsApp calls. The researcher used an audio recording device on a mobile phone to record the discussions. After the researcher explained the rationale for using audio recording equipment, the interviewees offered verbal consent to the interview.

Using social media platforms, like WhatsApp, Zoom, and Facetime is a cost-effective approach to speak with people who are dispersed geographically. The telephone interviews cut down on travel expenses. The interview discussion recording improved data analysis by allowing the researcher to listen to the interviews later. All interviews were recorded for transcription throughout the data processing phase. The researcher employed narrative analysis to examine the data. Every research endeavour included data analysis, which entails logical and quantitative analysis of the data gathered.

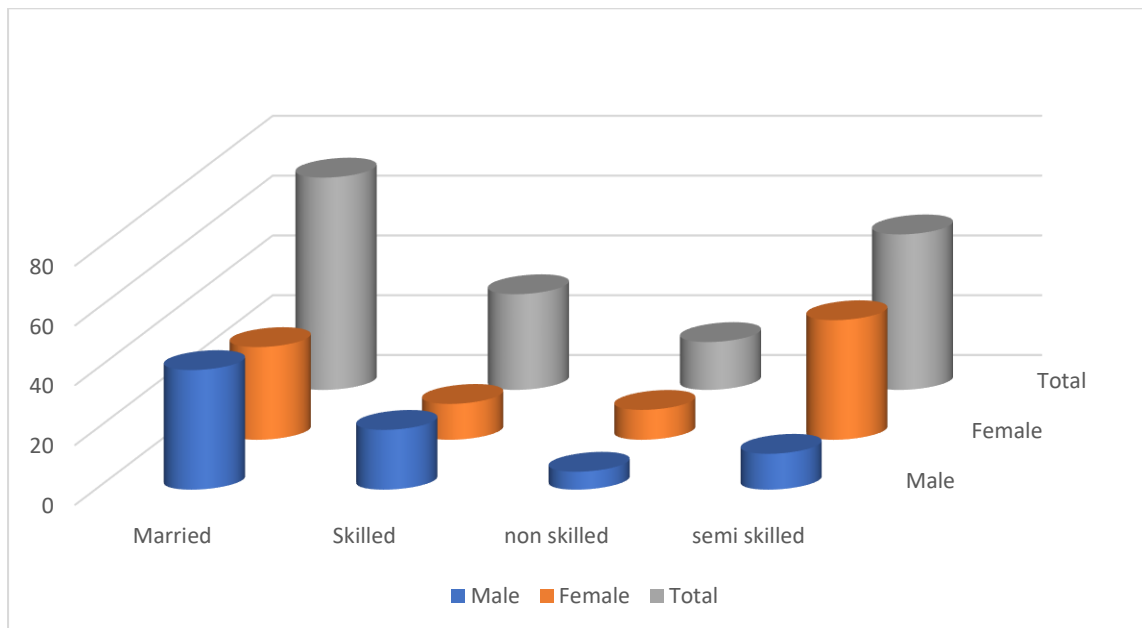
1.5.4 Sampling design

A sample is a subset of a more significant population that is chosen for research from among a great many people. The non-probability sampling technique was adopted in this study because it would have been impracticable to interview every former mineworker. According to Bryman (2016), purposive sampling absolves the researcher from obtaining a random sample of individuals and assists in selecting potential study participants. According to Marlow (2011), the non-probability technique involves choosing individuals who could satisfy the necessary and pertinent criteria to a study issue.

In making the study's selection, the following factors were considered. Interviews were conducted with 15 former miners in Nkangala Region who lost their jobs in the mining sector, due to mine closure.

The age, gender, marital status, and level of expertise of the interviewees are crucial information in this paper. About 71% of people are married, a more significant percentage than the combined figures for divorced and single people. Compared to skilled (32%) and non-skilled (16%) individuals, the proportion of semi-skilled participants is 52% higher. The participants' age, gender, marital status, and degree of skill are crucial information in this paper. About 71% of participants are married, and the proportion of semi-skilled workers is 52% greater than that of skilled workers (32%) and non-skilled workers (16%).

Figure1.2: Participants' information



1.5.5 Data analysis

Data from the interviews and policy documents were analysed inductively using thematic analysis. Qualitative phenomenological research methods involved transcribing material (usually interview transcripts), categorising data into themes, and drawing conclusions about the phenomena, based on these themes. The raw data for a phenomenological study was personal experiences gathered through interviews, observation, reading, writing, and living (Creswell, 2014).

Data analysis was carried out to identify consistent patterns that emerged throughout the analysis so that the researcher could categorise the consistent patterns as themes. The participant feedback was organised into themes using content analysis (Gwija, 2014). Blumberg (2011) defines content analysis as extracting meaningful information from transcribed data and organising it into themes. As a result, the transcribed data is then classified into themes, based on the research questions. Thematic analysis analysed the data gathered from semi-structured interviews with selected former mine employees from Nkangala Region. It entailed organising details about the case, arranging the facts logically, categorising data into meaningful groups, identifying patterns, scrutinising it for underlying themes and other patterns, synthesis, and generalisations used (Flick, 2014).

1.6 Ethical considerations

Qualitative studies pose ethical challenges for ex-mine workers and their dependents, due to the sensitive nature of the information involved. Ethical issues must be addressed as a foundation for any research project. These issues can involve sensitive information about their personal lives and the lives of their dependents, including minors.

As a result, the researcher was granted permission from the University of Free State's research ethics committee. The ethics committee and the ethical rules exist to protect study subjects and the institution from unethical behaviour. "The ethics committee also protects the researcher from conducting research that might damage their reputation" (Bryman, 2016, p. 525). The interview was conducted in English and isiZulu; all participants were fluent in both languages.

The researcher confirmed that ethical criteria were followed for this investigation, including:

1.6.1 Assent or informed consent

Research studies require informed consent so that people know what to expect, and so that they can make a conscious and deliberate decision as to whether to participate. During the interview, we found it concerning that some of the purposively selected interviewees were unwilling to participate. Consequently, during these instances, the researcher selected responses from the same categories of samples as the other respondents.

According to Bryman (2016), it is essential to provide prospective participants with sufficient information regarding the research to enable them to make an informed decision about participating. The researcher used the consent form to describe the study, its nature and purpose, the researcher's information, and the interview process. The researcher gave the participants a copy of the approval letter, which also notified them that the study had been approved.

The respondents were given information about voluntary participation and their right to withdraw from the study at any time. The principle of informed consent was distributed and verbally explained to the participants. Both principles required participants to be informed about the research process and its goals.

1.6.2 Harm to the participants

A high degree of protection was provided to the participants. Throughout the research project, the author ensured that participants were not harmed. In order to achieve this, the shared information was maintained confidentially.

1.6.3 Ensuring confidentiality and anonymity

The author made sure that the identities of all participants were kept private. Access to raw data was restricted, all data was securely stored, conclusions were reported in a way that did not enable easy identification of participants, and consent was obtained for subsequent use of data. In social research, confidentiality is crucial, and it is unacceptable to violate someone's privacy for research purposes. Since maintaining confidentiality is a crucial ethical problem, all data obtained during telephone, Zoom, and WhatsApp interviews for this project, is securely stored and password-protected (Bryman, 2016).

1.6.4 Study limitations

One of the restrictions is the underrepresentation and exclusion of varied viewpoints, especially those held by women. To combat masculinist discourse and investigate the gender-selective effects of mining projects, Lahiri-Dutt (2012) emphasises the necessity for a feminist critique of mining. The interviews needed to fully address the gendered aspects of closure procedures and the particular experiences and demands of women in mining communities.

1.6.5 Bias removal

Simundic (2013) states that bias is any inclination that precludes an unbiased subject assessment. It happens when systematic inaccuracy is induced into sampling or testing by favouring or encouraging one outcome or answer over others. Bias can arise at any stage of the research process, including study design and data collecting, as well as data analysis and publication. To ensure objectivity, the author maintained an unbiased approach throughout the research, using semi-structured interviews with all interviewees.

CHAPTER TWO: LITERATURE REVIEW ON MINE CLOSURE

2.1 Introduction

Mine closure has several impacts and consequences. Unexpected mine closures can have devastating effects on workers and local communities. It can result in employment losses, disinvestment, declining government revenues, infrastructure decay and outmigration. It reduces economic activity and can harm the environment. Environmental liabilities may also impose economic difficulties on mining communities (Berket et al., 2020). Mine closure is more than a managerial-technical-engineering problem. Economic dependency on mining has an impact on long-term livelihoods. These legacies will invariably affect mine closure outcomes (Bainton & Holcombe, 2018).

Boom times provide a desirable lifestyle, but busts can result in job losses (Ferguson, 1999). Migrant workers might return to rural areas during the bust to find alternative livelihoods (Potts, 2005). Individuals and communities may experience stress, due to the boom-bust cycles. Mineworkers solely dependent on mining jobs, are the most vulnerable. The consequences of mine closure are more severe in rural populations where alternative economic activities are limited. These implications are also more severe for mineworkers without higher education or skills. It is challenging to transfer mining skills to other industries. Hence, it is possible to underestimate the impact of mine closures on individuals and communities.

This chapter discusses the literature on the nature and effects of mine closure on mineworkers and their dependents. Furthermore, it identifies the support options required by former mine employees after a mine closes and recommends future mine closures and possible support options for former mine employees.

2.2 Definition: mine closure

Mine closure is the process of temporarily or permanently ceasing mining operations. The scale of resources, quality and commodity prices determine how long a mine can operate. Mines close when ore supplies run out, or commodity prices plummet. Shutting down a mine usually takes two to ten years, but it can take longer if long-term water monitoring or treatment is required. (Vivoda et al. (2019) define mine closure as a systematic process of planning and managing the decommissioning of a mine site. This process includes reducing impacts and

residual issues, environmental rehabilitation, and eventually relinquishing mining assets. Mine closure occurs once mineral extraction is complete, and it comprises deactivation and removal of infrastructure, followed by landform shaping and rehabilitation (Vivoda et al., 2019). Mine closures can be unpredictable and time-consuming. The process of decline and closure can be quick at times, but it usually takes a long time. Mining companies find it challenging to predict mine closures, and communities and households find it even more difficult. It involves a gradual reduction in the workforce and sub-periods of rising and falling employment.

2.2.1 Decommissioning

Typical mine closure activities include the following steps: (Mica, 2020).

Shut down: When production ceases, employees lose their jobs, and the mine only retains a small workforce for closure processes. Before the mine closes, the mining company may offer its employees retraining or early retirement options.

Decommissioning: The mine decommissions mining processing facilities and equipment during this step. Further activities include managing or disposing of waste, draining pipelines, cleaning, and selling equipment, demolishing, or repurposing structures and recovering.

Remediation/reclamation: Reclamation aims to return land and watercourses to a usable state, ensuring that any landforms and structures are stable and that any watercourses have acceptable water quality. Reclamation usually entails removing any hazardous materials, reshaping the land, restoring topsoil, and planting native grasses, trees, or ground cover, among other things.

After the closure, monitoring programmes evaluate the effectiveness of the reclamation measures and identify any necessary corrective action. After mine closure, mines may require long-term care and maintenance, including ongoing treatment of mine irrigation water, periodic monitoring and maintenance of tailing containment structures, and monitoring of any ongoing remediation technologies used, such as constructed wetlands. Although the mine closure steps are in sequential order, mining operations frequently begin closure and remediation while operating (Mica, 2020). Mine closure also requires that the developer has met the site's construction and final land use objectives before the state certifies the transfer of ownership.

In most countries, the mine operator may legally abandon a site if the ultimate land use and rehabilitation objectives have met state requirements (Vivoda et al., 2019).

2.2.2 Abandoned mines

A global problem is abandoned mines, also known as derelict, ownerless, abandoned, legacy, and orphaned mines. The main feature of these sites is incomplete remediation of historical mines. The term “abandoned” is used in the Ontario Mining Act to describe sites where the proponent has indefinitely halted or suspended advanced exploration, mining, or mine production without rehabilitating it. In the mining industry, terms like ‘inactive, orphaned, and unattended’ are commonly used (Mackasey, 2000).

Furthermore, illegal mining is common in abandoned and unrehabilitated mines. Although the mining industry and government continue to prevent illegal mining in abandoned mines by sealing open shafts, it is impossible to close all the shafts. Furthermore, illegal miners frequently create alternative entrances after authorities seal the shafts, while governments take little or no action to stop illegal surface mining. Disasters associated with illegal mining will continue to occur (Matshusa & Leonard, 2022).

Vivoda et al. (2019) say formal mine closure occurs when a government authority issues a certificate exonerating the owner or operator from any obligation to use the resource, liabilities, and duties relating to the mine’s economic, environmental, and social repercussions. Given the safety, environmental, and social risks associated with a poorly managed mine closure, this risk aversion by governments is understandable.

Most abandoned mines in Sub-Saharan African countries are unaccounted for, unmapped, and dangerous. Abandoned mines have become a social and environmental burden for surrounding communities, citizens, and governments. Abandoned mines threaten human and ecosystem health in Sub-Saharan Africa, particularly where there is contamination with heavy metals and hazardous chemicals (Dales & Ramasamy, 2019).

