THE SOCIO-ECONOMIC IMPACTS OF MINE CLOSURE: A CASE STUDY OF GA-NALA IN MPUMALANGA

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Declaration

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Abstract

The finite nature of natural resources compels the downscaling and closure of mines. While the environmental aspects of mine closure have been significantly dealt with in research and international literature, the socio-economic factors of closure have not received adequate attention. This study examines the experiences of ordinary miners and the general community on the socio-economic consequences of downscaling and mine closure. A qualitative research methodology was applied with the experiences of participants placed under investigation.

The study conducted reveals that the neglect of social and economic consequences of mine closure results in the failure of mine closure processes. Furthermore, the study shows that although there have been some significant inroads to the advancement and transformation of South African legislation regarding mine closure policy, more effort is still required to strengthen the regulation of mining operations to ensure sustainability.

Together with mining institutions, the government and all relevant stakeholders have the joint responsibility to improve oversight strategies and initiatives to respond to mines' inevitable downscaling and closure. Amongst many recommendations, the study points to industrial transformation, the implementation of skills development, skills transfer programmes and labour mobility schemes to respond to the inevitable downscaling and closure of mines.

Acknowledgements

The study conducted would not have been possible without all the interviewed respondents. Therefore, the first note of thanks is directed to all the respondents who sacrificed their time and effort to participate in the study and provide valuable insights about their local area.

I would also like to thank my academic mentors, Prof. Lochner Marais and Jan Cloete, who have provided exceptional academic support and guidance during the entire research process.

Finally, as a village seed of *eMchathuve nase Matolweni*, I express heartfelt and profound gratitude to my elders, my tribe as a whole, and all connections that keep the inner circle complete.

Nongwadla, Zulu, Mchenge!!

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List of Abbreviations

B-BBBEE: Broad-Based Black Socio-Economic Empowerment

DMR: Department of Mineral Resources

DMRE: Department of Mineral Resources and Energy

ELM: Emalahleni Local Municipality

IDP: Integrated Development Plan

LRA: Labour Relations Act

MMSD: Mining, Minerals and Sustainable Development

MPRDA: Minerals and Petroleum Resource Development Act

SEAT: Socio-Economic Assessment Toolbox

SLP: Social and Labour Plans

Chapter 1: Setting the Scene

1. Introduction

The international community depends on the materials and minerals extracted from the earth through mining and later processed into final goods or even services, like electricity. Therefore, mining is an essential element of our communities that also has a significant role in driving economies and contributing to the notion of development. However, mining also has adverse effects on communities, ranging from environmental issues to the inevitable closure of mines.

The finite nature of natural resources ultimately compels mine closure. There is thus a great need to balance mining operations against the world's populations or host communities while safeguarding the natural environment and contributing to local development. Likewise, when mining operations have ceased, the main concern is the population, environment, and development legacy left behind. This existing nexus speaks directly to the socio-economic impact of mine closure. In most incidences around the globe, it has not been positive.

1.2. Research Problem

The study investigates the socio-economic impacts of mine closure on the Ga-Nala district and the Emalahleni Local Municipality in Mpumalanga. With mine closure, there are always concerns about the legacy of mining operations left behind. Mine closure results in societal, environmental, and economic impacts that have significant financial burdens. Mine closure also negatively affects local communities that look to mining for employment. Therefore, mine closure has socio-economic disadvantages to hosting communities. It leads to widespread joblessness, which in turn increases the levels of poverty in those specific regions. All these dynamics ultimately speak to host communities' standard of living, which abruptly declines and puts host communities in a more challenging position, where they have to make socio-economic ends meet.

1.3. Aim and Objectives

The research investigates the probable socio-economic impacts of mine closure on the residents of Ga-Nala under the jurisdiction of Emalahleni Local Municipality by

focusing on issues of unemployment, poverty, and development in the area. Against this background, the research has the following objectives:

- Analysing the guidelines for mine closure and how they involve host communities.
- Investigating the socio-economic impacts of mine closure on the community of Ga-Nala.
- Analysing responses to mine closure.

1.4. Key Terms

The following key terms are frequently used in the study, and they require some definition:

Mining: The research uses this term to describe the process of exploration, excavation, and extraction carried out on and under the surface of the earth to obtain mineral deposits (Alec, 2020).

Mine downscaling: In the research context, the term is used to explain the reduction of a company's mining operations and labour force (De Lange, 2019).

Mine closure: This refers to the permanent discontinuation of mining operations (Amirshevana & Osanloo, 2018).

Sustainability: The use of available resources (natural or artificial) to meet human needs without diminishing the ability of future generations to meet their own needs (Alec, 2020).

Socio-economic: The term is used by the researcher to describe the interaction between social and economic factors.

1.5. Research Design and Methodology

This section of the study provides a background overview of the study area, research approach, research design, methods of data collection, and sampling design.

1.5.1. Background of the study area

The study covers Kriel, or Ga-Nala, a small town in Nkangala District under the jurisdiction of Emalahleni Local Municipality (ELM) in Mpumalanga. ELM is a category

B municipality that governs the most industrialised area in Nkangala District. This municipal area also has the highest concentration of power stations in South Africa, and its landscape mainly features opencast and underground coal mining (ELM, 2021).

Nkangala District covers approximately 2677,76 km^2 of which Emalahleni is recognised as the highest-order town in the region in terms of its function, population and land use diversity. The second highest-order town is Ga-Nala, and it is also ranked third in the region's settlement hierarchy due to the high concentration of coal mines and coal-fired power stations in the area (ELM, 2021). Nonetheless, the area has experienced significant mine decline over the years and is expected to experience even more decline in the next decade. Figure 1.1 below is a map of Ga-Nala, and it depicts the study area's urban area and the concentration of surrounding coal-fired power stations and mines.

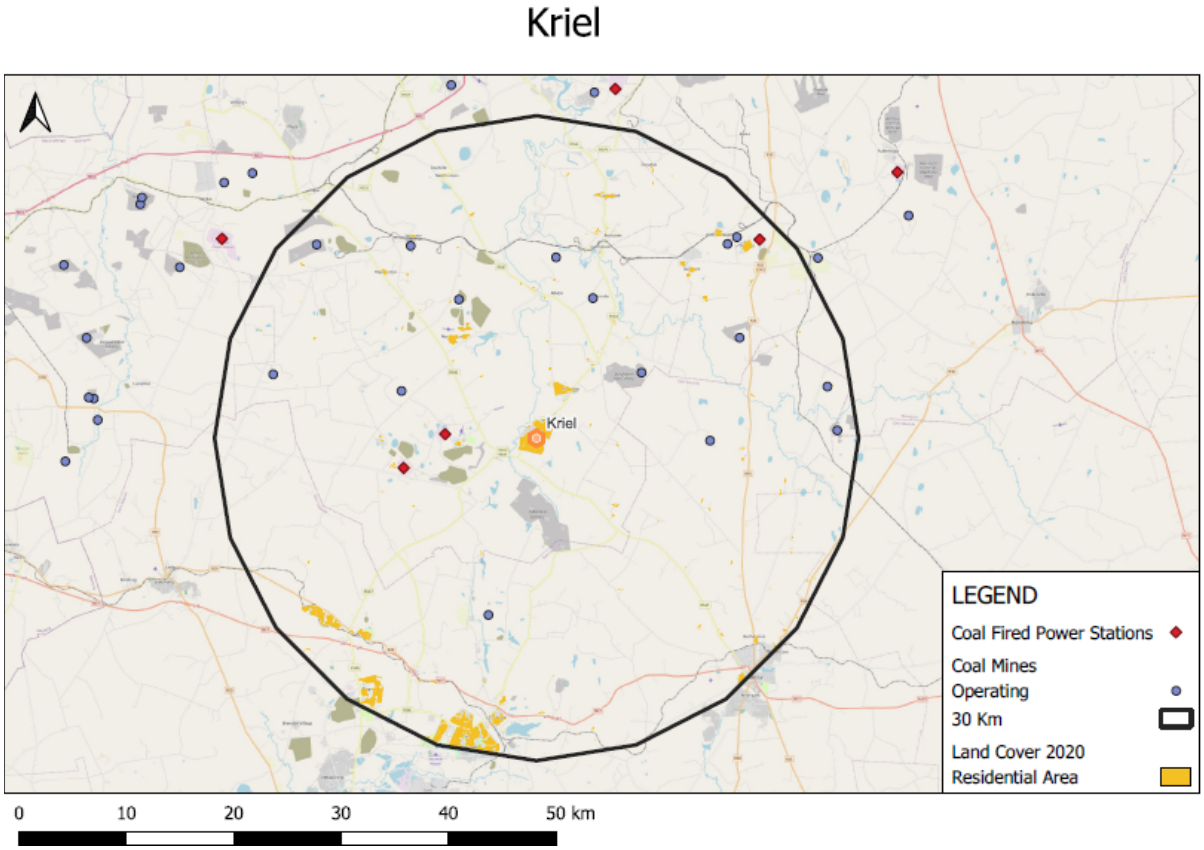


Figure 1.1: Map of Ga-Nala

1.5.2. Research approach

The study primarily uses a qualitative research approach. The central objective of qualitative research is to describe the nature of events rather than quantifying them (Manson, 2018:4). In that regard, an inductive reasoning approach is crucial to the study. The induction process entails drawing generalizable inferences from observations (Bryman, 2012:26).

The qualitative research approach that has been adopted captured the socio-economic reality of the people of Ga-Nala through intense interaction with select community members. Such interaction was then interpreted descriptively within the boundaries of the qualitative research methodology. The methodology also consists of two main procedures: a literature review and an empirical study that seeks to gain evidence of the concepts and observations. Qualitative studies help researchers to understand a phenomenon in-depth and are good at providing contextual data (Bryman, 2012:22).

1.5.3. Research design

A case study design was found suitable for this research. The main reason is that a case study will include a detailed and strong analysis of a single case. Furthermore, a case study draws attention to the complexities and particular nature of the case in question (Bryman, 2012:66).

Descriptive research is recognised as a type of research that seeks to describe a situation or research phenomenon. It is essential because it gives a clear understanding of a research problem. According to Bryman (2012:401), “One of the chief reasons for the emphasis on descriptive detail is that it is often precisely this detail that provides the mapping of context in terms of which behaviour is understood”.

1.5.4. Methods of data collection

The researcher employed semi-structured interviews and open-ended questionnaires to collect the primary data from a sample of 50 respondents. This culminated in the presentation of a comprehensive situational analysis of Ga-Nala, which has already been affected by mine downsizing and is most likely to be affected even further by the continued decline of the mining industry in the area. Nonetheless, the interviews and

open-ended questionnaires were conducted and administered through face-to-face and electronic interaction with respondents in the host community.

The sample of 50 respondents mentioned above rendered the study with 17 semi-structured interviews ranging from 15-35 minutes and 33 semi-structured questionnaires to solicit more information from the respondents. The interviews were recorded and later transcribed. Nonetheless, the sample can be further sub-divided into 18 ordinary community members, 12 respondents from the business sector, three members from local authorities (South African Police Service, National Union of Mine Workers, and Emalahleni Local Municipality), 12 mine workers, and five professionals from other institutions. This allowed for the gathering of consistent and comparable primary data. In that regard, key informants played a significant role in the process.

An observational method has been applied to this research to understand the situational context of Ga-Nala and mine closure in detail. More specifically, an unstructured observational method was used with the freedom to note what is relevant to the study area (Kabir, 2018:241). Furthermore, the inclusion of open-ended questions for follow-ups on specific research topics has been applied. Respondents in this setting can provide new insights from various perspectives (Kabir, 2018:212). This data collection method also helped triangulate the data obtained from other respondents and secondary data sources. The data gathered through observation, interviews and questionnaires forms part of the primary data.

In terms of secondary data, a range of sources has been used. The credibility and legitimacy of these sources are essential factors. Hence, the paper focuses on sources from the academic community that have been discussed and thoroughly debated within the academic arena. The literature review used a range of academic documents, while grey literature and policies were also analysed.

1.5.5. Sampling design

For this research, non-probability sampling has been the most applicable for the key informant interviews and semi-structured questionnaires. Under non-probability sampling, a snowball sample with a size of 50 individuals was taken. This way, the selected participants could suggest other individuals included in the sample based on their shared experiences (Bryman, 2012:424). In that regard, it is crucial to outline that

the sampling continued until the data was saturated. This was done by moving from general questions to more probing research questions.

Snowball sampling has been suitable for the research to reflect on people's relationships and trace their connections and shared experiences to that of the researcher. Inclusion and exclusion criteria have been included from the sample size used, where individuals who have or are currently working in the mine were included. In the same category, individuals who work at the highest levels of management were kept to a minimum. This is because they might not be in a position to reflect the socio-economic impacts of mine closure compared to ordinary miners and community members who have to grapple with the consequences of mine closure at the ground level.

The research aims to assess and investigate the probable socio-economic impacts of mine closure in Ga-Nala. For that purpose, more focus has been placed on mine workers, ordinary community members, local businesses, professionals and local authorities. In that regard, it is also outlined that only a few representatives from civil society and local government were included.

1.6. Data Analysis

This section of the study presents a detailed overview of ethical considerations in the conducted research and a measurement map for collecting and analysing data as applied in the study. Thematic analysis was used to analyse the data.

1.6.1. Research ethics

The notion of ethics is an integral part of research and is not regarded as a mere formality. From the nature of the study and interviewed sample arose an immediate need to gain all the respondents' confidence. As part of the ethical standards of the research, the voluntary participation principle of research that prohibits making people participate in any study against their will was applied. Making all respondents aware of the purpose of the study was the first step of the interview process, contributing to ethical considerations and conduct. In the same spirit, participants were first informed about the procedures and context of the research to obtain their consent before participating in the study.

The interviews for the study were conducted in an ethically sensitive manner, where the values of all the respondents and their socio-economic position were respected at all times. This contributed to gaining the respondents' confidence in participating and completing the interview process. With ethical standards in place, the study could meet its objectives. As part of those ethical standards, the research prohibited falsifying or misinterpreting research data. This helped promote fairness and transparency and avoid mistakes and misinterpretation.

The researcher protected the respondents' rights by reducing the probability and risk of psychological and physical discomfort. The research also protected the rights and the reputation of the university and the department supporting the research. In addition, all the interviewed respondents were kept anonymous to protect their rights further.

Above all, the research eliminated the risk of claims for negligence made against the researcher and the university. In doing so, the study paid close attention to elements of social responsibility in research while avoiding any discrimination against the respondents. In this way, the research took guard against any conduct that might have reduced the endorsement and integral aspects of human dignity and equal respect and treatment for all the interviewed respondents.

1.6.2. Limitations

Research limitations often involve constraints emanating from research dynamics, such as the chosen research methodology and sampling technique. For example, the larger the population, the more accurate a study might be. However, for this research, the chosen sample size is relatively small. Although this might have seemed like a limitation to data collection, the key informants were carefully selected to refer to other respondents who have been able to answer the research problem and meet the research demands, irrespective of the sample size.

Qualitative research is frequently open-ended, and, as a result, the answers provided by respondents are often not specified (Bryman, 2012:148). Some interviewees found some questions demanding, especially if they inadvertently revealed more than they intended. In other words, there were many instances in which the respondents had great potential for deception and exaggeration. To avoid this, respondents had to enter

the research voluntarily with a clear understanding of the required information to make other referrals if they were not well acquainted with the research problem.

Lastly, the COVID-19 pandemic was a direct limitation to the interview setting. This is because some respondents refused to be interviewed in person. To respond to this limitation, telephonic interviews were conducted. In some cases, the respondents were allowed to answer the interview questions in an open-ended questionnaire to ensure that the interviewee was at ease and felt valued for participating in the research. Another constraint for the study was that some participants refused to participate, especially accounting officers from the mining industry and local government.

1.7. Outline of the Study

This study has five chapters and follows the following pattern:

Chapter 2 (A literature review) – This chapter presents a detailed evaluation of international literature on the socio-economic aspects of downscaling and mine closure. The chapter also analyses the socio-economic contributions of mining from a global perspective. The chapter draws specific attention to mine closure issues, such as social risk and sustainability aspects, the regulation of mine closure, participation aspects of mine closure, planning for closure, and other socio-economic factors.

Chapter 3 (Evaluating mine closure policy and South African literature) – This chapter confined itself to the evaluation of mine closure legislation, requirements, and regulation of mining activities within South Africa's legal framework. Furthermore, the chapter also makes provision for a review of South African literature on mine closure and downscaling.

Chapter 4 (Data presentation and analysis) – This research chapter provides a detailed presentation following an extensive data analysis. It focused on demographic concerns of mine closure in the study area, socio-economic concerns, dependency on the mining industry, gender considerations, human rights concerns, and community development projects that have come about through the existence of mining in the area.

Chapter 5 (Conclusion and recommendations) – In the final chapter, the researcher identifies and presents the main findings from the study conducted. Furthermore, the chapter makes provisions for recommendations and future research.

Chapter 2: Literature Review

2.1. Introduction

The extractive industry has positive and negative socio-economic impacts on host communities. On the positive side, mining stimulates local economies and increases the income of the surrounding populations. Mining also brings employment and social service opportunities to communities (Mancini & Sala, 2018:103). However, mine closure could disrupt these benefits.

Mining companies divide the mine life cycle into exploration, development, and post-mining or mine closure. Amirshevana and Osanloo (2018:389) say that "mine closure refers to the period when the operational stage of a mine is permanently stopped". How mines address closure issues is crucial for the industry's proclaimed links with sustainable development.

Dealing with mine closure is complex as it could be a planned or unplanned event. Mine closure often has long-term and negative impacts on host communities. However, most literature refers to the environmental consequences of mine closure, and thus the socio-economic effects of mine closure have not received adequate attention (Bainton & Holcombe, 2018). Therefore, there is a great need for research on the socio-economic consequences of mine closure. These impacts are at the local, national, regional, and international levels (Strambo *et al*., 2019:7).

The chapter provides an overview of international literature on mine closure and downscaling. In doing so, this chapter draws attention to the socio-economic impacts of mine closure, existent plans and regulations for mine closure, social risks of mine closure, and post-mining transitions. Finally, the chapter presents the current knowledge on mine closure and downscaling while outlining substantive findings, and theoretical and methodological contributions to the issue.

2.2. The socio-economic impacts of mine closure

Mines will eventually exhaust their lifespan due to the finite nature of materials and resources. The legacy left by the mine in society is critical as the closure of a mine will impact different dimensions of society (Stacey *et al*., 2010:3). Nonetheless, the finite nature of mining calls for strategic closure planning from both the government and

mines. Despite a range of negative local implications from mining, it also positively affects mining communities and towns (Mancini & Sala, 2018:103).

Tables 2.1 and 2.2 below are essential to the socio-economic aspects of mine closure and downscaling. They provide a detailed overview of the indicators used for assessing the social and economic consequences of mine closure.

Table 2.1: Social aspects of mine closure

Social aspect	**Indicators**
Economic	Local economic activity (diversity and dependence)
	Household income
	Local living standards
Business	Local business development opportunities in the mining sector
	Business opportunities in other sectors
Employment	Local employment opportunities in the mining sector
	Local employment opportunities in other sectors
	Local employment stability/volatility
Security, education, and training infrastructure	Social order and safety (e.g., tensions, crime, and violence)
	Local skills development in mining and other sectors
	Access to quality education and training
	Local transport (e.g., public buses, roads, and airports)
	Critical infrastructure (food supply, power supply, water supply, telecommunications)
Amenities	Local aesthetic and recreational resources (e.g., heritage sites, parks and recreation areas, communal areas)
	Local culture, arts, and sports (including facilities)
Livelihoods	Local livelihoods (e.g., access to land, food, water, and shelter that affect livelihoods)
Land	Local land access, ownership, and use

Social aspect	Indicators
Housing and health	Local housing quality, availability, and affordability
	Community health and well-being
	Access to quality health and social services
Environment	Environmental aspects that affect social conditions (e.g., quality of air, water, land, ecosystem)
Demography	Local population dynamics (e.g., growth/decline, migration, ageing, gender balance)
Participation	Stakeholder participation in closure planning and closure and post-closure processes (including decision-making)
Inclusion	Inclusive stakeholder engagement, including vulnerable and otherwise marginalised groups (e.g., indigenous peoples, women, ethnic minorities, disabled, elderly, young) in closure planning and closure and post-closure processes (including decision-making)
Social (general)	General socio-economic considerations
	Social considerations in financial assurance mechanisms

Source: (Vivoda *et al*., 2019:8)

Table 2.2: Primary questions about the social impacts of mine closure

Category	Question
Poverty	What social or socio-economic values and gains can be achieved in poverty reduction?
Hunger	What social or socio-economic values and gains can be achieved in hunger reduction?
Education	What social or socio-economic values and gains can be achieved in education reduction?
Gender equality	What social or socio-economic values and gains can be achieved in gender equality?

Child mortality	What social or socio-economic values and gains can be achieved in child mortality?
Maternal health	What social or socio-economic values and gains can be achieved in maternal health?
HIV/AIDS, malaria, and other diseases	What social or socio-economic values and gains can be achieved in HIV/AIDS, malaria, and other diseases?
Health care	What social or socio-economic values and gains can be achieved in health care?
Water supply	What social or socio-economic values and gains can be achieved in the water supply?
Employment	What social or socio-economic values and gains can be achieved in maternal health?
Youth employment	What social or socio-economic values and gains can be achieved in youth employment?
Employability	What social or socio-economic values and gains can be achieved in employability?
Technology	What social or socio-economic values and gains can be achieved through technology?
Recreation	What social or socio-economic values and gains can be achieved in recreation?
Infrastructure	What social or socio-economic values and gains can be achieved in infrastructure?
Indigenous	What social or socio-economic values and gains or losses are inherent in indigenous affairs?
Culture	What social or socio-economic values and gains or losses are inherent in cultural affairs in the community?

Enterprise	What social or socio-economic values and gains can be achieved through the generation of enterprise?

(Source: ICMM, 2008)

2.2.1. Social aspects of mine closure

Governments and mining companies often underestimate the social aspects of mine closure and their importance and complexity relative to mine closure's financial, environmental, and technical issues. This lack of recognition of the social elements contributes to the failure of mine closure processes (Stacey *et al*., 2010:391). Mining, in general, has a social performance capability challenge in the sense that there have been some significantly recognisable decreases in the quality and scale of mining companies' capabilities in this particular function. This situation creates a challenge for understanding and managing the social aspects of mine closure. Furthermore, in cases where the social performance function has weak foundations, companies are limited to overseeing closure studies and successfully planning engagement processes (Vivoda *et al*., 2018:14).

The social dimension of the extraction of resources has always presented challenges for the extractive industries. These dimensions include gender considerations, human rights, human development, and cultural heritage (Bainton & Holcombe, 2018:2). These risks and challenges are particularly acute towards the end of the mining life cycle when multiple pressures align. The social impacts of mine closure are often directly linked to the level of local dependency upon resource extraction – for infrastructural development, service provision, governance, and an economic base (Bainton & Holcombe, 2018:1-3).

Poorly managed mine closure will exacerbate the above-mentioned social impacts. Therefore, stakeholders expect mining companies to address these social impacts proactively. Unfortunately, the mining industry has not yet devised the kind of social performance capabilities necessary to mitigate and constantly identify social risks. As a result, the social impacts of mine closure can lead to apathy, alienation and social instability. For example, many coal miners in the United Kingdom have experienced a strong sense of isolation and identity loss when mines shut down. This loss of place

identity is because their workplaces had provided social structures that served as the basis for family relations, locality, and class (Strambo *et al*., 2019:10).

Another important consideration is that miners also share a strong sense of identity; therefore, mine closure can psychologically affect host communities and individuals. Although it is less likely that individuals or social groups will experience the same socio-economic hardships or access similar opportunities in transition periods, there is still little attention on the socio-economic effects of mine closure in literature. Closely related to this gap are the implications of mine closure on the affected communities, political, and social security aspects (Strambo *et al*., 2019:7).

2.2.2. Infrastructure and social services

The continuation of social services and infrastructure maintenance are primary concerns of mine closure processes. Social services will consist of health service industries, education, the management of waste, and a range of social welfare services. Existing infrastructure concerns at closure often include hospitals, clinics, rail, roads, schools, power, water, and sanitation infrastructure. In that regard, the mining industry reasonably argues that it is the responsibility of the government to provide infrastructure and social services. However, they will assist in building and maintaining some of the infrastructure and other crucial services to their operations in mining. Under these conditions, governments often include infrastructure and social service responsibilities when they issue mining permits (Owen & Kemp, 2018:17).