2.2.3 Care and maintenance

The majority of mines are never officially closed. Many mines enter a phase known as ‘care and maintenance’ or being ‘mothballed’ with little investment in rehabilitation. Sometimes, it

might be a way to avoid formal closure (Vivoda et al., 2019). Active mining ceases during care and maintenance, but this is not formal. It is the process of temporarily closing a mine to resume operations later. Care and maintenance involve regular monitoring to ensure safety at the mine site, surrounding communities, and the environment closure (Vivoda et al., 2019). Care and maintenance create significant environmental liabilities and social concerns. Aside from using ‘care and maintenance’ to bypass closure requirements, mining companies sell their stakes in mines as resources dwindle and closure liability grows.

2.2.4 Large mining companies selling to smaller companies

Mine closure and decline often mean large mining companies sell their mines to smaller ones. Small companies usually have a more cost-effective structure and can prolong mine life. However, the long-term risk is that they rarely have the financial means to close mines properly. Transferring power to small businesses increases the likelihood of haphazard closures or abandoned mines, leaving the state to close them (Marais et al., 2022).

2.3 Mine closure

2.3.1 Existing literature

Coal mining areas are in a constant state of flux. Opening new mines boost the region’s economy and attract workers who often migrate from far away. New technologies often increase productivity, reduce coal mining jobs, and require new skills. Every mine must close at some point, either because of depletion or changing economic framework conditions, such as increased competition on the global market. As a result, structural change processes and their associated challenges are not a new occurrence in coal regions. Coal mining jobs and usage have declined in all European countries over the last few decades. In the last half-century, the world lost approximately four million coal-related jobs (World Bank 2018).

Literature suggests that when a mine closes, the impact is often more significant than when other industrial plants close, because mines often account for a larger share of the local economy. The traditional remote mining town’s closure of the mine often meant the town’s closure, resulting in ghost towns.

Because many mining operations are in remote areas, there are often few or no other employment options. As a result, mines must develop economic diversification (during the operation stage), which will help communities after the mine closes

Most mining closure plans are primarily concerned with environmental issues, with only a few addressing socioeconomic concerns. Even when a mine’s closure plan includes considerations for social dimensions and the local economy, the approach is often poorly articulated. It fails to consider the implementation of comprehensive and long-term initiatives that would allow local communities to overcome the wide range of consequences brought on by the withdrawal of resources when a mine closes (Bushesha & Shoo, 2020). Mine closure presents a complex mix of social, environmental, and economic issues (Vivoda et al., 2019).

Research has linked mining and social disruption. However, the research primarily links social upheaval to mining expansion or boomtowns. The research does not link mine decline and social disruption. Empirical evidence from the Global North suggests that such a link does not exist. In the Global South, Marais et al. (2022) argued that mine closure creates social disruption.

Mancini and Sala create a system for classifying the favourable and unfavourable social effects of mining. Through the use of generic and site-specific data, SLCA evaluates the social and socioeconomic impacts of products (from the extraction and processing of raw materials to the manufacture and use of products). Vivoda et al. (2019) identified 13 social aspects of mine closure (see Table 2.1).

Table 1: The social aspects of mine closure

Social aspects	Indicative element
Amenity	<ul style="list-style-type: none"> ○ Resources for recreation and the arts in the area (e.g., heritage sites, parks and recreation areas, communal areas) ○ Local sports facilities, arts, and culture

Business	<ul style="list-style-type: none"> ○ Opportunities for local businesses to grow in the mining industry, as well as in other industries
Demography	<ul style="list-style-type: none"> ○ Changing population dynamics (e.g., growth/decline, migrations, ageing, gender balancing)
Economy	<ul style="list-style-type: none"> ○ Diversification and dependence of local economies ○ Income of households ○ Diversification and dependence of local economies
Education and training	<ul style="list-style-type: none"> ○ Development of local skills in mining and other industries ○ Access to quality education and training
Employment	<ul style="list-style-type: none"> ○ Mining job opportunities in the area ○ Local employment in other industries
Environment	<ul style="list-style-type: none"> ○ Environmental factors that influence social conditions (e.g., quality of air, water, land, ecosystem)
Inclusion	<ul style="list-style-type: none"> ○ Inclusion of vulnerable and otherwise marginalised groups (e.g., indigenous peoples, women, ethnic minorities, disabled, elderly, and young) in closure planning, closure, and post-closure processes (including decision-making)
Infrastructure	<ul style="list-style-type: none"> ○ Local transportation (e.g., public buses, roads, and airports) ○ Essential infrastructure (food supply, power supply, water supply, telecommunications)
Health	<ul style="list-style-type: none"> ○ Community well-being and health ○ Access to high-quality medical and social services
Housing	<ul style="list-style-type: none"> ○ Quality, availability, and affordability of local housing
Land	<ul style="list-style-type: none"> ○ Ownership, access, and use of local land ○ Acknowledgement of traditional/customary ownership

Livelihoods	○ Local livelihoods (access to land, food, water, and shelter, for example)
Participation	○ Participation of stakeholders in closure planning, as well as closure and post-closure processes (including decision-making)
Security	○ Safety and social order (e.g., tensions, crime, violence)
Social(general)	○ General socioeconomic concerns

Source: (Vivoda et al., 2019).

2.3.1 Jobs and poverty

Numerous issues have arisen in the formerly prosperous mining communities, due to the closure of mines, like Mhangura, Gaths, Shabanie and Kamativi Tin Mine in Zimbabwe. These mines once provided livelihood sources for many families and supported the local economy (Ngoya, 2019). Mine closure leads to social transformations in local communities, associated with job loss and escalating poverty. For instance, the closure of the Kabwe Lead Mines in Zambia in 1994 resulted in nearly 1,200 direct job losses and an additional 5,000 jobs lost by contractors. The mine closure of the Kabwe Mine led to the rapid decline of the local economy with minimal diversification. Luanshya Copper Mine in Zambia dismissed 1,600 employees when it closed its Baluba Mine, due to plummeting copper prices and energy shortages (Hasheela et al., 2014).

The closure of Zambia's Bwana Mkubwa Mine in 2008 led to 400 employees losing their jobs. Job losses raise the need to search for alternate forms of livelihood and employment, forcing mineworkers to relocate. They may be unable to find employment with their skills as they might be inappropriate for alternative economies. It is even more challenging for retrenched miners to get other jobs in rural areas (Hasheela et al., 2014).

Zimbabwe's closed mines have become a significant obstacle to the country's adoption of its vision for economic revival against the backdrop of a booming mining industry that, at its peak, was supporting the entire country. Mine closure affects the well-being of the neighbourhood

and the entire country. Mines typically close for two reasons: their reserves run out or become unprofitable (Ngoya, 2019).

Most Zimbabweans, who live close to areas with mineral deposits, believe that the mining industry is key to improving the economy of the country's citizens.

2.3.3 Effects on livelihoods

Mine closure has a considerable impact on a country's economy. However, the impact is traumatic for those in the local communities. The social services, which the mines provide to the communities, become unsustainable after mine closure. Local municipalities and the government can usually not create alternative economic initiatives and can initially not continue providing the services with the mines. These issues lead to the communities' economic, emotional, and spiritual collapse, usually characterised by poverty, substance abuse, crime, and violence (Ngoya, 2019).

The Chamber of Mines in Zimbabwe heavily supported sports. When the mines shut down, most teams and clubs closed. Gates Mine, for instance, once served as the site of one of Zimbabwe's most extensive athletic, netball, soccer, volleyball and cycling stadiums. The stadium now is in a terrible condition, though, as the locals use it as a cattle paddock. The closing of these mines in Zimbabwe did have a significant impact on sports (Ngoya, 2019).

Most children in towns with minimal mineral deposits, but no active mines, have quit school and instead choose to look for mineral deposits to sell cheaply to support their families. The literacy levels of many affected children are low. Because of mine closure, small-scale and artisanal mining activities are now prominent.

Closure and small-scale mining have contributed to child labour and prostitution. Prostitution is significantly increasing in areas where the mines have closed. To make ends meet, financially strapped women and young ladies frequently sell their bodies. This exemplifies how closure leads to a decline in a society's morals, as people seek out any means of surviving (Ngoya, 2019).

Shutting down mines poses a severe risk to people's lives. In Mashava (Gaths Mine), for instance, there is a danger that people and animals could fall into abandoned open pits. The

small-scale mines' operating areas are overlooked by open pits, detracting from the local area and the country's beauty. Small-scale miners have more opportunities now that some mines are closed, but there are some issues, because their unchecked activities contaminate the community's water supply (Ngoya, 2019).

In areas where mines have closed, the problem of resettling the formerly so-called miners has grown. The miners believe it is difficult to pack up and leave, because the mines still owe them money. This is evident in Mashava, where the Gaths Mine has closed, but the workers have refused to leave, claiming the mine owes them money. According to the workers, the situation is terrible, because they cannot afford to raise money for necessities like food and school supplies (Ngoya, 2019).

A list of 157 closed and abandoned mines in the country without rehabilitation, serves as a reminder of Namibia's extensive mining history. The list of issues and dangers is extensive and includes everything from acid mine drainage to soil and groundwater contamination, unsafe open pits and underground mine structures, rock falls, and failing tailing dams, as shown in the illustration, where the orange colour denotes acid mine drainage from the tailings of the Otjihase Copper Mine (Hasheela et al., 2014).

2.4 Mine closure's social consequences

Mineral development has created new communities and brought wealth to residents in these mining regions. While mining supports impoverished communities (health clinics, business activities, schools, roads, and other social amenities), there is a need to document the stress experienced by individual communities after mine closure (Shandro et al., 2011).

Many people used these cities as workplaces, communities, and homes. These communities are distinguished by two different operational identities, resulting from mining operations: occupational communities (households or families whose primary income comes from mining); residential communities (existing homes or families within the mining area and those originating from mining operations). In many mining communities, indigenous communities are families or households rooted in the soil or those who have an ancestral connection to it (Shandro et al., 2011).

The closure of these communities directly impacts the primary source of income, placing economic, social, and psychological strain on the individuals and communities affected. Although often overlooked, mine closure's social and economic consequences are frequently as damaging as the environmental consequences. Towns that rely on mining as a mono-industry are severely damaged, as mine closures obliterate the towns' economic foundations (World Bank, 2018).

Mine closure is frequently traumatic for local populations, particularly in rural areas where the local authority is weak, labour productivity and non-mining income are low and where there is limited labour mobility. The collapse of local enterprises, public services, departure of young people, and socioeconomic inequities are only some of the consequences of mine closure. It can create significant distress for communities, due to the threat of economic and social collapse (World Bank, 2002).

Following the mine closure, many stressful events accompanied various forms of distress in the affected communities. Individuals in such communities face a variety of recognised social stressors, the most common of which are economical and health related (D'Silva & Norman, 2015). Alcoholism, prostitution, hopelessness, disempowerment, family stress and neglect are serious problems with mine closure (Campbell, 2000).

According to the situations reviewed, if a country has a significant population of coal employees, particularly in labour-intensive and inefficient mines, labour divestitures in the coal industry will suddenly unleash massive social protection numbers of services, straining and potentially overwhelming the system. A critical concern was the impact on employment. Due to mining jobs loss, local economies affect retail, restaurants, other dependent sectors, as well as social services. When a local economy loses its primary economic engine, the fragility of its narrow economic base, becomes apparent. (World Bank document, 2018).

Mine closure has a variety of negative social, economic, and cultural consequences that vary by community and mine site. Mineral exploration, development and operations have different impacts than closure. The impact of mine closure on a community depends on how reliant it is on the industry – access to alternative employment, investment and resources affect a community's ability to recover after mine closure (Monosky, 2021).

The recent literature review has classified mining's positive and negative social impacts. The analysis and classification aspects of mine closure, including the issues that impact or concern local communities or others, whether directly or indirectly associated with mining, form part of the social aspects of mining closure (Vivoda et al., 2019)

2.4.1 Environmental impact

Mineral development significantly impacts the environment, which is difficult to reverse or stabilise. Mining necessitates the movement of enormous amounts of the earth – far more than any natural process – and alters local drainage systems, topography, and vegetation. Mining also necessitates a lot of energy and infrastructure. Hydroelectric dams and natural gas infrastructure are common developments that occur alongside mines, increasing the overall footprint of the site and putting the mine in competition with other land uses (Monosky, 2021). Old buildings, mining equipment, ore processing facilities, and unmaintained roads may be left behind, posing a threat to fish and animals' ability to move freely in their natural habitats, compromising the ability of the local population to hunt and trap. Soil loss alters groundwater regimes and vegetation, and landscape subsidence may occur at closed and abandoned mines (Monosky, 2021).

2.4.2 Health and mental health impact

Mine closure leads to health-threatening conditions, including injuries and psychological problems in mining communities. These include depression, mental health issues and heart disease (Pini et al., 2010).

Closing mines impact the social structure, resulting in anxiety, insomnia, and substance abuse (C Georgia State University's Roberta Attanasio, 2016). Many psychological effects can result from mine closure for individuals and communities (Pini et al., 2010). Depression, because of mine closure, could lead to reduced long-term employment participation. Depression after job loss also increases the likelihood of remaining unemployed (Stolove et al., 2017).