In some cases, communities may negotiate for social services and infrastructure as part of their community agreements with mining companies. The inclusion of these services in mining agreements is a positive idea. However, when the mine closes, infrastructure and the provision of essential services are disrupted through sales or handover, and withdrawal which causes these initiatives to be perceived as negative (Owen & Kemp, 2018:17). When mines close or downsize, a range of social issues unfold. Typical issues of concern involve changes to the community's demographic and economic structure. For example, local institutions and facilities for health may be affected, especially if a company's support disappears. Also, government revenues diminish due to a reduction in mining royalties and taxes. In most cases, this leads to the direct loss of public services in mining communities (Vivoda & Kemp, 2019:9).

Above all, a transition to a post-mining environment may involve the loss of the very thing that once caused celebration at the outset of mining operations (Vivoda & Kemp, 2019:9). Nonetheless, determining whether the infrastructure is either a vital or non-essential element of post-mine closure requires research, engagement, and informed analysis. Even though it may not be entirely possible to predict outcomes with certainty, it is possible to develop closure scenarios. Developing scenarios requires an in-depth understanding of communities' social, government, and political systems. It also involves data on utilising services and infrastructure and potential alternative uses (Owen & Kemp, 2018:17).

The typical case material on mining infrastructure and land repurposing includes examples where mines donated the mining infrastructure to the local authorities. The community usually uses such facilities for cultural and educational purposes, tourism villages, or repurposing company lease land as real estate (Bainton & Holcombe, 2018:7). If a mining foreclosure lens is applied, project decision-making around infrastructural establishments during the project design phase should consider the existing context of possible situations of post-mining uptake and upkeep to new service provision (Bainton & Holcombe, 2018:7).

It is possible to use the infrastructure that sustains mining activities for other economic activities, such as agriculture. Hence, different research studies investigate the planting of fibre–producing plants on land previously used for mining. The main attraction here is that plants that produce fibre have a great potential to rehabilitate mining lands (Verster *et al.*, 2018). Communities can diversify the local economy by changing land previously used for mining into agricultural land. This change in land use could then spur the growth of downsized or down streamed industries, including the manufacturing and production of furniture and textiles produced from the fibre and the stems of plants. Thus, such interventions will boost the local economy and substitute for the decline of economic activity resulting from mine closure. However, these initiatives also demand intense mine closure planning with significant capital outlays. Therefore, meaningful investments in developing transferable skills and land rehabilitation are crucial for mining closure (Verster *et al.*, 2018).

2.2.3. Employment aspects of mine closure

Dependencies for social services, employment, and markets for local business – especially in developing countries enjoy development privileges and various opportunities that come through mining in their communities. When mines close, the communities lose those privileges. But again, mines' operations have proven to have detrimental environmental effects, which present significant challenges affecting the quality of life and livelihoods of subsistence host communities. Hence, it is equally important to assess host communities' coping strategies under these conditions presented by the mining environment (Stacey *et al*., 2010:3).

When mines close, there is a direct loss of primary and secondary employment or such jobs that arise through mining activities in other sectors, such as transportation. Secondly, the economy shrinks, and the mining regions cannot promote development or growth, thus creating a cycle of poverty (Espin, 2020). A combination of all these factors is most likely to result in instability. Nonetheless, widespread joblessness increases poverty, heightens criminal activity, and expands racial and ethnic tensions, while all hope for material advancements is lost (McConnel & Brue, 2011:393). The socio-economic disadvantages and the psychological stressors on host communities looking to mining for employment are other challenges to all individuals or groups affected by mine closure and downscaling (Stacey *et al*., 2010:3).

In most cases, mining communities are not well-prepared for the loss of employment and ensuing poverty that may come as a direct result of mine closure or downscaling. Although there might be plans for job creation schemes and skills development, mining communities experience significant social changes related to job loss, which results in increased unemployment and poverty (Ackerman *et al*., 2018:440). In other cases, former mineworkers are often reluctant to learn new professional skills and usually prefer to seek re-employment elsewhere in the coal industry (Strambo *et al*., 2019). Moreover, due to mineworkers' unemployment, they tend to lose their right to housing when mines downscale or close down. This situation harms communities' existing social structures and overall safety (Ackerman *et al*., 2018:440). This proves that there is a great need for in-depth and strategic mine closure.

2.2.4. Participation aspects of mine closure

Firstly, the idea of participation speaks directly to the engagement of various stakeholders in closure planning, closure, and post-closure processes. Multiple groups and people can act as stakeholders in mine closure other than community members and mine workers. These will include but are not limited to local and district authorities, traditional authorities, development agencies, civil society organisations, and business representatives (Stacey *et al*., 2010:409). Furthermore, the idea of participation primarily relates to the early stages of the mine's life cycle. The main idea is establishing relationships with the expectation of being present in communities over time (Everingham *et al*., 2020:7).

During mine closure, the public participation process emphasises the change brought about by the closure in a specific community. The participation process for mine closure can assist mining companies in managing resources of the mine closure phase that may compound. It can also help reduce or limit financial constraints at the end of the life cycle. Lastly, it can also limit unfulfilled stakeholder expectations while nurturing the complex legacy of mining impacts and unresolved grievances that host communities may have (Everingham *et al*., 2020:7). Under the umbrella concept of participation, consultation forms an essential aspect of the closure process.

The impacts of mine closure on host communities will vary with the degree of the community's levels of dependence. In some cases, the community will struggle to survive with the loss of the mine. Therefore, the idea of consultation is an integral part of the overall process of mine closure. The consultation can help avoid building up false expectations about the outcomes of mine closure to host communities (IIED, 2002:67-68). Nonetheless, because the closure of mines has a significant impact on host communities and other stakeholders in the local area, their participation in mine closure decision-making should be seen as an essential element of mine closure.

There is usually a divide between the interests of mining companies and the interest of communities. Mines want to mine productively, achieve good returns, and exit when the resources become depleted. However, communities expect to see long-term benefits. The current approach to mine closure relies too much on stakeholder engagement rather than on evidence-based practice and management. The main criticism against this approach stems from the fact that it frees mining companies to

enter standard maintenance modes, allowing the costs of mine closure to sit outside the life cycle of mine closure processes (Vivoda *et al*., 2019:1).

2.2.5. Housing and demographic consequences

Housing and demographic consequences of mine downscaling and closure are important aspects of mine closure. However, when looking into the impacts on social structures, these consequences of mine closure are far less documented. There is little reference to factors that speak to how mine closure affects individual households and workers (Strambo *et al*., 2019:7).

If mines have established residential accommodation and town sites for their employees, town normalisation and housing are a pressing material and multidimensional challenge for the planning phase of mine closure. For example, in some locations, mine closure will directly and negatively impact the housing market. After mining companies have placed their large housing stock on the local market, market prices for houses often tumble (Bainton & Holcombe, 2018:6). These transitions of town sites have also created additional pressures for local municipalities as they struggle to sustain urban infrastructure. Other instances consider whether or not housing provisions can lead to progressive developmental outcomes in the context of formalising relationships to ensure mutually shared expectations about ownership or the rental of houses for ex-mine workers. However, in general, mining may give rise to other social phenomena like the influx of optimistic migrants who will ultimately seek the provision of housing (Bainton & Holcombe, 2018:6).

When mines open, they attract people, and this causes inward migration, which often triggers other types of changes in communities. These changes include new social interactions, markets, and economic activities directly impacting a region's demographic and housing patterns. When people begin to live differently, in different areas, and connect in different ways, this will eventually affect how they construct their identity as a population (Owen & Kemp, 2018:22). In some cases, individuals who have moved into mining communities often find that their attachment is more profound than their original driver to move. For example, they might have moved to take advantage of the economic opportunity, but attachment occurs through housing, land, marriage, or other social ties over time. Mine closure approaches can threaten these outcomes, especially if not well planned (Owen & Kemp, 2018:22-23).

2.3. Planning for Downscaling and Mine Closure

The wide range of socio-economic challenges that emanate directly from the closure or downscaling of mines requires many sectorial authorities' involvement across various levels, representing another challenge in itself (Strambo *et al*., 2019:12). Therefore, to contribute to driving government efforts, societal actors, and other authorities, some countries have designed and set up outstanding societal organisations to assist with the phasing out of coal as the world moves towards implementing renewable energy power grids. For example, in Australia, the Latrobe Valley Authority was set up as a partnership between the government, the mining industry, and the community to help coal miners access training and employment services, facilitate new business advancements, and invest in infrastructural development (Strambo *et al*., 2019:12). These partnerships are, in essence, a step in the right direction, especially in planning for mine closure or downscaling and trying to ease the perceivable impacts upon host communities (Strambo *et al*., 2019:12).

Mine closure can initiate major transitions for the local economy and the broader society. The impacts of mine closure result from the material and social capacity created during the life cycle of a mine. Another essential element is the condition in which the mines leave the land after closure (APEC, 2018:57). Due to the fact that mining is time-based land use, rehabilitation should form part of the mines' development and operational planning. Besides, successful mine rehabilitation depends upon the re-vegetation or redevelopment of their surfaces to promote revitalisation and to provide opportunities for productive land uses and other supported sustainable purposes (Glen *et al*., 2014:48).

With the evolving concepts of sustainability and development, it may not be sufficient to return the land to its pre-existing condition. Therefore, policies should avoid simplistic approaches that advocate a return of land to its pre-existing condition, as this might not always be the most practical goal. The policy should, however, promote a concentration on post-closure land use that starts in the early phases of mining and continues through operation as part of a responsive and dynamic plan for mine closure. This planning should occur while capturing regulatory constraints, socio-economic aspects, and the need for post-mining stewardship (APEC, 2018:41).

The rehabilitation process should entail a subset of the mine closure process and facets such as decommissioning, contaminated land remediation, void management, and water table adjustments (Tanner, 2017). Furthermore, when the mine's design has a closure in mind, each mine feature can be created and rehabilitated in an entirely consistent manner with the vision of mine closure (Glen *et al*., 2014:51). All these actions are necessary to minimise mining activities' adverse impacts and the inevitable closure process. Likewise, there is a growing concern surrounding maximising social and economic prospects for communities after mining (Stacey *et al*., 2010:7).

The World Bank (2018:10) proposes a range of lessons to consider in managing coal mine closure: people and communities, land and environmental remediation, policy, and strategy development. Mine closure should have a clear policy direction led by a long-term just transition for all strategies. Furthermore, reducing the distress of mine closure depends on several factors, namely genuine stakeholder engagement, legal and regulatory reviews, adequate budgets for necessary social labour plans, and strong government commitment (World Bank Group, 2018:28). Under the pillar that deals with people and communities, a just transition should meet the needs of the people, their families, and the community. Therefore, a systematic approach to mitigate social and labour impacts that starts before any labour layoffs is most likely to result in a more orderly and cost-efficient process (World Bank Group, 2018:41- 43).

Regarding land and environmental remediation, physical closure requires competent institutions, closure regulations, and procedures. Successful physical closure requires modern mine closure regulations, procedures, and competent institutions. These aspects of physical closure are necessary for reclamation and long-term monitoring of potentially harmful legacy issues. A suitable example of such monitoring would be protecting water quality in surrounding areas of closed mines. Nonetheless, Ukraine, Romania, and Poland have demonstrated good practice regarding physical mine closure (World Bank Group, 2018:46).

To elaborate, Romania has been able to prepare a time-bound programme for the physical closure of 174 mines (World Bank Group, 2018:46), whereby it was possible to reclaim about 400 hectares of land through an adequate closure process and repurpose it for other businesses and communal activities. In addition, eight dams were reclaimed, which significantly reduced the potential risk of dam failure that would, in turn, result in catastrophic environmental and social impacts (World Bank Group,

2018:46). The lesson here is that environmental reclamation should occur from the outset of mine planning. Therefore, the prerequisites of land reclamation and mine closure should be part of the planning phase. However, this is a challenge for most mines as reclamation processes and plans for mine closure may be outdated or non-existent (World Bank Group, 2018:41-43).

Historically, mining organisations could legally abandon mines, leaving the cost of closure to the government and host communities. Today, this practice is unacceptable (Stacey *et al*., 2010:7). Therefore, when mines start, the law forces them to put aside funds to deal with the mines' closure – for example, investing in transferable skills development (Espin, 2020). In this way, communities can use their skills in other industries when mines downscale or reach the end of their operational life span. Also, guidelines that must be publicly available should ensure that communities, governments, and developers know of the requirements for closure from both a social and environmental perspective. The costs and resourcing relating to social impacts and programmes for closure ought to be reviewed by all stakeholders, including governments and communities, to ensure that allocations are adequately reflected (Owen & Kemp, 2018:7).