Although many factors contribute to long-term unemployment, some economists worry that long-term unemployment will have a psychological impact, affecting motivation, sense of control, trust, and self-esteem (Stolove et al., 2017). There is a higher level of depression

resulting from unemployment than amongst working persons, posing a significant economic burden to society (Greenberg et al., 2003). There are many reasons why unemployment, due to mine closure, can be stressful. An individual's employment status heavily influences social privilege, so psychological difficulties are prevalent among those economically marginalised (Fryers et al., 2003).

Living standards deteriorate, due to underemployment and unemployment. Goretskii (1995) observed that former operators were less able to concentrate and had compromised psychophysiological parameters. Avery et al. (1998) have reported that job loss reveals psychological deficiencies in ex-miners. The incidences of depression and suicide among former miners have also been higher (Gibson & Klinck, 2005). Furthermore, health status plays a role in both short- and long-term unemployment among people with mental and physical illnesses. As time passes, employers will increasingly consider job candidates less attractive, due to the stigma of unemployment (Obetholzer-Gee, 2008).

Mine closure can cause a sense of helplessness for some people, affecting their perception of their situation and locus of control (Stolove et al., 2017). Aside from the health concerns for Valley residents, 30 years after the coal mine closed, there have been concerns about their mental health and well-being.

Mental illness, among other diseases, is rising, as evidenced by data gathered through the Disability Living Allowance program. Coal mining may cause other diseases, which may not manifest until long after the mine has closed. In addition to psychological and social costs, mine closure also has health costs. The literature shows that health and mental issues will challenge coal communities long-term

Despite mine closure, isolation and low social support may have negatively affected older communities at greater risk of illness and depression, according to the authors. Similarly, young adults experienced higher depression rates and illness after mine closure, likely caused by the lack of jobs and opportunities for those who remained in the community after the mine closed.

There is proof that mine closures induce stress, anxiety, depression, and other illnesses, such as headaches and tuberculosis, although some of these symptoms are also present where mining is growing. There is a connection between community contentment, health, and mental health

in the literature, particularly among the elderly (Mactaggart et al., 2016). Practitioners and policymakers must be aware of mine closures.

2.4.3 Impact on economy

According to the literature, closure creates several challenges at the household level. Many people are experiencing psychological and socioeconomic difficulties, as they adapt to new circumstances, due to mine closures. However, closures affect more than just the community. Besides the workers laid off directly from the mine, local service businesses and auxiliary industries that support mines, may also shut down or cut back their operations, affecting households (Goretskii et al., 1995).

A mine closure has substantial social and cultural turmoil and financial consequences for the country (Hoskin, 2000). Former mine employees and their families, lost access to many daily activities they enjoyed before, including opportunities to interact socially through dining at restaurants, visiting community-run entertainment venues, and visiting the city. Mine closures affected the families, which caused them to be unable to purchase groceries and other essentials (Tempelhoff, 2010a).

In school, the children were not motivated and experienced learning difficulties. Since their parents could not afford new school clothes, they needed to adjust to their families' unique economic situation. As a result, the children had to wear second-hand clothes to school. The humiliation of several children led to one of them attempting suicide, reports allege. Non-payment of school fees led to children dropping out of school. Children also had difficulty accessing their year-end academic results because their parents owed the school money. School children often arrived hungry, although school feeding programs were evident (Van Eersel et al., 2020)

2.4.4 Employment impact

Job loss can have a significant impact on mineworkers and communities. Losing a job can affect one's physical, psychological, and social well-being. The direct loss of employment and the secondary loss of resources (e.g., income, status, and self-esteem) can cause local stress. Conservation of Resources (COR) Theory is a stress theory describing the motivation that

drives humans to maintain their current resources and pursue new ones. (Van Eersel et al., 2020). From a conservation of resources perspective, this depends on how threatening the individual perceives the event, how many resources are available to deal with the loss and how much an individual has invested in their lost job. Furthermore, data suggests that losing a job might result in complicated grieving symptoms (Van Eersel et al., 2020).

There is also a connection between attachment to lost work, self-esteem loss and identity disruption (Papa & Lancaster, 2016). The affected person has to reorganise their self-schemata, search for meaning, and rebuild their fundamental assumptions about others, the world, and the future (Harvey & Miller, 1998). Separation distress goes with difficulty embracing the loss, “moving on,” and finding meaning in life, resulting in enduring pain and functional deficits (Van Eersel et al., 2020).

Many people, including experts and those who have lost employment, seem unaware that complicated grief symptoms might develop, due to involuntary job loss. As a result, these symptoms may go unnoticed or be misinterpreted, for example, depression (Van Eersel et al., 2020). Specific work-related characteristics may influence the impact of involuntary job loss. The impacts are more severe for full-time residents, the number of years of employment affects the development of complicated grieving after a job loss. For example, individuals who have put more time, energy, and social capital into their profession are more likely to have this job play a prominent part in their self-concept (Van Eersel et al., 2020).

2.4.5 Social effects

Every mining stage has distinct environmental and social consequences long after closing the mine (Rao & Pathak, 2009). When a mine closes, mineworkers lose their right to housing. They have to leave their homes, and illegal dwellers often occupy these houses. It has a clear negative impact on existing social structures and neighbourhood safety. Metal from mining sites is stripped and sold to metal recyclers. The vandalism of infrastructure and facilities is common. Mining operations cannot resume unless the infrastructure is repaired, which would come at a high financial cost to the new mine owner (Ackerman et al., 2018). After mine closure, studies have found that migrant workers often face inhumane living conditions, separation of families,

extreme gender and age imbalances, a lack of land, and inadequate service (Ackerman et al., 2018).

Migratory labour practices result in the absence of parents, which has broader implications for ex-mine workers' livelihoods. The separation of parents and children causes problems for families. Prolonged periods of absence can result in a cultural disconnect between the parents and the family (Heymann et al., 2016). It is no secret that distance parenting impacts the lives of children, irrespective of their ages or family support levels. Distance parenting can cause family relationships to deteriorate, resulting in disunity and competition among children. Teenage delinquency may also increase (Madziva & Zontini, 2012).

Employees with direct dependents, whether married or single, may be affected. In a mine closing, married employees have a more difficult time than mobile, single employees, as mine's shutdown jeopardises an employee's dependents. The loss of income will affect all aspects of life, but it will be greater if the employee is the principal breadwinner in the family (Mackenzie, 1992).

Parents are directly responsible for the welfare of their children, therefore, losing a job will result in a decline in parents' ability to provide for their children's needs - education, clothing, and food. The parents of employees may be totally or partially dependent on their children. Care for the elderly will suffer if income declines in education and educational opportunities (Mackenzie, 1992).

2.5 Conclusion

Mine closures harm both the mining communities and the workers. It has an impact on their savings, plans and financial outcomes. Coal mining is unsustainable, because it depletes non-renewable resources and then abandons them, causing long-term harm to the ecosystem and community.

Due to its socioeconomic impacts, mining is a practice requiring strict regulation, from prospection and exploration to transportation, manufacturing, and consumption. A recent study from Sheffield Hallam University contends that the closure of coal mines has long-term

consequences for communities. The economic and employment consequences of closure have received far more attention in the literature than the social and political consequences.

Because a smooth and just transition requires designing interventions targeting the specific vulnerability of different communities in mining areas, government and mines should consider the distributional effects of mine closure on economic impacts. Reducing social inequality is likely a critical success factor in the post-mining transition, particularly in developing countries where mining regions have a high wealth concentration and few human or social benefits. According to the researcher, the social effects of closure have been understudied (Magadzu, 2021).

CHAPTER 3: THE LEGAL FRAMEWORK

3.1 Introduction

The previous chapter discussed the literature on mine closure. Mine closure is a complicated and interdisciplinary operation that requires a long-term collaborative effort from the government and mining companies. Both government and industry partners share the social concerns of mine closure. Mine closure certificates are not a common global phenomenon. This means that very few mines have rehabilitated the land to the satisfaction of the regulatory body. Both industry and government are gaining mine closure experience and expertise, and many jurisdictions are currently developing regulations for mine closure. This chapter examines regulations and policies concerning mining closure in South Africa. Successful mine closure requires a clear legal framework, aligned with international regulations. Often, the regulators lack the appropriate skills and knowledge for mine closure (Magadzu, 2021).

The Minerals and Petroleum Resources Development Act of 2002, acclaimed by the international community as best practice, has resulted in a paradigm change, addressing the rights and responsibilities of mining firms in South Africa. Although the new legislation's primary goal was to remedy past inequities in mining rights and the long-term environmental repercussions of mining, the socioeconomic realities of mining districts also received attention. The Act requires mining corporations to develop a Social and Labour Plan as a condition for gaining mining rights. Social and labour plans should help towns and mines to coordinate their planning, while addressing the socioeconomic issues related to mining and mine closure.

According to Marais and Nel (2016), the long-term repercussions of mining activities and downscaling and closure, are inescapable. However, the term 'mine closure' is most commonly used to describe the rehabilitation of a degraded mine site and the demolition and other infrastructures. Social considerations are not automatically included. Bainton and Holcombe (2018) advocate for a responsible approach when dealing with the social components of mine closure, pointing out that the emphasis is frequently on environmental issues. Mine closure law requirements differ by jurisdiction, as do financial insurance duties for closure costs (Vivoda et al., 2019).

Mining, Minerals, and Sustainable Development (MMSD) (2002) advises that mine closing processes and regulatory requirements should be strengthened. Despite elaborate regulations, few governments have committed to implementing mine closure policies and laws. The regulatory conditions and financial guarantees for mine closure differ by nation (Vivoda et al., 2019). Clark et al. (1998) discovered that, in most cases, the conditions for mine closure are established in mining rules, associated laws and regulations, or mining-specific legislation, rather than in independent mining laws.

This chapter evaluates mine closure legislation in the Republic of South Africa. The primary focus is on the socioeconomic elements of closure. However, this often depends on environmental restrictions. The chapter addresses the body of national and subordinate legislation, governing mining closure, regarding socioeconomic and environmental sustainability. Specific pieces of law and policy recommendations are listed below.

3.2 Legislation relating to mine closures in South Africa

In South Africa, there was no regulation governing mine closure until 1991. When mines lost money, the firms merely abandoned them. Land rehabilitation was mandated by the first legislation passed in 1991, and subsequent legislation increased the environmental and financial standards. As with all mine closure policies worldwide, South Africa's mine closure policy is centered on environmental concerns (Marais, 2022). Post-apartheid regulations and policies place the ultimate responsibility for mitigating environmental and social damage on mining companies. The obligation covers all phases of the mine's operation, including the start, the duration of operations and the post-operational period, following mine closure. This includes legislative promises to clean up, refresh and eventual closure.

- Constitution of the Republic of South Africa (Act 108 of 1996) (Constitution).
- The Mine Health and Safety Act 29 of 1996.
- The 1998 White Paper on Local Government.
- Mineral and Petroleum Resources Development Act (Act 28 of 2002) (MPRDA).
- National Environmental Management Act (Act No. 107 of 1998) (NEMA).
- LRA, or the Labour Relations Act of 1995.

- The 2018 B-BBEE Mining Charter, which will contain Social and Labour Plans ("SLP").
- The 1998 Skills Development Act No. 97.
- BCEA, or the Basic Conditions of Employment Act.

3.2.1. Constitution of the Republic of South Africa (Act 108 of 1996) (Constitution)

The Constitution governs all mine closure regulations, which supersedes all other legislation (RSA, 1996a). When discussing mine closure, most legal practitioners refer to Section 24 of the Constitution (Centre for Applied Legal Studies [CALs], 2016). It states that everyone is entitled to a space that is not detrimental to their health or well-being. Even though Section 24 provides the framework for mine closure legislation, the focus is on environmental and not social issues. A lack of land use planning, following the mine closure stage, may limit or practically destroy communities' possibilities for subsistence (RSA, 1996a).

The Constitution recognises environmental well-being as a fundamental human right to safeguard. Everyone has the right to an environment that is not hazardous to their health or well-being, according to Section 24 of the Constitution, which also specifies safeguarding the environment for the benefit of both current and future generations (RSA, 1996a). This ensures that environmental factors are taken into account during the closing of a mine. The Constitution also guarantees rights related to access to information, competence or standing to bring legal action and administrative justice (RSA, 1996a).

All these things become important when considering how to manage and safeguard the environment during the whole life cycle of the mine. CALS (2016) emphasises the idea of a healthy environment and government protection against unhealthy environments. Environmental conservation for the present and future generations is essential, and sustainable resource use is encouraged for socioeconomic growth, according to Section 24b (iii) of the RSA, 1996a. The mining sector in South Africa is required to uphold the Constitution and precisely adhere to mine operations and closure plans, regarding other people's rights (RSA, 1996a).

3.2.2 Mine Health and Safety Act, Act No. 29 of 1996

The Mine Health and Safety Act 29 of 1996 (MHSA) was created to safeguard the health and safety of those working in mines and fulfil South Africa's obligations under international law. The MHSA also improves mine health and safety measures by establishing culture, training and implementation between the State, employers, employees, and their representatives (Swart, 2003).

The MHSA refers to all mine stages, including decommissioning and closing, maintaining a safe, stable environment, even after operations, according to Sections 2 and 5 of the MHSA. According to the MHSA, mines are responsible for ensuring that the necessary plans are in place when the mine operations are about to end and when their mining area is not operational. The MHSA and subsequent regulations mandate that mines submit a rehabilitation plan for the surface of the mined area, prevent water and air pollution, and then apply for the final closure of the mining area (Swart, 2003). According to the MHSA, all businesses must take ongoing, reasonable precautions to avoid accidents, illnesses, fatalities, and property damage of any type at, or as a result of mines. According to the MPRDA, this requirement relates to a mining location that is not currently being worked at but has not yet been issued a closure certificate (Swart, 2003).