The academic community provided a range of social closure principles that mines need to consider approaching closure. First, social goals could include land rehabilitation, social and economic values, and contributions to a development path of a specified region (Stacey *et al*., 2010:9). Secondly, building closure into the project's life cycle where mine design, planning, and operation enhance sustainable development. Thirdly, stakeholder engagement, consultation, and empowerment should occur throughout the life cycle until its closure. The mine must be engaged with stakeholders from the earliest planning stages on all possible issues of concern, primarily mine closure or downscaling. Fourthly, there must be a consideration of human rights. Communities have a right to contribute to decisions that affect their lives, as all individuals enjoy constitutional rights of self-determination in shaping their post-closure future (Stacey *et al*., 2010:9-10). This will also ensure that post-mining accounts for the various dimensions of sustainability.

Mine closure and downsizing must have a careful design, planning, and management to adhere to the principles and values that support sustainable development. In that regard, the Socio-Economic Assessment Toolbox (SEAT) developed by Anglo-

American in 2003 is essential in planning mine closure (Samuel, 2012). Moreover, this approach is necessary to manage impacts on host communities and labour sending areas (Samuel, 2012).

From a socio-economic standpoint, the toolbox is also of great significance. It adds value to the entire dialogue by leading and directing the comprehensive design of a profile on mining operations and host communities. In addition, the toolbox includes identifying critical stakeholders within the community for effective engagement and profiling communities regarding their primary socio-economic development needs (Ackerman *et al*., 2018:441). It can contribute to local economic development initiatives and other elements that guard against the negative socio-economic impacts of mine closure.

A practical post-mining approach should provide a range of opportunities for mitigating and avoiding risks. Mining has severe local impacts; therefore, all negative consequences of mining require management to keep them minimal. The sustainability approach towards mining can achieve this by transferring the principles to post-mining activities. Mines should account for social, economic, and environmental risks, and communities living in mining areas should have the opportunity to sustain their well-being and standard of living after mining has come to an end (Kretschmann, 2018:854). In this way, mines reduce the inherent risks of mine closure that have long-term effects upon host communities. In the same spirit, this will contribute towards sustainability and reduce the dependencies created by mining.

The notion of planning is not only limited to the role that mining organisations should play, but it should also include government planning and that of civil society institutions. Planning will enhance communities' involvement in decision-making and lead to transparency and accountability of the entire process of mine closure or downscaling. However, proactive planning for mine closure seldom takes place (Marais, 2013:365). Nonetheless, another essential lesson is ensuring a viable economy in the aftermath of mine closure. This planning is also important because the complexity of mine closure is a multifaceted injury that occurs in a narrow timeframe, where communities are left vulnerable and do not have enough time to adapt (Verster *et al.*, 2018).

Consequently, it is not easy to judge the success of mine closure. Mining always results in the change of landscape, biophysical systems, and society in general. Successful mine closure is attributed more to small-scale mining than it is associated with large-scale mining (Milaras *et al*., 2014:9). One of the most crucial considerations when looking into the success of mine closure or down-scaling at any scale is to ensure the integration of mine closure objectives into operational mine planning, communal, and government expectations. Also, mine closure is more successful when it accounts for short-term, medium, and long-term trade-off considerations. From a corporate standpoint, setting and implementing inclusive mine closure strategies can increase the chances for successful mine closure (Milaras *et al*., 2014:10-11).

Lastly, the foremost motivation for mine closure today seems to stem from the concept of sustainable development, which refers to using, enhancing, and preserving the community's resources without diminishing future generations' ability to meet their own needs. However, one of the significant shortcomings of the literature and legislation on mine closure is that closure requirements are seldom clear and detailed or part of publicly available information (Stacey *et al*., 2010:9). Thus, despite the planning for downscaling and closure of mine's, good practice is still limited. Hence, it is outlined that successful mine closure is nearly always a problematic phenomenon that requires regulation.

2.4. The Regulation of Mine Closure

The bulk of literature from an industrial standpoint tends to incorporate socio-economic planning and regulations as an aspect of a mine's life cycle (Bainton & Holcombe, 2018:3). The Mining, Minerals, and Sustainable Development (MMSD) study of 2002 called for regulatory governance structures to focus on the outcomes of mine closure (Bainton & Holcombe, 2018:3).

The majority of countries worldwide, within which mining is a significant activity, have put policies and legislation in place to regulate mine closure directly and indirectly. Compliance with local and national provisions for mine closure is often a precondition of acquiring mining licenses and ensuring best practice (Clark, 2000:41). Furthermore, enacting closure-specific regulations indicates recognising a regulatory approach towards mine closure involving complex and distinct construction and operation issues (Kung *et al*., 2020:15). However, in some countries, their legislative framework

contains only general statements concerning proper rehabilitation and reclamation, with matters related to mine closure generally dealt with on an ad hoc basis (Clark, 2000:41-43).

A clear procedural pathway to the closure and downsizing of mines is required, and it should clarify the obligations of mining companies. However, only a few countries set up a clear pathway to the closure of mines. In fact, in the Australian jurisdiction, no path is mapped out, and the criteria to validate the success of complete closure processes is often ill-defined. As a result, there is a failure to draw a clear picture of successful mine closure and the required procedural aspects. This situation also applies to Brazil, the Philippines, New Zealand, South Africa, and many other countries worldwide (Kung *et al*., 2020:16).

The issue of regulating mine closure or even downscaling is a global issue. Vivoda *et al*. (2019:1) outline that "the absence of legal criteria to support the responsible closure of large-scale mines is a significant global issue". Regulatory frameworks often focus on social aspects without explicit information or text in policy or legislation. The least attractive scenario for mine closure that negatively reflects mine closure is when mining companies exit from communities with environmental and social impacts unmitigated. In this case, liabilities are externalised onto current and future generations of stakeholders (Owen & Kemp, 2018:25).

2.5. Social Risks of Mine Closure and Sustainability

Mining companies tend to avoid responsibilities and consequent externalities of social risk that come with the closure of mine's. Therefore, there is a need to focus on the sorts of dangers that mine closure may present for communities. In addition, mine closure processes necessitate mining companies to consider how their activities ultimately affect host communities and sustainability in general. Sustainability, in this case, is a corporate objective and a social expectation (Bainton & Holcombe, 2018:14). Nonetheless, literature tends to focus on a narrow and company-centric approach to sustainability and social risk elements. There is a focus on identifying and mitigating social challenges and impacts that may present a threat to the success of mine closure and the relinquishment of lease agreements.

Civil society, local communities, and governments have been putting pressure on mining companies to ensure that mining benefits filter down to host communities. For

example, in some countries, mines are often criticised for not investing back a significant proportion of their profits into developing the local area. The mining industry's response has been to strengthen its corporate social responsibility and social performance structures. However, with the closure of mines, these benefits might be lost or kept to a bare minimum (Bongwe, 2017:8). Hence, mine closure or downscaling must be carefully designed and planned.

Nonetheless, the closure of mining entities also has a legacy of long-term environmental impacts and financial burdens directly linked to the costs of remediating former mining sites. For example, mining entities must set aside financial resources for environmental rehabilitation. However, there are deeply entrenched concerns about the risk of mining entities closing down without fulfilling these obligations (Strambo *et al*., 2019:8).

On the other hand, if we stick to the definition of sustainability that maintains that societies should fulfil their own needs without diminishing the ability of future generations to their own, the hard truth is that coal mining and coal-fired power stations will never be clean. Nevertheless, there are strategies to regulate mining to prevent it from causing irreversible, widespread, and extensive damage to host communities (GroundUp & Davies, 2014). Nonetheless, it is worth acknowledging that although the extraction and burning of coal may provide short to medium-term benefits, it is not sustainable in the long run.

When looking specifically at the issue of mine closure and environmental risks, the implications of mine closure or even downscaling include the disadvantages of environmental impacts. These environmental impacts include a continuous ecological footprint. Common aspects in this regard have been river systems, deteriorating water quality, air pollution, and land abandonment (Marais, 2013). All these challenges impact the health and safety of communities in the sense that infectious diseases and perinatal conditions are commonly related to the environment. In addition, large-scale mining can include hazardous chemicals such as cyanide. Improper mine closure will exacerbate these environmental concerns, which will, in turn, pose a direct threat to local communities. Furthermore, air, soil, and water pollution can also expose communities to various health issues, including water-borne diseases and respiratory infections (IFC, 2014:23).

Another significant social risk of mining, in general, is attributed to the loss of agricultural land. Mining operations tend to destroy traditional livelihoods, especially in rural and less developed regions of the globe where agriculture is the primary source of income (Bongwe, 2017:12). In most cases, communities must shift from purpose-built settlements into areas of inadequate resources. In this way, mining activities change the structure of communities and take away significant portions of arable land. As a result, these communities have high levels of cash dependency with little or no formal activities for extra income. When the mines shut down, local communities are often left with no stable income to sustain themselves. In this way, mines pose significant socio-economic risks, and they cannot be regarded as sustainable if they strip communities of their ability to support themselves (Bongwe, 2017:12).

At the end of the mining cycle, the residual or operational risks require funding. Also, companies should see to it that they minimise or eliminate future social and environmental risks to the greatest extent possible over the life cycle. Where such existent risks cannot be eliminated, resources and controls must ensure that future liabilities are not financially or environmentally imposed on local governments and host communities (Owen & Kemp, 2018:8). Conventional wisdom emphasises that social aspects should be part of mine closure planning. A more progressive approach is to invert this line of thinking and ensure that social considerations form part of a mine's social performance from the outset of a mining project (Owen & Kemp, 2018:8).

2.6. Conclusion

The international community presents a range of lessons that should be noted and acknowledged regarding mine downscaling or closure. Firstly, mining is a special case because of its complex transitional nature and its environmental and socio-economic impacts. Secondly, much of the existing legislation concentrates on the natural or environmental aspects of mine closure, but there is a need to consider the value and voices of host communities. Thirdly, there is a noticeable increase in consensus that planning for mine closure should be part of the overall life cycle to prevent the anticipated negative socio-economic impacts upon host communities (Marais, 2013:365).

There is a research gap related to how mine closure and downscaling affects individual households. This then calls for more attention and academic research on the social

and economic aspects of mine closure and downscaling. Mine closure or downscaling may come as a planned or even unplanned event. In any case, mine closure or downscaling will have significant socio-economic and environmental consequences upon host communities. Mining often has more negative social, economic, and environmental impacts than positive ones, so there should be more effort and commitment toward successful mine closure.

Planning should include the expectations of host communities, civil society, and the government under which they operate. The policy should promote a focus on post-closure initiatives that start in the early phases of mining and continue through operation as part of a responsive and dynamic plan for mine closure. This planning should take place while capturing regulatory constraints, socio-economic aspects, and the need for post-mining stewardship (APEC, 2018:41).

Chapter 3: Evaluating Mine Closure Policy and South African Literature

3.1. Introduction

The closure of mines can come as a planned or unplanned event with detrimental social and economic implications. Chapter two focused on the socio-economic aspects of mine closure and the international literature, suggesting that there should be strategic planning for the downscaling and closure of mines. Mine downscaling and closure are unavoidable. Therefore, mine closure aspects should be included during a mine's life cycle. This inclusion of downscaling and closure planning during the life cycle guides internal mining operations and the legislation of different countries.

This chapter reviews South African policy and literature on mine closure. The making of policy and legislation, in general, occurs in a dynamic setting. In minerals and mining policy, the scope is necessarily broad, and it touches on various aspects of the mining process. In addition, the mineral resource and mining industry is also affected by the common and contractual laws of the country (Stevens, 2017:177). For instance, South African law presents principles often described and enunciated in case law that place judicial interpretation upon significant legislation to regulate mining in the country.

3.2. An overview of mine closure policies and legislation

The mining industry is one of the oldest industries in the country. However, the industry had limited guidelines for mine downscaling and closure for decades. Mining regulations in the country only started to consider sustainable development initiatives in the early 1990s. Section 24 of the South African Constitution is the cornerstone of sustainable mining. First, this section proclaims the right of everyone to an environment that is not hazardous or destructive to their well-being and overall health. Secondly, it affirms the right to have an environment protected for the present and future generations (Alec, 2020:29).