Sections 12 and 13 of the Act address the medical record and the requirements for tracing the health of employees exposed to risks. The record requires safeguarding until the mine is closed and turned over to the Department of Labour. Again, as standard criteria, all employees must perform medical examinations for exit certificates. Exit medicals are designed to shield mines from any liabilities and for the employee to use, if there are any claims. It will prove that the worker did not develop any health issues while working at the mine. Then, under Section 17 of the Act, each employee will be given an exit certificate detailing their exposure to radiation, silica dust and noise, as well as the presence of any other occupational disease (RSA, 1996b).

3.2.3 The 1998 White Paper on Minerals and Mining

The South African mining industry has existed for more than a century. Profits were the primary motivators for a long time, and there were few regulations on mine closure. Only in the early 1990s did South Africa's mining legislation begin to incorporate concepts of

sustainable development with the passing of the Minerals Act (1991). The democratic government produced the White Paper on Minerals and Mining, which included a detailed assessment of all mining policies of 1998 (RSA, 1998a).

The White Paper focuses on continuing a favourable policy toward investment, is the focus of Business Climate and Mineral Development. The White Paper includes explicitly a Mineral Rights and Prospecting Information Section, presenting changes to access and mobility to mining rights. There is further evidence of the imbalances in ownership and management, health and safety, housing needs, migrant labour, industrial relations, environmental management, regional collaboration, and administration. Under the section “people issues”, there is some reference to mine closure and downscaling. Only two will be considered for this section: People Issues and Environmental Management. The People Concerns subject addressed health and safety, housing, migrant labour, industrial relations, closure, and downscaling. According to the White Paper, job possibilities in mining and mining-related industries have decreased. The Government is responsible for assisting firms, employees, business vendors, and mining-related populations in predicting and mitigating the effects of large-scale job losses.

Regarding environmental management, the White Paper identified three policy and regulatory areas: the environmental impact of exploration, the effects of mine operation and closure, and the sustainability of recovery programmes when mining operations have ceased. The White Paper emphasises the importance of the Government promoting comprehensive and systematic environmental protection. As a result, the State intends to implement a single national environmental policy that will adhere to a standard national environmental plan and sustainable development within cooperative governance. This was realised when the Government promulgated the National Environmental Management Act in 1998.

The White Paper states that the Government will work to mitigate the socioeconomic impacts of large mining downscaling and closure. The White Paper says that note should be taken of the rate, context, and consequences of mine downscaling. To protect mining jobs, the Government will examine whether government aid should be available to mines and regions facing mine closure and, if appropriate, set guidelines for such aid. The White Paper on Minerals and Mining (1998) publicly advocate for extensive interaction with the labour force

when mine closure is imminent. It also asks for establishing the Social Plan Fund, which will assist with the interventions and efforts agreed upon between companies and employees who face systemic job losses when mines close.

Concerning Industrial Relations and Employment Conditions, firms must advise employees of potential job insecurity and prepare, in collaboration with government and labour, as well as mechanisms to safeguard employment or lessen retrenchment repercussions. Labour requires decisive government intervention to preserve the welfare of mine workers and neighbours harmed by factors that contribute significantly to mine closure.

The Government released the 1998 White Paper and the new policy approach focused on four factors: labour law, environmental protection, workplace health and safety, and ownership and management in the mining industry (focusing on the progress of black people and women). Women's concerns and the social effects of the mine closure received much less attention (Sesele, Marais & van Rooyen, 2021).

We distilled the White Paper's analysis into five critical ideas about mine closure and downscaling. First, the White Paper recognises that mine closure is a reality, and that mining employment will continue to decline, due to the finite nature of mining, mechanisation, and increased open-cast mining. The White Paper states that the Government's approach will be to keep an eye on the trend of diminishing employment in mines. It is unclear whether a simple concentration on monitoring would be sufficient or the objective of such monitoring (Sesele, Marais & van Rooyen, 2021).

In addition, the White Paper acknowledges that mine closures and downscaling will impact the region. It states: "Declining mining centres cause ripple effects throughout provinces and regions, primarily when unpredictable economic conditions determine their shrinkage". It does not elaborate on these potential side effects, and the absence of a suitable framework contrasts sharply with that proposed (Vivoda et al., 2019) (see Table 1). The Government acknowledges, however, that downscaling, and closures are realities that require action (Sesele, Marais & van Rooyen, 2021).

Specifically, the statement states that the Government will "ameliorate the socioeconomic repercussions of significant downscaling and mine closures." It assigns municipalities to

resolve this issue through their strategic plans, also known as Integrated Development Plans (IDPs) and Local Economic Development (LED) plans. It also presupposes that money will be available for the various branches of government to deal with the effects of mine closure (Sesele, Marais & van Rooyen, 2021).

The White Paper recognises the probable predicament of mineworkers, who might lose their jobs, which brings us to our third point. Before downscaling, it emphasises the value of consulting with the workforce, assisting employees in finding new employment, retraining them, and offering counselling services. These procedures must be followed, and mining corporations would be liable for doing so. It is unclear from the White Paper how local planning should respond to mine closure (Sesele, Marais & van Rooyen, 2021).

Closure and downscaling are viewed in the White Paper as opportunities for smaller mining firms. As a result, historically excluded people may now have a better chance of participating in mining. This has been observed (Marais, 2013a). A lack of funding can prevent smaller businesses from effectively managing closure, which can negatively impact the closure's social planning process. (Sesele, Marais & van Rooyen, 2021).

The White Paper also notes that the Government will help mines set up social plan funds, due to downscaling and closure. This notion of a social fund was expanded upon by the MPRDA, which came after the White Paper, in order to address the social effects of mining by implementing SLPs. Nevertheless, this fund has not given closure issues any thought. In discussing mine downscaling and closure, the White Paper focuses primarily on the financial and environmental concerns. It does not mention gender and only makes one mention of women (not about closure). Although progress has been gradual, a parallel government initiative to increase women's employment in the mining sector exists (Sesele, Marais & van Rooyen, 2021).

3.2.4 Mineral and Petroleum Resources Development Act (Act 28 of 2002) (MPRDA)

The MPRDA (Act 28 of 2002) followed the White Paper. The MPRDA acknowledges the State as the custodian of all mineral and petroleum resources in South Africa. It wants to facilitate equal access to the country's national mineral and petroleum resources, particularly historically disadvantaged people, such as women. There is also a significant focus on protecting the

environment. Mining should contribute to the social and economic well-being of the communities in which they operate (MPRDA, 2004).

Mineral rights, prospecting permits, and mining authorisations are subject to specific transitional measures under the MPRDA. As a result of the Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA), which came into effect on 1 May 2004, the legal framework for the regulation of the mining industry has undergone significant changes. For example, all prospecting and mining operations must be conducted by the generally acknowledged principles of sustainable development, according to Section 37 of the MPRDA. It further states that the purpose of the MPRDA is to ensure that the nation's mineral and petroleum resources are developed in a sustainable and orderly manner, while promoting justifiable economic and social development by Section 24 of the Constitution.

According to Section 38 and Section 39, the Environmental Management Program (EMP) process outlines assessing and managing identified impacts. As part of the EMP, R527 specifies the environmental objectives and goals for mine closure. Suitable mining permit applicants must make prescribed financial provisions to rehabilitate or manage negative ecological impacts. According to the mine closure guidelines in R527, the owner of a mining permit must make the following provisions:

- The process of shutting down its mining operation begins at the beginning of operations and continues throughout the mine's lifetime.
- Environmental impact risks are assessed and proactively handled, which includes acquiring pertinent data during the mine's activities.
- Mine Health and Safety Act (MHSA) 29 of 1996 safety and health regulations.
- Environmental consequences that are residual and potentially latent are identified and measured.
- The land is restored to its natural state or to a planned and approved norm or land use that adheres to the idea of sustainable development, as far as is reasonably possible.
- Mining operations close quickly and affordably.
- The Environmental Management Plan (EMP) includes key objectives for mine closure, including proposed closure and restoration costs, broad future land use objectives and management of environmental impacts.

Like NEMA and the National Water Act (NWA), the MPRDA contains a provision (Section 45) that allows the DMR to order an operation to look into, examine, assess, and report on the effects of any pollution or environmental degradation and take any necessary action within a predetermined time frame. The DMR can take the required steps and charge the Mine Manager (MM) for the costs if the operation fails to follow such a direction. Section 38 holds the mine's owners jointly and severally accountable for any unacceptable adverse effects or non-compliance with this Plan in conjunction with the EMP.

3.3.5 National Environmental Management Act (Act No. 107 of 1998) (NEMA)

A vital goal of the National Environmental Management Act (NEMA) is to promote sustainable development by setting national standards for the integrated management of the environment (RSA, 1998b). State organs and all branches of government must work together, consult, and support each other. According to RSA (1998b), NEMA 26 covers environmental protection topics, including mining communities' socioeconomic development.

The duty of care principle, which applies to all types of pollution and imposes a duty of care to prevent, or if permissible, to minimise environmental damage, is outlined in Sections 28 (1) and (3) of NEMA. The provision for rehabilitation following mine closure in Section 28 (3) (f), which indicates that the measures may include efforts to "remedy the consequences of pollution and degradation," is one example of a measure to prevent environmental deterioration.

The following principles are listed in Section 2 of the Act and referenced in Section 37 (1) of the MPRDA. Environmental management must adhere to Section 2 of the National Environmental Management Act of 1998 guiding principles (Act No.107 of 1998).

The environmental requirements of this Act shall:

- Apply to all prospecting and mining operations and any matter relevant to such operations; and
- Be interpreted, administered, and carried out by the provisions of this Section.

In 2015, the Government took steps to regulate care and maintenance under NEMA. According to the Financial Provisions Regulation, mines were to be placed on care and maintenance for

five years before being reviewed. However, the requirement of proposed regulations was abolished in 2017, leading to unregulated care and maintenance (Magadzu, 2021).

3.3.6 LRA, or the Labour Relations Act of 1995

The Industrial Relations Act, No. 66 of 1995 (LRA), regulates the right of trade unions to exist, encourages and facilitates collective bargaining in the workplace, encourages worker participation in decision-making, provides transparent procedures for resolving disputes through statutory conciliation, mediation, and arbitration, and establishes the labour tribunal and the Labour Court of Appeal, with exclusive jurisdiction over labour matters. According to Section 1(a) of the LRA, its purpose is to promote economic development, social justice, industrial peace, and democratisation in the workplace by achieving the primary objectives of the Act, which include, but are not limited to, the implementation and regulation of fundamental rights, conferred by the Constitution.

Section 185 of the LRA's statutory mandate states that labour practices during the employment relationship shall be fair and that employees shall not be substantially, unduly, or unfairly terminated. Additionally, Section 84(1)(c) of the LRA requires the employer to consult with workplace forums (i.e., trade unions) on proposals for partial or complete closures. This process includes the operational termination of employees or so-called downsizing. Operational requirements are defined in Article 41(1) of the BCEA, as requirements based on an employer's economic, technological, structural, or similar needs.

Mine closure indicates the mine's inability to meet its economic needs. According to the LRA, if a mine cannot meet its economic needs, it can dismiss its workers. Section 189 of the LRA requires that the reduction be procedural and materially equitable within the meaning of the law.

Section 189 of the LRA requires the employer to give workers at least 60 days' notice and to consult with the workers, or their union, about proposed redundancies so that the dismissal of workers during a mine closure is proper.

Given the LRA's statutory mandate, 60 days' notice is not enough for workers and is not fair to workers. Employees plan their lives based on the employment contract, meaning they will

work in the mine until they reach retirement age. During retirement age, employees have established retirement plans to support themselves. 60 days' notice is not enough for employees to create sustainable livelihoods for themselves, which is contrary to the intent and purpose of the LRA and has unexpected negative social impacts on communities.

3.3.7 The 2018 B-BBEE Mining Charter, which will contain Social and Labour Plans ("SLP")

The Mining Charter is the popular name for the Broad-Based Black Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry. The Mining Charter creates a framework for the mining and other mineral-related industries to follow to meet a defined transformation target. The mining charter also aims to secure the meaningful economic participation of formerly disadvantaged individuals in the South African mineral resources industry. It establishes requirements for both new and existing mining rights owners (Marais et al., 2017).

The mining charter creates home ownership and skill development as two crucial components that might be useful for the mine's employees after it closes (Marais, 2018). The Mining Charter emphasises that a comprehensive housing development strategy for mineworkers should include a scenario in which such a worker does not become homeless if the mine closes. However, most of my workers' contracts with their employers determine how long they will live there.

The mining charter encourages employees to expand their abilities to work in other mining-related businesses after the mine closes. If another running mine gives an ex-employee an employment chance after the mine closes, this can be advantageous to the individual. The ex-employee might profit less from the skills if there were no employment opportunities. Because they lacked the essential and appropriate skills for employment in other industries, only a small percentage of former mineworkers found jobs, which burdened the Free State Provincial Administration (Marais, 2016). According to Marais and Nel (2016), the incapacity of mineworkers to find employment in other sectors is caused by unrelated skills acquired during mining.

3.3.8 The 1998 Skills Development Act No. 97

The Skills Development Act No. 97 of 1998 (SDA) was passed with the goals of enhancing worker skills, enhancing worker quality of life, and enhancing worker mobility, including enhancing self-employment potential (Section 2(1) (i & iii) of the SDA). Sections 2(c)(ii) & (2)(g)(ii) of the SDA urge employers to offer employees the opportunity to learn new skills, and the Act's goal is to help laid-off workers rejoin the labour force. By ensuring that all existing policies are included in the more comprehensive National Qualification Framework, as envisioned in South African Qualifications, the Capabilities Development Act No. 97 of 1998 also aims to create a plan to improve workplace skills. By the LRA, the SDA is a component of employment law (LRA definition of employment law). The abilities offered during operations in the mining sector, are also skills that may be used in other industrial sectors outside mining, which would be advantageous.

3.3.9 BCEA, or the Basic Conditions of Employment Act

Like the Labour Relations Act ("LRA"), the Basic Conditions of Employment Act (BCEA) governs the interaction between an employer and an employee in the workplace. By carrying out the BCEA's primary objectives, which are to give effect to the right to fair labour practices, as referred to in Section 23(1) of the Constitution, establish and make provisions for the regulation of primary conditions of employment, and thereby to comply with the obligations of the Republic as a member state of the International Labor Organizations, and to provide for matters related to the primary conditions of employment, the Act aims to advance economic development and social justice.

A company may terminate an employment contract for operational reasons under the BCEA. A severance package equal to at least one week's remuneration must be paid to employees during a mine closure and retrenchment process under Section 41(2) of the BCEA.

Employees with fewer years of service will receive smaller packages during mine closure, according to the BCEA. This requirement negatively impacts employees. They perceived mining employment as a way out of poverty because they had spent less time in the mining company. By signing a contract of employment, they start making financial and social

commitments, knowing they will receive a salary for a more extended period. Their families and dependents suffer from sudden mine closures, resulting in devastating social issues.

3.3 Conclusion

It is observed for a somewhat comparable circumstance in towns that have been reliant on mining. The literature has focused much attention on the social upheaval that mining booms cause. This book expresses concern about this, but they contend that the dependence that a mining boom fosters, may have a more significant effect. After the first social upheaval, this dependence grows. The dependence endures even as the disruption fades. People anticipate that prosperity will last. In general, the government and mining corporations do not consider decline, although, over the past 20 years, mining companies have started to include closure in their plans. When mining declines, people and organisations find it challenging to shift, due to dependence. This reliance is frequently maintained by mining throughout boom and slump periods. Additionally, mining leads to material dependencies, such as infrastructure that is difficult to adapt for other uses or environmental degradation that makes planning for another economic activity, challenging.

In his book, Marias (2022), examined South African and global practices to show how mining leads to reliance and why governments, mining firms, and households should work together to reduce dependence to reduce the hazards associated with closure. He noted how housing policies might foster long-term dependence during a mining boom. The emphasis of South Africa's housing strategy is on local development, wealth growth, and homeownership. Homeownership aims to give families a place to call their own, while also allowing them to build wealth and maintain stability.

Chapter 2 focused on reactions to mine closure and its societal repercussions. Despite a growing collection of studies on the social effects of mine closure, social unrest is rarely associated with mine closure in the literature. Significant investments are required by the mining industry's front-end strategy to secure a social mining license. I also covered the idea of declining cities and planning for it in this chapter. The literature on ageing cities strongly focuses on accepting decline rather than always choosing economic diversification. Programs for economic diversification are not the only remedy for the decline. Cities that are struggling

economically should instead learn to respect it. Reduced energy and water use, fewer traffic issues, and the chance to re-establish a connection between the city and nature are all advantages of shrinking. Many mining towns and cities can gain knowledge from the literature on dwindling cities. They should not only value decline, but also prepare for it in advance. The overemphasis on economic diversification could be replaced by examining the potential advantages of decline.

The legislation discussed in this chapter is related to mine closure, and its creation helps strengthen communities adversely affected by mining. Prior law development focused primarily on environmental issues, while ignoring the social impacts of mine closure on communities. According to the Constitution, every person has a right to certain protections, such as a secure environment. The Constitution, which is the nation's supreme law, should be the basis for any new legislation. The MPRDA addressed the environmental and socioeconomic problems encountered by the mining-affected areas by creating a new law that regulates mining operations. Even though political meddling and state-led law enforcement present difficulties, the legislative requirements should be adhered to and carried out. For instance, social and labour plans must include inputs from community members.

Several pieces of legislation and accompanying policies emphasise the importance of skills development for mine workers and the community. Mining companies must ensure that adverse environmental effects are rehabilitated and managed throughout all mining processes under these regulations. The Act, however, has sufficient tools to regulate mines, even though it may not be perfect. According to the White Paper, employees must be aware of work uncertainties, and the parties must be ready for such situations. Such preparations must be made by the Government, unions, and employers. The White Paper suggests preparedness should start while the employment relationship is still in place to avoid the adverse effects of mine closure. To find work once the employment relationship ends, the employees must possess the necessary qualifications and have received the necessary training. The SDA governs skills development.

There is no way to avoid mine closures. The process of mine closure and downscaling has therefore been regulated by legislation in South Africa. As part of the legislation, people involved and affected by mine closures and downscaling will receive rights of protection, including environmental protection against adverse effects.

Mining operations are regulated and protected by the MHSA. As part of the legislation, the employer must ensure that the mine closure process is safe, creates a stable atmosphere and that the mined area can be rehabilitated after the mine closure. The NEMA mandates environmental protection.

The company, the Government and the workforce must be ready for any employment insecurity that may result from the closure and downscaling of the mine. Employers are required to inform workers of potential job loss. Employees laid off due to the mine closure, and downscaling must receive 60 days' notice under the terms of the MPRDA, LRA, and BCEA.

These laws support and safeguard the social advancement of the workforce. An employee whose social well-being had depended on his employment, which he would anticipate ending when he reached retirement age, will not be allowed to take advantage of the 60 days' notice provided to employees. Therefore, despite the law, the effects of a mine closure will undoubtedly harm the workers. Analyses of data are covered in the following chapter.

CHAPTER 4: FINDINGS

4.1 Introduction

The thesis examined the effects of mine closures and provides an overview of the international literature (see Chapter 2). The research points to many consequences of a mine's closure. Unexpected closures may have implications for the local population and mine staff. It might cause emigration, a loss of jobs, a decrease in government tax revenue, and infrastructural damage (see Chapter 2). There might be consequences for both economic activity and the environment.

Mining closure is one of the most challenging problems companies, societies and countries must handle. Mine closure can be very distressing for mining towns because it increases the likelihood of economic and social collapse. Abandoned mines could result in significant environmental liabilities. For workers, losing a job, due to a mine closure, has financial and psychological repercussions. It must be taken into consideration that the mining sector is required from companies to meet specific objectives in various sectors, such as skill development, employment equity, housing and living conditions for mine employees, to name a few, as per Empowerment Charter for the South African Mining and Minerals Industry, as incorporated in the Broad-Based Black Economic Empowerment Act, according to the Mining Charter. Therefore, the mining industry contributes to the overall socioeconomic development of South Africans. When the mine shut down, employees forfeited all earned benefits, including medical assistance, death insurance, life insurance, housing allowance, education allowance, provident fund, and other job perks. The effects would be more severe during an economic downturn, and the laid-off employee would need help finding another job. The labour market might need more opportunities for people looking for jobs with similar skills and work experience. Employees hired for a new position, but unable to use their skills, might experience psychological adjustment at work. However, one of the Mining Charter's most essential tenets is the development of skills. One of the Mining Charter's primary goals is to expand the existing talent base of historically disadvantaged South Africans. Mines draw up and submit Social and Labour Plans (SLPs), following Section 23 of the MPRDA; the awarding of mining licenses is conditional on the mine offering their social and labour plans.

This chapter discusses the following adverse social effects of mine closure: the influence on the economic impact, social results, well-being, livelihood outcomes, and environmental impact

4.2 Economic impact

Any obstruction to producing, distributing, and consuming goods or services influences the economy. Therefore, the closing of mines also has a significant influence on the local economy. Mining is the primary driver of economic growth and employment for the local populace. The collapse of the local economy and an increase in unemployment follow the closure of these mines.

4.2.1 Loss of income

Loss of income may result in an inability to pay creditors and a declining local economy. Though the payment arrangements can be in place with creditors, they can only be made for three months. Payment defaults result in repossessions and blacklisting. Many respondents spoke about having to find the money to avoid repossessions and address the needs of their family members. Respondents also said that the loss of income is stressful and worrying, mainly if it occurs unexpectedly and one has dependents and financial obligations. Only some people can anticipate or prepare for a sudden loss of income; even the best-laid plans may be inadequate. One respondent explained his as follows,

“I can't even pay my bills, my children's school fees are in arrears, I can't afford to buy power, and I must buy water, because the water from the tap is unsafe to drink in my area. Worse, my new car was repossessed six months after I purchased it, because I could not make payments” (Interviewer 6, 2022).

The respondent claims that there was no other source of income during that time, emphasising the financial effects of losing a job. Even though he had agreements with the bank, it could only be for six months. He struggles to afford basic needs like electricity and water. He thought he would have found employment within six months. Since most businesses were going through layoffs due to Covid-19, finding other jobs was difficult.

In Chapter 2, the existing literature proved that loss of income might result in an inability to pay creditors and the local economy declining. The community is not the only group impacted by mine closures. Along with local service providers and auxiliary industries that assist mines, they may close or scale back their operations and, impacting households, may also lay off employees. (Goretskii et al., 1995).

4.2.2 Impact on spending activities

The absence of income prevents the former mineworkers and their families from participating in activities they regularly did before the mine closed. Many spoke of being left in despair because their primary source of income unexpectedly ended. The mining sites closed due to the company being liquidated or the depletion of coal, eliminating any chance that the mines might reopen soon. Without generating income, the respondents said they had to forfeit activities like dining out and visiting entertainment venues. They must depend on an unemployment insurance fund that is only valid for four months. One respondent said,

“It was incredibly difficult, because I could not use the money to sustain myself and my family. The unemployment insurance money is insufficient and not even half the salary” (Interviewee 9, 2022).

The above quote shows the financial difficulties of losing one’s job. Mine closures impacted families because they could not buy food and other necessities. It also confirms research by Tempelhof (2010a). This includes socialisation through dining out, visiting locally owned entertainment venues and travelling. A World Bank paper (2018) also referred to the loss of mining jobs and the consequences on local economies, retail, restaurants, other reliant industries, and social services.

4.3 Social consequences

Mining booms are associated with social disruption, according to international literature. Mining's rapid economic and demographic boom exacerbates urban crime and social concerns. However, there is little reference to social disturbance when a mine closes. The literature and policies on mine closure focus on environmental considerations and mining firms (Vivoda et al., 2019). The work on social consequences is rising, but still insufficient (Bainton &

Holcombe, 2018). Vivoda et al. (2019) identify 14 social elements of mine closure and 30 related variables: economy, business, employment, security, education and training infrastructure, amenities, livelihoods, land, housing and health, environment, demographics, participation, inclusion, and general social factors. Long after the mine is shut down, each mining step has specific environmental and social repercussions (Rao & Pathak, 2009).

4.3.1 Education

When parents work in mines, mining companies often pay for their children's tuition. The mines created dependencies, which exacerbated the problem when the mine closed. All those benefits are forfeited when the mine closes. Some respondents said the children have dropped out of school, due to unpaid fees. The following quotes describe the relationship between education and job loss, because of mine closure,

“I had to move two of my kids from private to public school, giving up all the benefits, and one had to quit school, because I could not afford to pay her tuition at the special needs school where she was enrolled” (Interview 10, 2022).

Mining enabled the respondent to send their children to a private school. Losing the mining employment meant the children had to move to a public school. The differences between private and public school-learning and skill outcomes are well-known in South Africa. The quote above also points to the difficulties in keeping a child with special needs in school. In Chapter 2, existing literature revealed that the students had trouble learning and lacked motivation in class. They needed to adapt to their families' financial conditions, because their parents could not afford new school outfits. The children were consequently forced to wear second-hand clothing to school. Reports claim that the humiliation of numerous other children caused one child's attempted suicide. Children who did not pay their fees were forced to leave the school. The fact that their parents owed money to the school made it impossible for kids to receive their year-end academic scores. Even if school food programs were visible, students frequently arrived at school hungry (Van der Walt, 2009). One respondent also reflected on having to drop out of a university course in the following words,

“I was only left with two modules to complete my degree; I had to postpone my registration due to lack of registration fee, tuition and books' money” (Interview 15, 2023).

Planning for mine closure in South Africa considers the growth of regional mining expertise to serve former miners after closure. The Government and mines implement plans to lessen the socioeconomic effects of mine closures and assist the impacted communities. South African legislation for upskilling and mine closure, as well as local skill development, are in place.

One of the South African mining industry's social responsibility objectives was for the in question mine to conform to the Mining Charter. This describes the transformation and underlines the need for skills development and employment equity in the mining sector, including steps to support employees impacted by mine closures. As the mine was paying for the workers' upskilling, they could find employment outside mining industries even when the mine closed. The comment mentioned the mines' contribution to mine workers' skill development. The mines created a dependency, compounding the problem when the mine closed.