In a South African context, the country's constitution is the highest rule of law (Stevens, 2017:177). It establishes, promotes, and protects equal constitutional rights. In that regard, mining establishments have to adhere to the country's constitution and common law while exploring, operating, and in the process of downscaling and closure (Alec, 2020:28). Therefore, the most significant pieces of policy and legislative guidelines for closure in the country will include:

- The White Paper, A minerals, and mining policy for South Africa of 1998
- The B-BBEE Mining Charter of 2018
- The Skills Development Act no. 97 of 1998
- The National Environmental Management Act no. 107 of 1998
- The Mineral Act no. 50 of 1991
- The Mineral and Petroleum Resource Development Act (MPRDA) no. 28 of 2002

3.2.1. The White Paper, A minerals, and mining policy for South Africa of 1998

The White Paper on minerals and mining policy has six fundamental themes, namely: governance, regional cooperation, environmental management, people issues, participation in ownership and management, business climate and mineral development (Department of Minerals and Energy, 1998). However, in the interest of this section, only two of the above aspects will be discussed: people issues and environmental management.

The last element under the theme of people issues is that of downscaling. Here, the White Paper proposes that government will play a significant role in alleviating the social consequences of sizeable downscaling and closure. In terms of policy requirements, there should be extensive consultation with miners in the event of significant downscaling. Furthermore, there should be a facilitation of the involvement of affected communities, including municipal structures (Department of Minerals and Energy, 1998).

Regarding the theme of environmental management, the White Paper referred to three critical regulatory areas: the environmental impact of the exploration process, effects on the operation and closure of mines, and recovery programmes where mines have ceased to operate. These areas of concern receive support from the constitutional notion that everyone has the right to an environment that is not harmful to their health or well-being (Department of Minerals and Energy, 1998).

For closure, the White Paper proposes that there should be an explicit budgetary allocation, especially for land rehabilitation programmes. Furthermore, the damage caused by the mining industry should be managed and contained irrespective of the scale of mining. Therefore, mining companies should conduct their operations in a

manner that takes caution of the rights and needs of local communities. At closure, the mines must ensure the continued availability of productive infrastructure and land (Department of Minerals and Energy, 1998). Furthermore, the government's overarching goal is to ensure sustainable development, which is possible by integrating environmental impact management into all-economic development activities (Department of Minerals and Energy, 1998).

3.2.2. The B-BBEE Mining Charter of 2018

The Broad-Based Black Socio-Economic Empowerment (B-BBBEE) charter, otherwise known as the 'mining charter', attempts to transform the mining industry. The charter initially establishes a system for the mining industry and other mineral-related establishments to achieve specified transformation segments over set periods (Alec, 2020:31). The mining charter brings to the picture two critical aspects that might be valuable under post-mine closure for employees: skills development and homeownership (Marais, 2018). The mining charter promotes skills development that allows employees to be employable in other industries in light of mine closure. Furthermore, the charter upholds that the appropriate housing development strategy for mineworkers should include post-closure (Alec, 2020:31).

The mining charter also seeks to ensure meaningful economic participation of previously disadvantaged groups in the mineral resource sector. By complying with this objective, the mining sector contributes towards the development of small black-owned businesses. The mining sector must allocate specified portions of its procurement to assist enterprise development and benefit historically disadvantaged South Africans (Gloy, 2014:13). The closure of mines may harm the development of small black-owned businesses and the owners and their dependents. When the mining industry suffers from economic setbacks such as decline, it makes it virtually impossible to meet the set targets of the mining charter. Thus, preventing the industry from investing and allocating its procurement towards enterprise development as required by the mining charter (Gloy, 2014:14).

3.2.3. The Skills Development Act no. 97 of 1998

The Skills Development Act forms part of the employment law of South Africa in terms of the LRA (LRA definition of employment law). The primary purpose behind the Skills

Development Act no. 97 of 1998 is to improve employees' skills, improve the quality of their lives, their labour mobility, and enhance their ability of self-employment. The act also seeks to shield retrenched workers from economic hardship by ensuring that their skills allow them to re-enter the market. In addition, the act recommends employers to provide their employees with opportunities to acquire new skills (Alec, 2020:42). When a mine is downscaled or closed or fails to meet its economic objectives, unemployment and poverty might prevail. The envisioned programmes for skills development, mobility, and diversification can therefore help combat the devastating effects of mine downscaling and closure. Furthermore, it will be advantageous that the skills availed to mine workers in the mining sector also include skills applicable to industrial areas beyond mining (Alec, 2020:42-43).

3.2.4. The National Environmental Management Act no. 107 of 1998

The introduction of the National Environmental Management Act no. 107 of 1998 ensured cooperative environmental governance by developing standards for decision-making regarding the environment and affecting the people. This legislation has a range of amendments to keep mining companies liable for current and past mining operations. Thus, the National Environment Management Act is an excellent legislative tool that can decisively deal with issues of non-compliance during mining operations, closure, and post-mine closure (Watson & Olalde, 2019).

The amendment of the act in 2014 made provision for the financial security of the exploration process, mining operations, mine closure, post-closure, and rehabilitation. These regulations explicitly state that a mining company needs to be accountable for environmental damages by applying best management practices in the processes of mining and rehabilitation. Furthermore, section 34 of the National Environmental Management Act requires a mining right holder to have a closure certificate to avoid contravening set legislation during closure (Alec, 2020:39). In addition, Swart (2003:490) emphasises that "an environmental management plan, premised on environmental impact assessments, should be presented and formally endorsed as the principal environmental rehabilitation prerequisite when mines submit their closure plans".

The National Environment Management Act does not include social issues on mining. Still, it emphasises closure procedures from an environmental perspective. It provides

for environmental rehabilitation (De Lange, 2019:51). However, despite all set regulations, the general trend in South Africa is that mining companies transfer the burden of rehabilitation to the government. This results from the inadequacy of mine closure requests and a low rate of successful applications to the Department of Mineral Resource and Energy (Watson & Olalde, 2019).

3.2.5. The Mineral Act no. 50 of 1991

The Minerals Act no. 50 of 1991 made provisions for statutory requirements enforcing environmental management and protection, rehabilitating affected areas, and prospecting in South Africa. Section 38 of the Minerals Act requires that the rehabilitation of the land surface used in any prospecting or mining operations is carried out by the holder of the prospecting permit or mining rights concerned. Furthermore, the act promulgated regulations to ensure that financial provisions are available by the mining right holder for environmental management programmes (Swart, 2003:490). This was the first law in South Africa to make mining companies responsible for post-mining rehabilitation.

Section 54 of the act requires that a mining right holder should inform the Director of Mineral Development in writing at least 14 days before the intention to cease mining operations temporarily or permanently (Swart, 2003:490). Nonetheless, before enacting the Minerals Act, mining companies used irresponsible mining methods with little or no regard for environmental protection. Likewise, mining organisations would shirk their responsibility of rehabilitating the environment by leaving an area unrehabilitated. This negative legacy also reflects the long-term residual effects on communities' environmental, health, and social well-being in unrehabilitated areas (Swart, 2003:489).

3.2.6. The Minerals and Petroleum Resource Development Act (MPRDA)

Before the Minerals and Petroleum Resource Development Act (MPRDA) no. 28 of 2002 was brought forth, environmental protection was enforced through the Mineral Act no. 50 of 1991. Therefore, the main objective of the MPRDA is to uphold South Africa's internationally recognised right to exercise self-determination, independence and custodianship of all minerals and petroleum resources of South Africa. Furthermore, the act also ensures that the rights to mine contribute to the socio-

economic well-being of communities where mining occurs and that such activities are not hazardous to the environment (Alec, 2020:31-21).

The MPRDA primarily plays a transformative role. The main components of this function include disseminating ideas to transform communities and mineworkers. This segment of the act speaks directly to mine community development plans. In addition, the act offers an incentive to strategically design long-term initiatives or programmes that will ensure self-sustaining communities are self-reliant (DMR, 2010). The successful implementation of such initiatives displays the commitment of the mine to community development (Alec, 2020:36).

When it comes to closure, section 38(1)(d) of the MPRDA states that the mining right holder will have to accept liability for a mining area impacted by their operations. Section 43 of the act deals with the issuing of closure certificates. This section emphasises the environmental obligations to capable institutions (Alec, 2020:33). However, the MPRDA says very little about the social aspects of mine closure. Yet, it is worth acknowledging that the act does make provision for the development of social and labour plans.

Section 89 of the MPRDA provides financial guarantees by any mining entity before mining operations. Nonetheless, section 43 requires mine owners to apply for closure certificates when their mining rights lapse, when they want to abandon a part of the granted portion of the property, or when they want to shut down. The purpose of this provision is to ensure that there is money available if the company fails to rehabilitate and remedy the environmental damages caused by their operations in case of mine closure (Alec, 2020:33).

3.3. Analysing the Social and Labour Plan

The MPRDA introduces the submission of social and labour plans as a prerequisite before granting the right to mine. Social and labour plans can also be seen as a concentrated effort to address the promotion of economic growth and the development of minerals and petroleum. Such initiatives can enhance the platform for creating jobs, which will also contribute towards strengthening the social and economic welfare of all South Africans (DMR, 2010).

The DMR (2010) outlines that “Section 23(f) of the MPRDA emphasises that the mining rights will only be granted by the minister to prospective mining applicants, as contemplated in section 100 of the mining charter after adhering to the prescribed social and labour plan guidelines”. In addition, the DMR has contributed towards developing the guidelines for submitting social and labour plans as required by regulation 46 of the MPRDA (DRM, 2010). The social and labour plan primarily requires all mining organisations to develop a Mine Community Development Plan, a Housing and Living Conditions Plan, a Human Resource Development Plan, and an Employment Equity Plan to manage downscaling and closure under their social labour plans (DMR, 2010).

The housing and living conditions plan is closely related to the idea of community development planning. The primary objective of the plan is to promote homeownership. This social and labour plan segment's significance is ensuring that mining communities have housing security even when a mine is closed. However, this provision by the social and labour plan depends on the municipality’s constitutional mandate and aim of human settlement in the local sphere of governance to provide adequate housing (Alec, 2020:36). Nonetheless, Marais and Cloete (2013) say that the outcomes of housing programmes associated with mortgage bonds turned out that some employees who owned assets fail to sell during mine closure (see also Alec, 2020:36). This is because mine closure causes a drop in the value of housing. Still, mortgage bonds do not decline; in some cases, job losses also translate to former mineworkers' inability to settle their debt (Van der Watt & Marais, 2019:1212-1213).

When it comes to the labour element, the human resource development plan is of significance. The plan’s primary objective is to promote the acquisition of skills, financial aid, and other training programmes that represent demographics. The skills development of both communities and mine workers is an essential aspect of this programme. The human resource development plan provisions require that the mining companies undertake programs to ensure the diversification of skill and economic sectors to reduce the adverse effects of closing mines (DMR, 2010).

After downscaling and closure, only a limited number of previous mineworkers become employable because some do not possess the necessary employment skills in other sectors (Marais & Nel, 2016). Therefore, the skills shortage jeopardises the employability chances of former mineworkers outside the mining industry. This then

calls for the strategic implementation and commitment of the human resource development plan in diversifying skills development in the mining industry.

On the other hand, reducing employees due to the downscaling of mines is an unavoidable phenomenon. Therefore, the social and labour plan guidelines require mining companies to develop a standing procedure that deals with downscaling and reductions in line with section 52(1) of the MPRDA and section 189 of the Labour Relations Act. Furthermore, the mine should establish mechanisms and turnaround strategies to save jobs and prevent unemployment and downscaling (Alec, 2020:37).

It is acknowledged that the social and labour plans make provision for a community development plan, a housing and living conditions plan, a human resource development plan, and an employment equity plan to deal with the social implications of mine closure (Sesele *et al*., 2021:7). However, these plans do not require mining companies to think beyond the life of a mine and deal with the adverse social consequences of mine closure. Another concern is that legislation requires social and labour plans to remain until a final closure certificate is issued and received by the mining right holder. Sesele *et al*. (2021:7) emphasise that "this is an example of linking social aspects of closure to a mines life cycle planning, but many of the long-term social consequences will materialise once the mine has closed".

3.4. Deductions from Policy and Legislation

From this assessment, it is clear that mine closure policies and legislation regarding regulatory requirements can be strengthened, although they are relatively broad in context. For example, the MPRDA says very little about the social aspects of mine closure. However, it is worth acknowledging that the act does make provision for the development of social and labour plans. In addition, despite extensive regulations, there is a challenge with the implementation and commitment of mine closure regulations. This is reflected by the fact that only a few mines make submissions for closure requests. The general trend in the South African mining industry is for mines to transfer the burden of rehabilitation to the government.