4.3.2 Breakup of families

Reports of family breakups and high divorce rates were expected. Being jobless causes conflict in the home, and "your wife could disrespect you" is a result of their emotions of helplessness. Some mine workers turned to substance abuse, which led to domestic violence, divorce, or separation. One respondent said, "Due to my inability to earn money, my wife left me" (Interview 6, 2022). The statement shows the impact of employment losses on family breakups. Involuntary job loss frequently results in lower earnings, and the stress caused by the negative income shock has resulted in the family breakdown. It indicates that loss of income and unemployment strained the relationship and led to the possibility of divorce or separation.

Eliason (2004) says that a job loss may be viewed as an economic "surprise" that negatively influences the partner's future expected earnings. Loss of a job may lead to one spouse discovering previously unknown qualities about the other that affect their attractiveness to potential partners, such as dependability or a sense of responsibility. Losing employment could therefore expose new information about the compatibility of your marriage and result in divorce.

Chapter 2 indicated that due to migratory labour practices brought on by mine closure, parents are absent, which has more significant effects on the life of former mine workers. Families

experience issues when parents and children are split up. A cultural divide between parents and family can develop, due to extended absences (Heymann et al., 2009).

Children's lives are impacted by distance parenting, regardless of their ages or the strength of their families. Children may become divided and competitive, due to distance parenting damaging family bonds. Delinquency among teenagers may also rise (Madziva & Zontini, 2012).

When a mine closes, families might need to move in order to find new employment prospects. Extended family members become estranged, and stress and isolation may also increase. Relationships suffer, due to a move, because people may be forced to leave behind their support networks and deal with the difficulties of starting over in a new location.

4.3.3 Impact on housing

The evidence from the interviews pointed to three types of housing consequences. First, there was evidence that some families were forced to leave the mining town and relocate to informal settlements. According to White Paper 1998, mining operations are typically located distant from existing populations, and employers have undertaken the provision of housing as part of the infrastructure required to develop the mine. After the mine is closed, the entire structure of mining towns is demolished or left as a ghost town. Secondly, there was also evidence of workers returning to their parental homes. One respondent said,

“I had to move back in with my parents, because I could not stay in the house that the mine provided for me and could not afford to rent a flat.” (Interview 4, 2023).

According to Ackerman et al. 2018), miners take the right to housing away when a mine closes. They must vacate their residences, many of which are now occupied by illegal immigrants. It has a definite negative effect on the current social structures and neighbourhood safety. Metal recyclers buy the cable scrap sold, after it has been taken from homes at mining sites. Infrastructure and facility vandalism are frequent occurrences. If the infrastructure is not fixed, mining operations cannot be restarted, and the new mine owner would be forced to pay a steep financial price.

Thirdly, there was evidence of downsizing. One respondent said,

“We had to downsize to a smaller house. My kids had a tough time adjusting to the foreign suburb”. (Interview 5, 2022).

Finally, most mining companies have a financial programme where employees borrow money for a home at a lower interest rate than a bank or offer housing subsidies to their employees. After losing their jobs at the mine, most employees had to switch their home loans from the mine finance programme to a regular financial institution. This shift increased their monthly bond payments, because of the high interest rate. Some employees were forced to sell their larger homes and purchase smaller homes, because they could not afford to pay high bond instalments for larger houses, due to high interest rates and bond payments that were more than they could afford.

4.4 Well-being

The loss of a job contributed to health problems and the loss of some benefits, like a medical aid. They also mentioned emotions of isolation, loss of self-esteem, and hopelessness, all of which impacted their physical and mental health. The length of unemployment raised respondents' negative emotions, which led to depression.

4.4.1 Health

Mining can create health problems, like neurological ailments, kidney diseases, mercury sickness, and lead and zinc pollution, affecting nearby residents (Obasi & Akudinobi, 2020). The detrimental effects of mining on human health include respiratory issues, like pneumoconiosis, asbestosis, and silicosis brought on by breathing-in fine dust from the significant volumes of dust produced by mining processes, like blasting and drilling (Obasi & Akudinobi, 2020). When mines close, many mineworkers might have some of these health problems, but they might not be acute. Therefore, dealing with long-term health problems is central to losing a job in the mining industry. One respondent said,

“I was diagnosed with lung disease in 2018, due to dust I inhaled. I spent six months in the hospital and returned to work in 2019. I was given an administrative job, because I was not fit to work in the plant, despite having qualifications in blasting and drilling. Now that the mine

is closed, it is difficult for me to find other mining jobs, due to the side effects of the disease. I once went for an interview and failed a medical test.” (Interview number 10, 2023).

After the work injury, mining companies gave the individual continued employment in a reduced function to accommodate their disability, and a new contract was drawn up. Goals are defined in this new contract that the workers have agreed on to guarantee a clear expectation, but most of the time, the agreement does not specify what will happen if the mine closes. It renders employees miserable after closure.

4.4.2 Mental health

Most workers claimed that being out of work and losing their income had caused them to suffer from significant depression, stress, and anxiety. All respondents indicated conditions threatening their health, including a decline in their psychological well-being. These illnesses showed tendencies toward heart disease, miscarriages, depression, an increase in mental health problems, substance abuse, suicides, and, in children, learning challenges that significantly impacted their academic performance. One respondent links the financial decline and breakdowns in relationship with mental health problems,

“My new car was repossessed six months after I purchased it, because I could not make payments. Due to my inability to earn money, my wife left me, I felt helpless, and I was hospitalized, because of depression. I got depressed as this job was my only hope” (Interviewer 6, 2022).

The job was viewed as the primary asset, and the loss of a job impacted their health and the loss of some benefits, like medical aid. They also mentioned emotions of isolation, loss of self-esteem and hopelessness, all of which impacted their physical and mental health. The length of unemployment raised respondents' negative emotions, which led to depression. One respondent said,

“Before I lost my job, I was the primary breadwinner for the family. No longer was there any income? I thought about what was ahead and grew increasingly worried and frightened. I was eventually diagnosed with depression” (Interviewee 12, 2023).

Some respondents were more susceptible to stress than others and displayed several early symptoms of severe depression because they tended not to accept their current situation. Depression is made worse by losing a job. One financial stress that appears to have a unique psychological impact on a person, is debt. Additionally, debt is prevalent and a significant component of so many people's financial realities. As a result, it is crucial to start examining how debt affects one's emotional and physical health.

4.4.3 Losing access to medical aid

The ramifications of a job loss brought on by the closure of a mine, extend far beyond the employee's immediate family. Many laid-off people may need more financial support to meet obligations, like paying for health care.

Medical aid is an effective way to cover oneself financially, should it be for a medical need or medical supplies. Access to medical aid protects the individual against hefty medical bills and day-to-day medical expenses after medical procedures. Certain chronic illnesses, such as stroke and heart disease, are fatal. Most chronic conditions remain throughout a person's life; however, they do not always cause death, but impact the quality of life. When someone loses their work, they stop receiving medical assistance.

There are three significant impacts. First, respondents often spoke about losing access to medical aid. One specific person already had a medical condition, and then losing his job and medication aid was problematic. This respondent said,

“I hurt my eye at work in 2015. My insurance would pay for my medical bills, and I would go to the hospital once a month for check-ups. Now that I have lost my job, I cannot afford to get checked out every month” (Interview 1, 2022).

Mine work may cause issues that a retrenched mineworker may be unable to cover themselves after job loss. Not having a medical aid means the respondent cannot go for monthly check-ups for his eye. The current health insurance is at a different level than when he was a mineworker, so monthly check-ups are impossible. There is a clear indication of a deteriorated level of service. The second issue concerns having to look after extended family members' health,

“My job loss resulted in a significant change in my life. I lost my medical insurance; as a result, I had to pay from my pocket for my sisters’ chronic medication; it is difficult, but I must continue to be a vital member of my family” (Interview 3, 2022).

Mineworkers often care for family members' health because the mining employment created the space to do so, which the retrenched mineworker may be unable to cover.

Thirdly, losing a job also has health implications that become challenging when one needs medical aid. Respondents said,

“My health suffers because of stress and anxiety. I went through a brief period of depression. I had to go to a public hospital, since I used chronic medication and had lost my medical insurance. Also, because I had to pay cash or wait for the clinic to fill my prescriptions, because my medication was occasionally out of stock, I did not take it as prescribed and became ill” (Interview 6, 2022).

Losing mine employment may cause issues (like stress and anxiety) that the newly retrenched mineworker may be unable to cover. The fact that medical schemes cover certain chronic diseases in addition to other benefits is one of the advantages of having medical assistance as an employee. Because they cannot afford to go to private hospitals or pay for medical care, some employees who have medical aid revoked, due to job loss, are obliged to go to a government hospital where state hospitals' health care is infamously unreliable in South Africa.

Medical aid is, therefore, essential to deal with health conditions resulting from mining and losing one's job. The last quote also highlights the incapacities in the public health system. Losing a job increases mental health concerns. Although a comprehensive public health system is in place, it has problems, like not being able to attend to mental health problems in the same way as physical health problems.

4.5 Livelihood outcomes

Work was viewed as the basis for belonging by the respondents, and loss of work influenced their social life and spending patterns, due to changes in their financial condition. They also expressed loneliness, loss of self-esteem, and hopelessness, impacting their physical well-being. The respondents' negative sentiments grew as their unemployed duration increased.

4.5.1 Self-esteem

The experience of being laid off, due to a mine closure, can affect a person. The importance of a person's employment in society and many cultures is seen as a factor in determining who they are. How frequently do we ask someone what they do for a living or what their work is, in order to learn more about the people we are interacting with? A person's employment tends to indicate how they view themselves; it is a gauge of their self-worth. Losing one's job impacts one's sense of self-identity beyond financial loss. People who go through this trauma frequently struggle with low self-esteem. For example, a 55-year-old said,

"For over two years, I was unemployed. I was a house-husband. Being unemployed made the experience challenging. My wife assumed all the duties. It is a shame if you cannot support your family as an African man" (Interview 6, 2022).

"That brought shame, and I was embarrassed, which made me lose confidence in myself as a man. Before I lost my job, I was the family's main breadwinner; now, seeing my parents suffer, brought so much shame, and hurt" (Interview 11, 2023).

Mining villages frequently create their own distinctive culture and way of life, based on the industry. For people whose identity and purpose have been centered around the mining lifestyle, the closure of a mine can be devastating. The family dynamics may be impacted by uncertainty and dissatisfaction brought on by changes in routine, everyday activities, and social connections.

Insecurities and negative self-perceptions are signs of low self-esteem. People who lack self-confidence may feel unattractive, awkward, or inadequate. People with low self-esteem frequently perceive rejection and disapproval even when there is none. Another ex-miner worker claimed that since he could no longer afford to pay his rent and maintain his family financially, he would have to return to his parent's house, which was an embarrassment as an adult.

4.5.2 Nutrition

Because of the mine closure, disadvantaged, low-income communities suffer disproportionately from a lack of income. This is especially true regarding malnutrition, which

occurs when people do not acquire the necessary nutrients in sufficient quantities. Malnutrition affects children and adults, both underweight and overweight, and it can severely influence health. Many respondents spoke about financial hardship leading to a lack of access to nutrient-dense foods or food insecurity, which has had a global impact. Malnutrition has long-term consequences for people's health and economic well-being. Undernutrition can increase the likelihood of illness and infection and lengthen healing durations. One respondent said,

“Lowering one’s living level, paying for everything, and having no money come in, but only money going out. I had to cut back on the number of meals per day from three to one and replace other meals with bread, which is bad for my kids” (Interview 13, 2022).

The mine closure drastically changed the former miners' and their family’s way of life. They had to get used to the new normal and learn how to live within their means. It was difficult for some people, since they were so accustomed to their way of life that it was all, they had ever known. With inflation and a challenging standard of living, it seemed nearly impossible to survive.

According to existing literature, the closing of a mine can affect the entire food supply chain in areas where mining activities have a considerable impact on the local economy. The closure can affect food accessibility and availability by reducing agricultural output or raising food prices. As a result, people may experience greater degrees of food insecurity as they struggle to maintain a sufficient and balanced diet.

4.5.3 Impact on life cover

Most mine workers could not continue paying for their life insurance, due to lack of income, despite it being one of the perks of working as a miner. A few life insurance policies expired, because of overdue payments. One respondent said,

“No one is ever ready to lose their job. Sometimes such things come at a time when you have nothing else coming in as income. I was so unprepared to lose the job, and what is hurting, I forfeited all my insurance, including the life cover I have been paying for years” (Interview 10, 2022).

The interviewee's reaction indicates that the job loss was unexpected and that neither he nor she was financially or mentally prepared for it. The phrase suggests that losing the job was a surprise and evokes shock and unpreparedness. The respondent notes that there was no other source of income at the time, emphasising the financial impact of losing the job even more.

Additionally, the interviewee talks about giving up all their insurance, including a life insurance policy they had been paying for years. This shows that they could no longer afford to maintain their insurance coverage, due to the loss of income. The fact that the respondent mentioned giving-up life insurance, indicates that they had to make difficult choices and put short-term necessities ahead of long-term security.

Life insurance is frequently provided to miners as a perk of employment. When the mine closes, employees who work in mines may lose their jobs and any employer-provided life insurance. Thus, their protection would ordinarily expire or require conversion to new insurance. Insurance firms could reevaluate their risk exposure in areas where mines have closed. Insurance companies might be more hesitant to sell new life cover policies in certain areas if the closure causes an economic slump or increases unemployment. This can make it more difficult for people to get coverage or lead to higher premiums.

The reaction illustrates the psychological and financial stress brought on by the unexpected job loss. It emphasises the interviewee's difficulties and compromises due to the circumstance, highlighting how losing a job affects one's well-being and financial security. Insurers may reevaluate the risk profile of the remaining policyholders, if mining closures significantly impact a considerable number of covered individuals in a specific region. The shutdown of a significant industry might affect the total risk and mortality data for a particular area, which may lead to premium modifications for those people.

4.5.4 Finding new employment

Because they are interconnected and intertwined, the effects - whether social, economic, environmental, or health - cannot be distinguished. People's health has an impact on their ability to earn money from natural resource-based livelihoods or on their ability to engage in meaningful employment or entrepreneurship. Environmental consequences, including water, soil, water pollution and ecosystem degradation, also impact these factors. Additionally, losing

a job, due to a mine closure had indirect, induced, and cumulative effects, such as marriages dissolving, because former male mine workers could not fulfil their obligations as household breadwinners. Illegal mining leads to injury or death to earn subsistence or informal income; poverty and decreasing living standards result from losing a job or experiencing a decline in income levels. One of the respondents in the semi-structured interview stated that,

“Finding other employment was not simple. Nevertheless, I secured a four-month contract, but it was terminated since the business was complicated because of COVID-19” (Interviewer 2, 2022).

“35-year-old man said finding another employment was difficult, because many businesses were closing, and others were laying off workers, due to COVID-19. As someone with a disability, finding a job was not easy” (Interview 7, 2022).

Numerous survey participants began working in the mines while they were young. Before starting their jobs in the mining industry, all the interviewees had never worked in any other industry. They only had mining experience and credentials, which made it impossible for them to find another job after the mine closed.

Finding new employment after Covid 19 was challenging, whether employees had skills or not, as most industries were cutting costs, and some were shutting down, due to an economic meltdown. Finding another employment may take months or even years as most enterprises are still recovering from Covid -19.

4.5.5 Finding employment as an unskilled labour

The mine closure drastically changed the former miners' and their family's way of life. They had to get used to the new normal and learn how to live within their means. It was difficult for some people, since they were so accustomed to their way of life that it was all they had ever known. The mine's shutdown was unexpected and came as a shock. The mine shutdown had a devastating impact on the former miners' daily lives. Some former miners had to try other careers even though they had no formal education to support themselves and put food on the table. With inflation and a challenging standard of living, it seemed nearly impossible to survive.

“I don’t have matric. I only completed Grade 7. As I am good with my hands, I am attempting to launch a woodworking business” (Interviewee 8).

Based on their statements throughout the semi-structured interview, the respondent appears to have limited formal education, because they still needed to complete their high school education (enrollment). They claim to have only completed the seventh grade, implying that they have low academic achievement. However, despite having only a high school education, the interviewee (respondent) feels confident in their practical talents. They have indicated they want to start a woodworking business, implying that they are capitalising on their physical skill and expertise to pursue entrepreneurial chances in the industry.

This response displays the interviewee's inventiveness and will to create opportunities for themselves even though they need higher formal education. It creates the appearance that they are aware of their abilities and are actively pursuing a professional path that matches their skills.

The response suggests that the person being questioned is conscious of their academic limitations but has decided to focus on their practical talents and entrepreneurial drive to create their woodworking enterprise. It reflects their tenacity and initiative in seeking alternative paths to success in their personal and professional life.

5. Conclusion

The closure of the mines in the Nkangala District has significantly harmed numerous areas of the former mine employees' lives. The conclusions addressing the effects of the mine closure are as follows:

The shutdown of mines meant that former miners were no longer eligible for medical benefits offered by their employers. Accessing healthcare services became challenging, due to the loss, which hurt their well-being. They struggled to pay school fees, uniforms, and other educational expenditures, due to losing their benefits and income. Thus, children's education was jeopardised, restricting their chances for the future, and the closure negatively impacted the education of the children of former mine workers.

The shutdown caused workers who lost their jobs to feel more stressed, anxious, and depressed, perhaps worsening mental health conditions. Some former mine workers' self-esteem suffered dramatically as a result of job loss and the ensuing financial burden. They felt a loss of purpose, worthlessness, and a fall in confidence, impacting their mental health. Some of them could not afford housing, which forced them to downsize or become homeless. Due to the disruption, family connections became strained, sometimes resulting in separation or divorce, due to financial and emotional pressure.

Numerous chances for training and skill upgrading were provided for the former mine workers. The closure of mines, however, prevented former mine workers from receiving these benefits, which made it more difficult for them to locate new jobs or make a career change. Those former mine workers who lost their jobs and money, cut back on non-essential purchases, like entertainment, dining out and leisure time. There were job losses and economic downturns as a result of the fall in spending, which had an impact on nearby firms. Understanding and addressing these adverse effects is crucial to help the impacted former mine workers and their families during the transition.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Mine closures frequently have far-reaching effects on mining firms, employees, and their families. This research investigates the impact of mine closure on former workers and their families in the Nkangala Region (Mpumalanga Province). The Nkangala Region has a long history of coal mining activities. However, recent mine closures in the Nkangala Region have generated worries about the social and economic impacts on local communities.

The study investigated several aspects of the mine closure's implications, such as the economic impact on households, changes in livelihood strategies, education, social cohesion, mental health, and access to healthcare. The research provides an understanding of these issues experienced by former mine employees and their dependents and potential opportunities for alleviating the detrimental effects of mine closures.

5.2 Overview of chapters

The section aims to provide an overview of the study's three literature chapters. The overview covers some of the study's key findings.

The second chapter investigated the effects of mine closure on ex-miners and their dependents. It also highlighted the support alternatives needed by former mine employees after a mine shut down and proposes future mine closures and potential support options for former mine employees. The mine's closure consequences include economic, social, welfare and livelihood concerns. Mining closures directly influenced the larger community, but the most significant pressure of closure began in 2020 during the Covid-19 era for individuals who lost their jobs. Because the mine closure has rendered them unemployed, most of these mineworkers have been unable to find alternative employment, because their mining-related skills are not related to other sectors of the economy. Unemployment causes societal and family problems. The mine closure also caused demographic changes in the mining region, generating outmigration, which led to a population drop in the mining region and the closure of other enterprises that supported the mine.

In Chapter 3, the emphasis turned to South Africa's Mine Closure Legislation requirements. The Constitution governs mine closure and supersedes all other legislation (RSA, 1996a). It states that everyone has the right to a space that is not hazardous to their health or well-being. Even though Section 24 provides the framework for mine closure legislation, the emphasis is on environmental rather than socioeconomic considerations. To uphold South Africa's commitments under international law and protect the health and safety of individuals working in mines, the Mine Health, and Safety Act 29 of 1996 (MHSA) was established.

According to Sections 2 and 5 of the MHSA, the MHSA relates to all mine stages, including decommissioning and closing, and maintains a safe, stable environment, even after operations.

Skills Development Act No. 97 of 1998 (SDA) was introduced in the chapter to improve workforce skills. The SDA plays an essential role in workplace skills development. South Africa incorporated the Mine Health and Safety Act (29 of 1996) into the chapter to ensure health and safety in mining operations and legitimise its commitments under international law. In some way, each legislative framework discussed in this study complements the other.

As a result of the interviews with the 15 participants, Chapter 4 discussed the empirical evidence gathered. The following topics were discussed: how you obtained your mining job, how long you worked in mining when you lost your mining employment, and how you lost that job. The impact of losing this mining job on you and your family was discussed. Most of the mine workers only had mining experience, some were semi-skilled, and their chances of finding employment at other mines were poor, because most were downsizing due to Covid-19. The closure of the mine brought about a substantial systemic disruption in the transition of the family structure, which led to job loss and the rearrangement of family relationships. Mineworkers' families had to alter their way of life to accommodate their lately decreased family incomes. In one instance, the respondent was forced to give up a house, because the layoff and divorce happened simultaneously. In terms of education, there have been cases where children have left school, because of unpaid fees. In other instances, they could not send their children to private schools, due to financial constraints. In one instance, an ex-miner receiving benefits from the mine had to leave school, because she could not afford the tuition.

5.3 Main findings

Sudden closures can devastate the community and mine workers, including loss of employment, health and mental health and socioeconomic impact. One of the most challenging issues that mining firms, mining societies, and mining nations must deal with, is mine closure. According to focus group interviews and informants, the influence on physical and mental health, the economy, the job situation, and the social repercussions cause the adverse social effects of mine closure. An empirical qualitative survey was carried out to gather information on the experiences, skills, and readiness for job loss of mine workers.

5.3.1 Main Finding 1: The economic and livelihood consequences of losing a job is difficult to counter

The implications and outcomes of mine closure were covered in Chapter 2 of this study, along with the fact that sudden mine closures can be highly detrimental to local populations and workers. It can influence long-term livelihoods by decreasing economic activity, causing job losses, decreasing government income, and reducing economic activity. Chapter 4 examined how losing a mining job can impact a family. It undoubtedly impacts family preferences and forces a readjusting of lifestyles priorities, interests, and needs because of mine closure.

The Nkangala region has experienced an immediate loss of jobs due to the closing of the mines. This loss of income affects Individuals and their families in a chain reaction. The respondents raised their inability to pay bills for power, water, and school fees. The loss of income directly impacts their ability to maintain their financial stability and meet their fundamental necessities. People needed help to pay their expenses and fulfil their financial obligations when their income was low or non-existent. Paying bills late has led to debt accumulation, late payment penalties, and the potential disconnecting of vital utilities like the water or electricity supply.

People frequently prioritise necessities over discretionary expenditures under financial pressure, such as paying for food, housing, and healthcare. Thus, leisure time and non-essential expenditures may be curtailed or stopped altogether. One respondent mentioned that he had to stop eating lunch at restaurants and that it was his son's birthday at the time of the interview. However, he could not afford to buy him a gift or a cake; for some ex-mine workers, loss of income has resulted in the repossession of possessions, such as a car, due to missed payments.

This exacerbates individuals' financial difficulties, making it even more difficult to achieve stability. Generally finding a new job or starting a business was difficult.

5.3.2 Main Finding 2: Mine closure creates social disruption

Mine closures have generated much scholarly discussion worldwide in the twenty-first century. In Chapter 2, academics discussed topics that affect local populations significantly concerning mining activities and examined mine closure from several angles. One viewpoint focuses on the detrimental social effects of mine closure, such as an increase in crime, drug misuse, a drop in living standards, people leaving mining communities, health and mental issues, stress on family life, intensified food poverty and social disruptions.

MPRDA mandates that mining companies create and implement SLPs as a part of their mining operations as per Chapter 3 of this study. These SPLs address how mining activities, including mine closure, affect society. The Act strongly emphasises the necessity of mine closure plans to minimise potential adverse effects on the affected communities. The mining charter recommends planning mine closures and encourages mining corporations to prioritise impacted communities' social development, while closing mines.

Losing a job has educational implications. Due to budgetary constraints, many people, particularly those from low-income families, need help getting a quality education. This has resulted in greater educational inequality and probable long-term ramifications for individuals' prospects. Mining enabled the responder to send their children to a private school. Due to the loss of the mining job, the children were forced to attend a public school. In South Africa, the learning and skill outcomes inequalities between private and public schools are extensively documented.

Furthermore, financial challenges can exacerbate family tension and raise the chance of family dissolution. Financial strains can cause emotional pain and relational problems, making it challenging to sustain dependents or meet basic requirements. According to the finding, housing issues have affected people and families, due to the economic impact. Others have seen overcrowding or housing insecurity as they search for inexpensive housing options, while some have suffered eviction or foreclosure owing to financial difficulties. One former mine worker had to return to their parent's home. One of the ex-mine workers had to downgrade

from a big house to a small one; another had to move back in with their parents, because he could not afford to rent a flat since he was in the mining village. Along with leaving their partners and children, they also had to look for new jobs, which was challenging owing to retrenchments and the unpredictable state of the global economy. They also had to make numerous adjustments, due to the unknowns of the future.

Even though a move to a different region had been promised, they applied for other jobs and were hired in other provinces. To gather their thoughts and strength, some returned to the other provinces where they were originally from. Due to Covid-19, two participants were forced to look for work in different regions after losing their mine jobs. The first participant was not hired for the position he applied for, because he failed the pre-employment medical fitness assessment, owing to an eye injury. According to Section 46(d) of the SLP, mining right holders are obligated to help mine workers find job prospects and take steps to lessen the closure's negative effects on nearby mining communities, given that closing may occur earlier than first planned when the project commenced. The rules include the necessity to establish a sustainable economy beyond the mine's existence and to guarantee a sustainable economy after the mine's lifetime, but they leave out concerns like finding work after the mine closure, particularly for former mine workers who were injured at work.