3.5. Reviewing South African Literature on Mine Closure

3.5.1. Introduction

As mines exhaust their resources, they approach the end of their productive life cycle. As a result, mine downscaling and closure have become common concerns around the globe (Crous et al., 2020:2). This section focuses on mining practices in South Africa's coal industry. It will touch on the visible impacts of mine downscaling and closure. Furthermore, the finite nature of the mining industry means that there can be detrimental environmental, economic, and social effects upon host communities with the decline and closure of mines. Therefore, this section will also assess public and private sector cooperation in dealing with the downscaling and closure of mines. Lastly, the section will align social and labour plans with the IDP (Integrated Development Plan).

3.5.2. An overview of coal mining and the impact of closure in South Africa

The discovery of coal over 100 years ago led to the transformation of the country's socio-economic landscape. For decades, South Africa was recognised as a country built around the mineral resource industry, and as a result, mining towns are a common phenomenon in the country. South Africa also has a long history of the abandonment of mines, followed by a high number of projected mine closures in the next decade – especially in Mpumalanga (Crous *et al*., 2020:2).

Today, mining companies are regulated and increasingly compelled to plan for closure at the inception of mining operations. However, it is still concerning that mining has significant environmental, social, and economic legacy issues (Crous *et al*., 2020:2). These problems originate from lax legislation, irresponsible mining practices, and stringent social expectations. As a result, the socio-economic and environmental attributes of coal mining in the country are chronic, especially in mining towns. For example, coal mining and electricity production through coal has resulted in South Africa being ranked amongst the world's top 20 countries with the worst carbon emissions (Chinomona & Mathu, 2013:347).

In that regard, degraded natural environments present substantial challenges for host communities, affecting their subsistence and quality of life. Therefore, the mining industry has to deal with the closure of mines by adopting an approach that can focus

on environmental aspects, on the one hand and the dependency of the surrounding communities on the other. In addition, mine closure planning should not only be limited to a focus on land rehabilitation and the natural environment but also on the various socio-economic aspects of mine closure or even downscaling (Ackerman *et al*., 2018:3). Unfortunately, both mining organisations and local communities are often unprepared and ill-equipped to deal with the closure or even downscaling of mines (Marais, 2013:365). The tendency of the mining industry to deal with these problems towards the end of a mine's life cycle rather than planning for them from the start is partly responsible for the adverse impacts of mine closure (Sesele *et al*., 2021:1).

The closure of mines is a significant threat to the socio-economic future of mining towns (Nel & Binns, 2002:257). When a mine is downscaled or shut down, poverty and unemployment in those communities become rampant. As unemployment grows, poverty and deprivation also increase, leading to high instability and opportunistic crimes (Chinomona & Mathu, 2013:347). Another trend is for mine closure or even downscaling to inevitably lead to outward migration, which often poses significant constraints on the regions in which populations have migrated; this causes pressure on local economic development policies and infrastructural developments (Marais, 2013:365). The outflow of former mine employees in mining towns and incredibly skilled labour creates additional challenges. This group of people could have mobilised their communities into action and created new opportunities if they did not move to a different region (Verster *et al.*, 2018).

Mine closure and downscaling can also lead to the loss of income for local government in rates, ultimately harming the municipalities' financial planning and provision for public service (Marais & De Lange, 2021:4). The challenges faced by the local government with the downscaling and closure of mines are multi-dimensional. Consequent to the closure of mines, the local government is obligated to provide and maintain services resulting from mining in the area (Marais, 2013:514). For example, the impact of growing informal settlements creates significant problems for local governments regarding the provision and delivery of housing obligations (De Lange, 2019:37).

Another concerning issue with mine closure or downscaling is avoiding turning active communities into "ghost towns" and generating post-mining economies. However, mine closure or even downscaling is commonly associated with a plummet in

investments, a decrease in production factors, and a loss of capital, which often leads to social instability in those former mining regions (Marais, 2013:365). Furthermore, this situation has a domino effect on host communities, which also leads to social unrest. The main issue here is the inadequacy of alternative employment and economic opportunities in mining communities, especially for less educated and skilled labour (Verster *et al.*, 2018).

3.5.3. The nature of mining towns in South Africa

Mining towns are a common phenomenon in South Africa. These towns are characterised by development patterns that reflect historical and contemporary policies developed as an interplay between the mining companies, the government, civil society, and the general community. Even so, there is still no comprehensive policy on mining towns. However, there are some guidelines in the White Paper of 1998 on mining and the mining charter. These policies seek to promote long-term settlement in mining towns and present the desired shift away from the company-town model (Marais *et al*., 2018:784-785).

The White Paper of 1998 calls for the strategic integration of mineworkers into the local economy and puts an end to racially discriminatory provisions that apply to housing and town planning. Today, some of these towns are open, with mining and non-mining residents, and others have been normalised. Furthermore, the most favoured approach to mining towns is to ensure collaborative planning between mining companies and the government (Marais *et al*., 2019:1-4).

To portray sustainability, mining companies now support collaborative planning with the government, which has come as a direct result of normalisation. Marais *et al*. (2019:779) define the process of normalisation that has dominated South African mining towns as “the take-up of the operation and provision of services and facilities by local and other authorities, which had previously been provided and operated by companies”. This logic mainly drives a pro-normalisation approach that company towns create social ills. These social ills include, among many, problems associated with underinvestments in social services and town planning (Gregory *et al*., 2018).

On the other hand, the most significant risk associated with town normalisation is that a range of systemic issues reveals themselves at closure. For example, normalisation has shifted some long-term consequences of downscaling and mine closure, such as

job losses and the responsibility of maintaining urban spaces, to the local sphere of governance and individual households (Marais *et al*., 2019:880). Normalisation has therefore contributed to the dysfunctionality of the local sphere of government. If mines had retained the company town setting, the extended liabilities that come with the downscaling and closure of mines would remain with the mining companies (Van der Watt & Marais, 2019:1213).

3.5.4. Alignment of social and labour plans with the IDP

A mining company's social and labour plans must align with the 5-year strategic plan of the municipality known as the Integrated Development Plan (IDP). The first step of the process is consultation (Thobatsi, 2014). The mine must consult with the local government to absorb the community's demands in the IDP. For success, the IDP is highly dependent on public participation. During public participation, community meetings will be held where they can raise their issues. This cooperation between local government and mining companies is supported by the 'new natural resource agenda' and the MPRDA (Van der Watt & Marais, 2021:3).

Once a mine has consulted with the local sphere of government and is able to absorb the demands and challenges of communities, it would draft and align its social and labour plan with the IDP. These plans are then submitted to the mineral resources department and tied to a company's mining license. However, evaluations of this approach have not been so positive. The criticism of this approach stems from the fact that a weak IDP will automatically translate to a fragile social and labour plan and that social and labour plans cannot account for the long-term consequences of mine closure (Van der Watt & Marais, 2019:1212-1213). Another problem with this collaborative relationship lies with the fact that the social and labour plan guidelines do not make provision for strategic procedures to align municipal IDPs and social labour plans. The procedures for the management and facilitation processes are not stipulated. Consequently, this weakens the relationship, especially in a non-voluntary collaborative setting (Van der Watt & Marais, 2021:2).

3.6. Conclusion

The discovery of coal transformed the entire landscape of South Africa. Over the years, mining has proven to have detrimental environmental, social, and economic

effects upon host communities. The government embarked on a path of normalisation to combat these socio-economic ills, especially in mining towns. However, the process has its observable trade-offs. For example, mining companies often shift the long-term consequences of mining to the local government. This proves that although mining companies collaborate with the government to deal with downscaling, closure, and other mining operations, this collaboration still needs strengthening.

In addition, the relationship between the IPD and social and labour plans is very critical, and it should accommodate the dependency for host communities that comes with mining. Likewise, mining companies and local governments should be cautious that a weak IDP will automatically translate to a fragile social and labour plan. The collaborative relationship between mining companies and the local government should make strategic provisions for the adverse social and economic consequences of mine downscaling and closure.

Chapter 4: Data Presentation and Analysis

4.1. Introduction

The literature review in Chapter two pointed to mine closure's adverse social and economic consequences. Chapter three focused on assessing mining policies and the policy approaches towards mine closure. To combat the social ills created by mining operations in mining towns, the government embarked on the path of town normalisation. Today the emphasis is on local public government as opposed to mine-managed towns. However, the process has proven to have trade-offs as mining companies often shift the long-term consequences of mining, including mine closure, to local government and individual households.

The mineral-rich province of Mpumalanga faces the vulnerability of mine closure and downscaling. Most towns in the province try to provide mining employees with social infrastructure, housing, and recreational facilities (Laduma, 2014:2-4). The declining coal industry in Ga-Nala, which has the second largest economic base in ELM, raises concerns about the socio-economic impacts of mine closure.

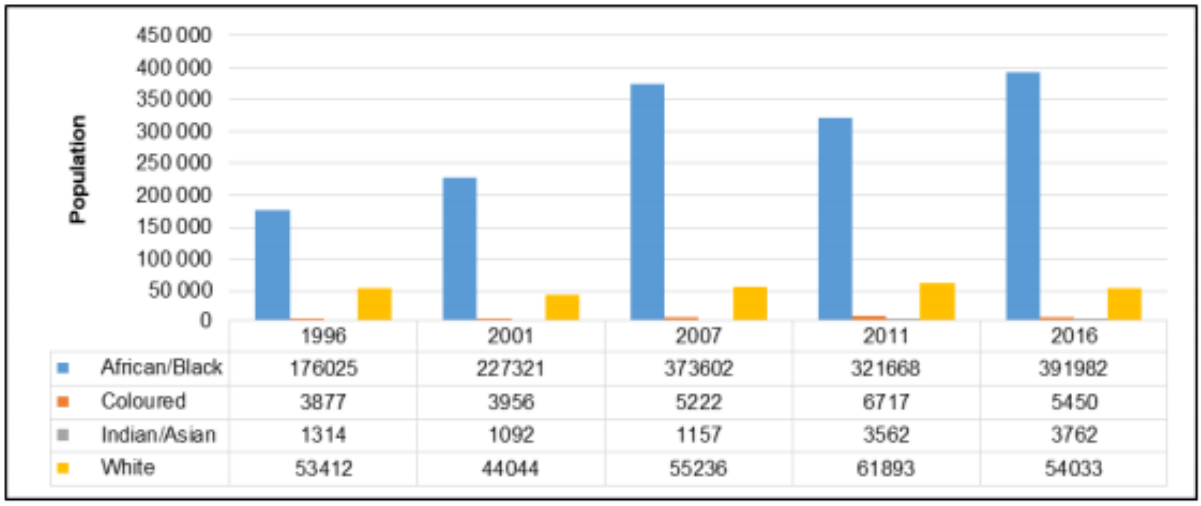
In this chapter, an overview of the findings of the research process will be provided using the transcripts of the semi-structured interviews with a sample of 50 individuals and a range of secondary data sources. The findings are presented thematically with the following main themes: consequences of mine closure on the population; socio-economic concerns; business consequences; community expectations; gender considerations, and human rights concerns.

4.2. Consequences of Mine Closure on the Population

The following section will indicate the impact of mine closure and downscaling by reflecting on the socio-economic features of the study area under the jurisdiction of ELM.

4.2.1. Statistical background

ELM's population has been on the rise since 1996. Figure 4.1 reflects the population composition of Ga-Nala and its estimated growth from 1996 to 2016.



	1996	2001	2007	2011	2016
African/Black	176025	227321	373602	321668	391982
Coloured	3877	3956	5222	6717	5450
Indian/Asian	1314	1092	1157	3562	3762
White	53412	44044	55236	61893	54033

Figure 4.1: Population of Emalahleni

(Source: ELM, 2021)

Between 2011 and 2016, the municipal area recorded a population growth of 3.2% per annum. Ga-Nala alone recorded a population estimate of 15,237 individuals in the area (City Population, 2016). Meanwhile, the overall population of the municipality increased from 395,466 individuals in 2011 to 455,228 individuals in 2016. By 2030, the municipal area will house approximately 710,000 people (ELM, 2021). Yet, these predictions and the current growth will likely change when mine and power station closure sets in.

4.2.2. Migration patterns and the mining industry in Ga-Nala

Considering that Ga-Nala has the second largest economic base in ELM due to its power stations and surrounding collieries, the mining industry has attracted a significant pool of individuals who are not locals. The aforementioned statistical data suggests that the mining industry has led to immigration and confirms the data trends in the previous section.

A community member outlined that:

> *The population here is composed of people from other places, and when the mines close, they would have to return to their places. On the other side, you'll find that people who have stayed here for years do not get jobs, but outsiders do (7).*

The above response from a community member is entwined with some of the most complex dynamics of internal migration as experienced within the boundaries of the municipal area. Amongst many, this respondent expects that the migrants will migrate back to their places of origin. Although it is unclear what the extent of migration back to these labour-sending areas would be, the more important point is that the area will lose people.

Table 4.1:Community perceptions on the population and mine closure

General Community No. of Respondents	**Population Decline after closure**	**Mine Workers** No. of Respondents	**Population Decline after closure**	**Business Community** No. of Respondent	**Negative Impact on Housing Market**
1.	1	1.	1	1.	0
2.	1	2.	0	2.	0
3.	0	3.	1	3.	1
4.	0	4.	0	4.	1
5.	1	5.	1	5.	1
6.	1	6.	1	6.	1
7.	1	7.	0	7.	1
8.	0	8.	0	8.	0
9.	1	9.	1	9.	0
10.	1	10.	1	10.	0
11.	0	11.	0	11.	0
12.	0	12.	1	12.	0
13.	1				
14.	0				
15.	0				
16.	1				
17.	1				
18.	1				
18	**11**	12	**7**	14	**5**

Table 4.1 above mirrors the perceptions of the respondents on issues of population decline and the closure of mines in the area. Out of the 30 respondents from the mine workers and the general community's category, 18 respondents show concern over population decline as stimulated by the downscaling and closure of mines in the area. Furthermore, some respondents in the business community anticipate that the closure of mines and consequent population decline in the area will have a negative impact on the housing market.

Other respondents from the complete sample were either indifferent or less concerned about the upcoming closure of mines in the area and how that could affect their

demographic composition. These respondents were mostly concerned and frustrated over the current status quo. For example, from the collected data and the previously mentioned community member's response, there is a sense of frustration with the increased competition for local services and resources due to population growth. When host communities receive migrants, they are often unprepared to accommodate the new entrants, especially regarding shared resources, housing facilities, and overall integration. As a result, social cohesion is distorted, coupled with other forms of societal disruptions.

4.3. Socio-Economic Concerns

Most respondents describe the town as experiencing a gradual social decay and rising instability. The expected decline might increase this instability. The respondents pointed to a slow response from authorities to their problems in general. The lack of a reputable public service is a central concern. The interviewed respondents showed dissatisfaction with the cost of municipal rates, escalating crime, poverty, and joblessness. As it is, the locals also have to grapple with the inevitable closure and downscaling of mines in the area.

4.3.1. Poverty

The multidimensional issue of poverty is generally not well established. Therefore, no indicators and theories will give a complete picture of poverty in a given situation. Poverty has several dynamics: the basic needs perspective, the income perspective, the social inclusion perspective, the human development perspective, and the livelihoods perspective. These perspectives and their inherent indicators explain poverty caused by various, mutually interacting, context-specific, socio-economic, and environmental factors (Davids & Theron, 2014:39).

In ELM, expectations are that poverty in the area is relatively low because of commerce and industry developed around the mining sector. However, that is not the case. The declining mining industry has a significantly negative impact on the general outlook of poverty. The main reason is that the declining mining industry threatens the region's labour market and job security.

When asked about the economic consequences of mine closure, a community member reasoned that:

We would experience poverty in different aspects, and Kriel would just collapse (14).

In response to the same question on the consequences of downscaling and mine closure in the area, another community member said:

We will be affected deeply. I mean, unemployment and crime are already high; without the mines, our situation would be worse. These mines are at the core of our community (11).

In 2017, 145,255 individuals in ELM lived under the lower-bound poverty line (the food poverty line plus the average amount derived from non-food items of households) (Stats SA, 2019). This trend indicates increased poverty. Using the lower-bound poverty line as a measure of poverty in the municipal area, ELM (2021) found an increase from 43.6% (2017) to 45.4% (2020).

The overall outlook of poverty in the municipal area remains a detrimental issue amid a declining mining industry. The poverty headcount deteriorated from 8% in 2011 to 10.9% in 2016 (measured by comparing the income of each household to the poverty line of a given population) (ELM, 2021).

From the above reading and the collected data, the respondents are mindful of the multiple socio-economic issues in their communities: poverty, crime, and unemployment. As a result, these sub-themes appeared more frequently in the collected data.

4.3.2. Crime

Amongst the many social disruptions that come with downscaling and the closure of mines is the issue of increased criminal activity. When asked about the socio-economic consequences of mine closure and downscaling, two mine workers said:

I think crime will be high because people will not be working. Also, there would be a high rate of unemployment and illiteracy (2).

Loss of employment pushes people to crime in an attempt to fend for their families (9).

These respondents are concerned with increased crime levels because mine closure will lead to a loss of employment, perpetuating social deprivation – a

primary motive to participate in criminal activity. The respondents suggest that the most basic motive for taking part in criminal activity is the need for perpetrators to fend for themselves and their families.

Marais *et al*. (2021) argue that mining-related crimes include theft of mining equipment, illegal mining, carjacking, property crimes, violent crimes, and smuggling. Table 4.1 below provides a detailed outlook on crime statistics in Ga-Nala over ten years. However, Marais *et al*. (2021:5) warned that working with official crime statistics in South Africa is problematic as the crime data is subject to manipulation and under-reporting. Despite these concerns and crime data being presented per police station and not per municipality, this is the only data available.

Table 4.2: Crime statistics of Ga-Nala police station (2009-2010 to 2018-2019)

CRIME CATEGORY	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	Case Diff	% Change
CONTACT CRIMES (CRIMES AGAINST THE PERSON)												
Murder	5	5	8	9	8	12	5	13	5	8	3	60.0%
Sexual Offences	35	39	24	26	28	27	26	18	26	24	-2	-7.7%
Attempted murder	3	10	9	2	14	6	7	16	11	17	6	54.5%
Assault with the intent to inflict grievous bodily harm	126	113	106	102	99	90	82	98	86	81	-5	-5.8%
Common assault	109	101	114	98	88	52	59	66	47	49	2	4.3%
Common robbery	37	31	31	35	30	19	18	14	18	13	-5	-27.8%
Robbery with aggravating circumstances	48	55	46	47	49	56	54	46	51	51	0	0.0%
Total Contact Crimes (Crimes Against the Person)	**363**	**354**	**338**	**319**	**316**	**262**	**251**	**271**	**244**	**243**	**-1**	**-0.4%**
Total Sexual Offences												
Rape	20	24	16	17	21	21	22	12	19	22	3	15.8%
Sexual Assault	4	2	1	3	4	1	2	5	6	1	-5	-83.3%
Attempted Sexual Offences	4	5	1	3	2	2	0	0	0	0	0	0 Cases
Contact Sexual Offences	7	8	6	3	1	3	2	1	1	1	0	0.0%
Total Sexual Offences	**35**	**39**	**24**	**26**	**28**	**27**	**26**	**18**	**26**	**24**	**-2**	-7.7%
SOME SUBCATEGORIES OF AGGRAVATED ROBBERY												
Carjacking	12	11	9	4	4	3	21	6	18	7	-11	-61.1%
Robbery at residential premises	2	11	5	4	3	8	1	1	2	4	2	100.0%
Robbery at non-residential premises	8	11	15	25	18	16	20	29	19	29	10	52.6%
Robbery of cash in transit	0	1	0	1	2	2	0	0	1	0	-1	-100.0%

Bank robbery	0	0	0	0	0	0	0	0	0	0	0	0 Cases
Truck hijacking	6	2	3	1	3	2	1	1	1	0	-1	-100.0%
CONTACT-RELATED CRIMES												
Arson	1	2	4	1	7	4	4	4	2	3	1	50.0%
Malicious damage to property	61	82	97	72	107	64	58	58	44	46	2	4.5%
Total Contact-Related Crimes	**62**	**84**	**101**	**73**	**114**	**68**	**62**	**62**	**46**	**49**	**3**	6.5%
PROPERTY-RELATED CRIMES												
Burglary at non-residential premises	7	44	56	44	27	55	43	45	35	47	12	34.3%
Burglary at residential premises	295	390	410	442	535	256	342	346	316	279	-37	-11.7%
Theft of motor vehicle and motorcycle	87	124	73	79	49	37	36	39	43	29	-14	-32.6%
Theft out of or from motor vehicle	50	93	99	68	88	78	62	46	79	80	1	1.3%
Stock-theft	13	27	15	25	12	20	25	17	24	30	6	25.0%
Total Property-Related Crimes	**452**	**678**	**653**	**658**	**711**	**446**	**508**	**493**	**497**	**465**	**-32**	-6.4%
OTHER SERIOUS CRIMES												
All theft not mentioned elsewhere	428	419	434	390	417	343	288	302	238	242	4	1.7%
Commercial crime	30	29	88	157	101	57	61	66	62	67	5	8.1%
Shoplifting	69	71	58	66	50	71	65	64	58	40	-18	-31.0%
Total Other Serious Crimes	**527**	**519**	**580**	**613**	**568**	**471**	**414**	**432**	**358**	**349**	-9	-2.5%
Total 17 Community Reported Serious Crimes	**1,404**	**1,635**	**1,672**	**1,663**	**1,709**	**1,247**	**1,235**	**1,258**	**1,145**	**1,106**	-39	-3.4%
CRIME DETECTED AS A RESULT OF POLICE ACTION												
Illegal possession of firearms and ammunition	1	0	4	6	0	4	8	4	8	9	1	12.5%
Drug-related crime	19	29	43	50	31	44	50	61	88	114	26	29.5%
Driving under the influence of alcohol or drugs	14	11	219	24	26	44	53	52	68	67	-1	-1.5%
Sexual Offences detected as a result of police action	0	0	0	0	1	0	0	0	0	0	0	0.0%
Total Crime Detected as a Result of Police Action	**34**	**40**	**266**	**80**	**58**	**92**	**111**	**117**	**164**	**190**	26	**15.9%**

(Source: SAPS, 2019)

The statistical data presented in Table 4.1 indicates that crime has been a problem in Ga-Nala for at least the past ten years, with some periods better or worse than others. Furthermore, the interviewed respondents showed concern over the possibility of increased crime as a result of mine closure. Table 4.1 indicates that Kriel's most common and frequently reported crimes are crimes against the

community, contact-related crimes such as assault, and property-related crimes such as burglary at residential premises.

Another risk is the possible increase of other reported crimes, such as malicious damage to property, drug-related offences, assault, and robbery, with aggravating circumstances. As the mining industry declines, the area is more susceptible to intensified criminal activity and acts of violence. Although the crimes mentioned above can occur without the downscaling and closure of mines, the premise is that the downscaling and closure of mines has the potential to aggravate crime levels in general. Increased crime levels ultimately translate to social disruption or instability in its broadest sense when coupled with other socio-economic impediments.

4.3.3. Unemployment

Defining or describing unemployment at a conceptual level may appear simple. However, in practice, the formal definition and measuring of unemployment are complex. For this reason, there are various definitions of unemployment, and it is vital to be clear on the definition used in a particular analysis (Fourie & Burger, 2013:476). An extended definition of unemployment is applicable in the context of mine closure and downscaling. Fourie and Burger (2013:476) outline that "the unemployed are those who took specific steps to find employment in the preceding weeks plus those unemployed people who did not look for work, but say they want to or are willing to work. These are the so-called discouraged workers".

In the case of ELM, the area's unemployment rate has increased from 25.4% in 2015 to 26.6% in 2016 (ELM, 2021). When looking at unemployment by gender, women experience the highest levels of unemployment compared to their male counterparts at 34.8% and 23.9%, respectively (ELM, 2021).

When asked about the socio-economic consequences of mine closure, a community member stated:

> *Unemployment will increase, employees will lose their jobs, for example, cashiers and petrol attendants will lose their jobs, and since people won't be able to afford to buy daily necessities and petrol, the population will decrease as people evacuate and look for better living conditions (6).*

The recorded unemployment rate in Ga-Nala is already high. With mine closure, the respondent predicts it will spike even higher. The respondent also pointed to unemployment increasing in other industries, such as retail. The MPRDA proposed plans for skills development and job creation. However, if these interventions do not realise, they will fail to lessen the consequences of closure. The individuals who are only skilled in the mining industry will experience the most vulnerability with their loss of employment.