5.3.3 Main finding 3: Pressure on individual well-being in the household

According to Chapter 2, the closure of mines causes injuries, psychological issues, and other health-threatening circumstances in mining towns. These include heart problems, mental health conditions, and depression. Long-term unemployment will have a psychological impact, impairing motivation, sense of control, trust, and self-esteem. Closing mines influences the social structure, causing anxiety, insomnia, and substance misuse - underemployment and unemployment cause a decline in living standards.

According to Chapter 3, the Constitution identifies environmental well-being as a fundamental human right to be protected. According to Section 24 of the Constitution, everyone has the right to an environment that is not detrimental to their health or well-being and the right to preserve the environment for the benefit of both present and future generations.

Job loss frequently results in financial troubles and uncertainty, generating stress and worry. Financial stress impacts one's capacity to get healthcare and purchase necessary medications or treatments, potentially leading to health problems. Many jobs offer medical insurance, such as medical aid, essential for obtaining healthcare services. Loss of these benefits makes it challenging to finance medical treatments, prescriptions, or therapy, thus impacting workers' health and well-being. For some people, losing a job can contribute to feelings of isolation, because the workplace generally provides social connections and a sense of belonging. The abrupt removal of everyday encounters with co-workers can add to feelings of loneliness, which can influence mental health.

Having trouble finding new employment or transitioning to a different career path might make people feel depressed after losing their jobs. Future uncertainty can heighten stress and have a detrimental impact on mental health. Most workers forfeit their medical aid and go to public hospitals or clinics for their chronic diseases. These impacts have a severe impact on the employees' quality of life.

In 2015, one respondent had an eye injury while working and was given a position with few duties. Unfortunately, because of his job loss, he cannot pay to see a doctor every month, and his insurance only partially covers work-related accidents. After receiving a diagnosis of depression, he is now starting to rebuild his life and frequently visits the neighbourhood counselling facility. A 35-year-old man was unable to support his family after losing his work. He had to pay for his sister's ongoing medication; stress and anxiety were detrimental to his health. These individuals could not afford a monthly physical visit to the private hospital and were forced to pay out of pocket for medical care; the impact of a job loss on a former miners' physical and mental well-being is essential in this paper.

When a mine closes, jobs are lost, resulting in various effects on the lives of former miners and their dependents, including their self-worth, nutrition, access to life insurance, and chances of landing new jobs as unskilled labourers. Chapter 4, Section 4.5 examines the abovementioned elements in greater detail. Some former mine workers' self-worth and self-esteem have suffered dramatically, because of job loss brought on by mine closure. Most former mine employees, especially men, experience feelings of inadequacy, loss of identity, and a drop in self-

confidence, because of losing a career that offered stability and a sense of purpose. It could take time for people to become used to their new situation and regain their self-worth.

The inability of former mine workers to buy nutritious meals for themselves and their children was exacerbated by the loss of income, caused by the mine closure. Economic troubles drove people to prioritise basic needs over nutrition, potentially leading to nutritional shortages and health issues. Access to inexpensive and nutritional food becomes a concern, especially when other career options are restricted. Many mining businesses include life insurance or other benefits as part of their employee benefits package. In the event of mine closure and associated job loss, coverage and benefits may be discontinued or altered. This leaves former mine workers without appropriate life insurance, jeopardising their financial security and ability to deal with unforeseen occurrences. Some ex-mine workers stated that finding a new job as an unskilled labourer is difficult, particularly in this region where the mining sector is a significant employer. It is challenging to find alternative employment, since the knowledge and expertise obtained from working in a mine are not directly transferred to other industries or occupations. This has led to a protracted search for employment, higher competition, lower pay, and a drop in overall income levels.

5.3.4 Main finding 4: Finding new employment and finding employment as an unskilled labour

The issue of unemployment brought on by mine closure was highlighted in Chapter 2. The industry's situation is that there are few transferrable skills available. The White Paper, the Mining Charter and the SLP, which call for employees to be prepared with skills and training to seek employment after mine closure, were discussed in Chapter 3. However, the interview findings demonstrate that the regulators' recommended skill improvement process rarely occurs.

In the case of individuals who have received training, these abilities are frequently tied to the mining discipline, meaning that the knowledge they get is primarily practical within the mining industries and has minimal appeal outside of them. Due to this reality, workers who acquired these skills and training after a mine closed can only compete for jobs in the mining industry. After being laid off, finding work was challenging.

Some ex-mine workers stated that finding a new job as an unskilled labourer is difficult, particularly in this region where the mining sector is a significant employer. It is challenging to find alternative employment, since the knowledge and expertise obtained from working in a mine are not directly transferred to other industries or occupations. This has led to a protracted search for employment, higher competition, lower pay, and a drop in overall income levels.

5.4 Recommendation

The investigation yielded the following study recommendations.

- Debt counselling and personal finance programs should be one of the components of the mine closure plan for ex-mine workers and their families. The program will assist by supporting managing debts and improving finance skills. It will help those affected and their families to navigate the challenges they may face during the transition. Program components could include:
 - Financial recovery - ex mine workers might have incurred debt and struggled to make ends meet without a steady paycheck. Programmes for debt counselling will assist people in developing methods for managing their debts, negotiating with creditors, and coming up with reasonable repayment schedules.
 - Money and budgeting management - personal finance programmes will teach ex-miners and their employees how to plan budgets, track costs, and make informed decisions. This is a necessary skill for individuals and families who have lost their jobs and are suffering financial difficulties due to the mine's closure.
 - Protection of assets - as a result of the closure, some former mine workers lost their valuables. Debt counselling will assist them in understanding their legal rights and options for protecting their residual assets. It will also offer advice on managing outstanding loans or mortgages related to the missing belongings.
- Including debt counselling and personal finance programmes in the mine closure plan reflects a commitment to assisting former workers and their families. The skills and knowledge gained through the debt and personal finance programme will have a long-term impact by providing individuals and their families with the tools to effectively manage their finances, making them more likely to achieve long-term financial stability and reduce the risk of debt.

- SDL training includes social entrepreneurship and a program to encourage mine workers to have an entrepreneurial mindset and other stakeholders to establish social enterprises to mitigate the negative impact of mine closure. Social enterprises will introduce new sectors, products, and services; social businesses will play an important role in diversifying the local economy. Social enterprises can help the community's long-term economic development by fostering sustainable and socially responsible business practices.
- Develop educational programmes and bursaries specifically created for children of ex-mine workers to ensure they have access to quality education, notwithstanding the mine's closure.
- Involve other community stakeholders to plan activities and events that unite people, fostering a stronger sense of community and mutual support. Provide school counselling services and family support programmes through faith-based organisations to help children cope with changes and potential stress.
- Mine, government, faith-based organisations, and other stakeholders should work together to assist in implementing a family restoration project for families affected by mine closure.
- The mining industry should encourage home ownership and implement rent-to-own programmes. This will inspire mine workers to purchase a home.
- Employee Assistance Programme (EAP) and other health care benefits should be extended for at least a year and included in the mine closure plan for ex-miners and their families.
- Given that the mining sector hires many untrained individuals who are later trained and developed for mining operations, the mining industry should provide training and development programmes for transferrable skills to other industries. This is because that after a mine closes, many workers have a difficult time finding work in other sectors. Most of the time, people are forced to make do with drastically inferior living standards and income.
- Establishing social enterprises, which combine business principles with a strong emphasis on tackling social, economic, and environmental difficulties, will address various societal issues. Social businesses can meet the social needs of impacted

communities by offering services like health care, counselling, education, and assistance for vulnerable populations affected by mine closure.

5.6 Limitations and potential research areas

In this case, the study examined the consequences of mine closure on ex-miners and their dependents in the Nkangala District. One of the significant constraints identified throughout this study was participants' unwillingness to openly communicate their experiences and how they affected them and their families.

The study was limited, because several ex-miners in the Emalahleni area were unwilling to disclose their grief and struggles, mainly involving family members, including kids. This could be attributed to a few issues, including mental anguish, privacy concerns and fear of retaliation. Ex-miners in Victor Khanye Municipality were more open and comfortable discussing their transformation.

5.7 Further research

This research sought to establish and grow social companies to mitigate the detrimental impact of mine closure on ex-miners and their families, which continues to be an issue. None of the interviewees mentioned having undergone entrepreneurial or business management training. Considering this, the researcher suggests the following subsequent research: "Establishment and development of a social enterprise in a mining town to mitigate the negative impact of mine closure". The proposed future research subject is critical, A because it could lead to new research on minimising the adverse effects of mine closure.

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ANNEXURES

ANNEXURE ONE: INTERVIEW SCHEDULE

Phase 1:

Question 1 (20 min): Tell us the story of being employed at a mine (*Briefly explain how you initially got a mining job, how long you worked in mining, when did you lose the mining job and how you lost that job? What were the consequences for you and your family after losing this mining job?*)

Answer these questions by making a trying to allocate time frames to the main activities.

Question 2 (40 min): Tell us your story after losing your job at a mine (*Did you apply for other jobs? (Discuss the various applications and levels of success). How easy was it to find another job? What various activities did you undertake to provide? How successful have you been in finding an alternative livelihood after your mining job? How easy or difficult was it to make a living after mining?*)

Answer these questions by trying to allocate time frames to the main activities.

Phase 2:

All interviews will be transcribed and follow-up questions will be clarified with the participants

Questions (20 min):

1. How prepared were you to make a living after mining?
2. What helped you to make a living after mining?
3. What skills did you not have to make a living after mining?
4. Document the following:
 - The age of the worker
 - Where the interview was conducted
 - Gender
 - Is the person married?
 - Is there evidence of having been or still is a migrant worker?

ANNEXURE TWO: ETHICS APPROVAL LETTER



GENERAL/HUMAN RESEARCH ETHICS COMMITTEE (GHREC)

01-Jul-2020

Dear Mr Jan Cloete

Application Approved

Research Project Title:

Mine closure narratives in South Africa

Ethical Clearance number:

UFS-HSD2020/0653/3006

We are pleased to inform you that your application for ethical clearance has been approved. Your ethical clearance is valid for twelve (12) months from the date of issue. We request that any changes that may take place during the course of your study/research project be submitted to the ethics office to ensure ethical transparency. Furthermore, you are requested to submit the final report of your study/research project to the ethics office. Should you require more time to complete this research, please apply for an extension. Thank you for submitting your proposal for ethical clearance; we wish you the best of luck and success with your research.

Yours sincerely

Dr Adri Du Plessis

Chairperson: General/Human Research Ethics Committee

Adri du Plessis

A handwritten signature in blue ink that reads "Adri du Plessis".

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ANNEXURE THREE: INFORMED CONSENT



RESEARCH STUDY INFORMATION LEAFLET AND CONSENT FORM

DATE

June 2022

TITLE OF THE RESEARCH PROJECT / ISIHLOKO SOMSEBENZI WOKUCWANINGA

Mine closure narratives in South Africa/ Ukulandisa kwe - Mine eNingizimu Afrika

RESEARCHERS' NAMES AND CONTACT NUMBERS: AMAGAMA ABACWANINGI NEZINOMBOLO ZOKUXHUMANA

Patrick Dzimiri	2017332525	Contact number
Siphiwe Mathe	2020611196	Contact number

FACULTY AND DEPARTMENT:

Faculty of Economic and Management Sciences
Centre for Development Support

STUDY LEADERS' NAME AND CONTACT NUMBER: IGAMA LABAHOLI ABACWANINGAYO NENOMBOLO YOKUXHUMANA

Prof Lochner Marais (0404707)	051 401 2978
Mr Jan Cloete (0851348)	051 401 3599

WHAT IS THE AIM/PURPOSE OF THE STUDY?/ UYINI UMGOMO/INJONGO YESIFUNDO?

To gather stories on how former mineworkers manage to sustain their livelihoods after losing jobs in the mining industry. Ukuqokele izindaba mayelana nababesebenza emayini ,ukuthi baziphilise kanjani emva kokulahlekelwa wumsebenzi

WHO IS DOING THE RESEARCH? UBANI OWENZA LOLUCWANINGA?

Two students who are doing research for the degree Master of Development Studies. Abafundi ababili abenza ucwaningo ngezinga i - Master of Development Studies.

HAS THE STUDY RECEIVED ETHICAL APPROVAL? INGABE ISIFUNDO SIYE SAMUKELWA IZIMISO ZOKUZIPHATHA?

This study has received approval from the Research Ethics Committee of UFS. A copy of the approval letter can be obtained from the researcher. Lokhu kuhlola kuye kwathola imvume eKomitini Yokucwaninga Ye - UFS. Ikhophi yencwadi yokugunyaza ingatholakala kumcwaningi



ANNEXURE FOUR: LETTER FROM LANGUAGE EDITOR

Michelle Woolley

WRITER EDITOR PROOFREADER TRANSLATOR

Bachelor of Library and Information Science: B.Bibl.
Reference & Research Librarian

Bachelor of Arts Honours in Translation Studies and Editing

Associate Member of Professional EDITORS' Guild (PEG)

CERTIFICATE OF EDITING

This letter certifies that I have edited the Mini-Dissertation detailed below.

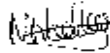
Title:

THE IMPACT OF THE NKANGALA REGION MINE CLOSURE ON THE FORMER
MINE EMPLOYEES AND THEIR DEPENDENTS

Author:

SIPHIWE LORRAINE THATO MATHE

Regards
Michelle Woolley



Date: 24/7/2023

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Professional
EDITORS
Guild