Lastly, although poverty, crime, and unemployment do not necessarily co-occur, one cannot ignore the links. The main reason is that joblessness comes with a direct loss of income. Following this loss of income, households struggle to sustain their livelihoods, and under these socio-economic circumstances, crime and poverty are prone to increase.

4.4. Business Consequences of Mine Closure and Downscaling

Mining creates an environment where local businesses become dependent on mining. The business sector in Ga-Nala depends on the mineral resource industry. This dependence comes under pressure when mine closure takes place. When asked about the socio-economic consequences of mine closure, a community member in the taxi industry said that:

> *For the taxi industry, profits will decrease because we transport mine workers from Thubelihle Township to Ga-Nala Mine (8).*

In this community member's response, it is clear that the taxi industry has become dependent on the mine, which has attracted mine workers to the area, thus creating a business opportunity. However, with the downscaling and closure of mines in the area, the taxi industry is left vulnerable with limited business prospects.

Another business respondent in the telecommunications industry noted:

> *Business will be slow, making our business unable to keep its doors open because of the lack of income. There will be more unemployment cases, not just on the mine workers but other related businesses (9).*

Businesses are fully aware of their dependency on the mining industry, irrespective of the size, scale, or even levels of elasticity to the observable dependence. The respondents also indicate that such an involuntary dependency on the mining industry

creates pressure on their sales, especially when the mining industry is experiencing a decline.

When asked about the consequences of mine closure, a general manager in the petroleum industry responded:

> *Sales will begin to fall due to fewer people transporting. Fuel sales will decrease, and theft will start. If sales drop, the company would have to consider retrenchments (1).*

The general manager's response suggests that the main contributing factor to their sales is a significant consumer base derived from the presence of the mining industry in the area. With mine closure, the observed dependency on the mining industry is put to the test, thus affecting business negatively. As their sales drop, they will ultimately consider reductions. When asked about the unintended costs of business because of mine closure and downscaling, a general manager in the retail industry said:

> *It depends on the scale of closure. More mines closing, more customers will leave town. This will bring a loss of income in business which will lead to reductions (4).*

From the above responses, the main shared concern in the business sector is that mine closure could shrink the customer base of some businesses. This shrinkage will, in turn, negatively impact the companies' overall financial outlay, which ultimately pushes them to consider reductions.

4.5. Community Expectations of the Government and Mining Industry

The role that the government plays through the life cycle of the mining industry is significant as it dictates policy and the grounds of operation for the mining industry. For example, the MPRDA determines the mining companies' requirements to acquire or renew mining rights. Thulo (2015:1) outlined that, "Amongst others, these requirements include an Environmental Impact Assessment and a Social and Labour Plan that should ensure that mining companies play a leading role in the socio-economic development of the areas in which they operate".

The previous chapter revealed that the White Paper (Minerals and Mining Policy for South Africa) proposed that government should play a significant role in alleviating the

social consequences of sizeable downscaling and closure. Regarding policy requirements, there should be extensive consultation with miners and host communities in the event of significant downscaling (Department of Minerals and Energy, 1998). The above-mentioned constitutional obligation also signifies the envisioned interaction between the government, the mining industry, and the local area where mining occurs. For closure, this interaction requires several years of planning and coordinated effort from all stakeholders, ideally from the inception of mining operations. This section will focus on the built communal expectations from the government and the mining sector in dealing with the inevitable closure and downscaling of mines.

4.5.1. The inclusion of the community in mine closure

Towards the end of the extractive industries mining cycle, community expectations on social and economic development are particularly acute when multiple pressures of downscaling and mine closure align. The evidence shows the alignment of closure between the mining industry and the local community of Ga-Nala has been inadequate. Based on previous experiences, and when asked if the mining companies listened to the community in the process of mine closure, a community member said:

> *I don't remember the community being consulted by the mines; look, the mines will speak to their people, and when the coal is finished, they will go (7).*

The above response from the community member contradicts the requirements of the mining policy. It shows that the interaction between mining companies, the government and the local community concerning downscaling and mine closure is limited. The risk here is that if mining companies and the government fail to consult and interact with host communities about downscaling and mine closure, the needs and expectations of host communities are most likely to be overlooked when planning and imagining a post-mining economy. On the same question posed above, another mine worker said:

> *When Anglo Americans sold the mine to Seriti, they did not consult. So maybe Seriti will not consult too. But I think they will inform their employees (2).*

From the collected data and the shared responses above, it is possible to see that the general trend of mining companies in the area is to consult with their employees about the downscaling and closure of mines with limited consultation from the community. This has created a negative impression on the community, especially concerning the mining industry's ability to accommodate their expectations in the process of downscaling and mine closure.

4.5.2. Community development projects by the mining industry

One of the socio-economic pressures of mine closure is the discontinuity of community development programmes that have come through the mining industry alone or in collaboration with the local government. When asked about the consequences of mine closure from a municipal planning perspective, one municipal official said:

> *If there are projects in the pipeline, they will stop, affecting the delivery of those services (2).*

Although the data from the interviews show that the mining industry supports a range of community development programmes in the area, the response from the municipal official suggests that mine closure threatens the continuity of those programmes. With mine closure, the mining industry will either cut its funding or abandon all operations, including active community development programmes. In addition, the respondents were somewhat sceptical when asked about the continuity of community development programmes in a post-mining economy. Amongst many, one mine worker reasoned that:

> *It's very difficult for these programmes to continue because for a mine to function, it needs capital. Hence it becomes very difficult for them. On the other side, other programmes will continue, especially if mines, for example, built a school or clinic. These programmes will continue to provide services to the community at a large scale (10).*

Even though consultation with the community by the local government and the mining industry is said to be minimal, it would be deeply misleading to say that there is no community development of any kind in the area. However, due to limited consultation with the community, it cannot be concluded that all the community development

programmes implemented in the area directly speak to the community's needs and priorities during closure. The respondents also indicated that the community of Ga-Nala is primarily interested in long-term and self-sustaining development projects that cater to their needs in a post-mining economy.

4.6. Gender Considerations

Along with the many socio-economic aspects of mine closure that have been under-researched is the notion of gender and mine closure. In the context of mine closure, issues of gender have not received much attention (Sesele *et al*., 2021:1). For example, in as much as there have been some significant inroads toward the attainment of gender equality around the globe, the mining industry remains heavily attributed to masculinity with only limited participation of women (Sesele *et al*., 2021:1). As a result, these two fundamental factors make women extremely vulnerable during mine closure.

From the collected data, it can be deduced that most mineworkers in Ga-Nala are predominantly male and are, in most cases, the sole breadwinners of their families. In stretching this observation, the literature points out that only approximately 14% of the coal mining industries' workforce of seven million around the globe consists of women. In addition, Sesele *et al*. (2021:2) further outline that "when women work in the industry, they earn up to 40% less than men". With the domination of male workers mentioned above, women in the mining industry become extremely vulnerable during mine closure. On top of that, some women face the household vulnerability of being abused by their male companions. One mine worker touched on the household vulnerability of women during periods of mine closure and downscaling and said:

> *Gender-based violence will become unbearable as the family heads won't be able to provide for their families (5).*

Another mine worker said that:

> *Mostly the affected gender is female, especially in downscaling women face abuse due to stress from their unemployed counterparts (8).*

As a result of women's domination by men in the mining industry, any government support and focus on reinstating miners will ultimately support men. Likewise, the Social and Labour Plans discussed in the previous chapter run the risk of not

reflecting the needs and aspirations of women (Sesele *et al*., 2021). This suggests that women's vulnerability during periods of mine closure is multifaceted. It ranges from policy development and implementation to structural imbalances, underrepresentation, and vulnerability experienced at a household level.

4.7. Human-Rights Concerns Around Mine Closure

Literature alludes to the fact that mining companies have a long history of human rights abuses while governments have been too weak in regulating mining companies and holding them accountable for their actions. This does not mean that the South African Constitution is short of human-right concerns on the issue of downscaling and mine closure. However, the issues lie with compliance and the lack of sufficient regulation of mining activities. The Constitution recognises, among many, the right to health, a healthy environment, fair labour practices and other socio-economic rights enshrined in Section 7(2) of the Constitution (Anderson *et al*., 2016:22).

The outcome of the provisions mentioned above in applicable cases is that socio-economic rights are not merely binding to the state alone. As a result, they may be relevant to the vertical relationship between individuals and the state or in a horizontal arrangement in respect of the relationship between private entities. Nonetheless, in the context of downscaling and mine closure, the collected data reveals that the government and the mining industry often cause or contribute to violating these human rights. In practice, communities do not understand human rights issues. When asked about human rights concerns that should accompany mine closure, one mine worker said:

> *I feel they might be there, but the mines do not want the responsibility. Some people don't even get their money, some come back sick, and the mine does nothing (7).*

On the same question, another community member said that:

> *The mines don't care, what are we to them? Maybe they care for their employees and the rights of their employees (12).*

Amongst many, the above responses show that some mining companies often evade their responsibilities regarding human rights. For example, the respondent refers to

mine workers not getting their employment packages which can be seen as a direct violation of the Labour Relations Act (66 of 1995). Furthermore, the respondent points to some mine workers returning sick from the mines, which might violate those individuals' right to health and a healthy environment. When the government fails to play its regulatory and oversight role, mining companies are free to act in contravention of set mining policies and legislation. Consequently, human rights tend to have little meaning to the communities facing the long-lasting legacies of mining and the government's inaction to the mining industry's lack of compliance.

As a result of the government's inaction and inability to successfully regulate mining companies, the long-term consequences of mining are shifted to the local government along with any financial obligations to remediate the effects of downscaling and mine closure. For municipalities already distressed, as in the case of ELM, this trend by mining companies and the Department of Mineral Resources and Energy (DMRE) places additional pressure on municipal planning and the overall effectiveness of those municipalities in service delivery (HRW, 2022).

When asked about the consequences of mine closure, a community member shared that:

> *If the mines close, Kriel will be in hunger, even the municipality will suffer. Our infrastructure will not be taken care of (11).*

This situation increases the risk of violating basic human rights even further. When public services are not delivered, it becomes a direct violation of socio-economic rights and other human rights that communities should have. In addition, the failure to implement social and labour plans is a compounding factor that hurts mining communities' enjoyment of human rights.

4.8. Summary of Research Findings and Conclusion

The mining industry in ELM faces the challenge of dealing with the plethora of problems that arise due to the downscaling and the closure of mines. Environmental issues such as rehabilitation have been sufficiently dealt with in the literature. However, the same cannot be said for the socio-economic issues. For this reason, this chapter focused strictly on the socio-economic issues of downscaling and mine

closure, such as the dependency of the surrounding communities on the mining industry.

Apart from the pre-existing socio-economic impediments in the study area, the downscaling and closure of mines have a high potential of aggravating those socio-economic impediments, especially considering the nature of Ga-Nala as a mining town. This chapter also demonstrated that the literature is correct in its observation that the lack of successful mine closure results from neglecting the socio-economic consequences of mine closure at an early stage.

Above all, there are lessons to be learnt from the presented data and overall literature on the downscaling and closure of mines. The respondents showed they are concerned with the inevitable downscaling and closure of mines in the area. Based on previous experiences, these respondents also fear that the mining industry will overlook their needs in the process of downscaling and mine closure. In addition, the presented data maintains that the implications of mine closure include but are not limited to socio-economic aspects such as demographic concerns, gender considerations, community expectations, and human rights concerns. These implications of mine closure reinforce the complex reality of dealing with the issue of closure, designing mitigation strategies, and planning for a post-mining economy.

Planning for downscaling and mine closure should, therefore, not only focus on environmental issues alone but also consider the various socio-economic aspects of closure, as discussed in this chapter. The downscaling and closure of mines must be carried out comprehensively while considering the individual needs of mining communities. These fundamental aspects of downscaling and mine closure will assist in shaping a thriving post-mining economy and a just transition.

Chapter 5: Conclusion and Recommendations

5.1. Introduction

This chapter presents the conclusion and recommendations. The study investigated the socio-economic aspects of mine closure and downscaling in Ga-Nala. The study used a qualitative research methodology within a case study design. The study analysed the likely effects of mine closure and downscaling using questionnaires and a semi-structured interview schedule with a sample size of 50 respondents. The respondents were chosen through snowball sampling, which allowed them to make referrals to individuals with the same or similar experiences on the issue of downscaling and mine closure.

5.2. Overview of the Main Study Chapters

Chapter two examined international literature on the socio-economic consequences of downscaling and mine closure. The extractive industry has proven to have both positive and negative effects on host communities. It has the potential to stimulate local economies. However, the negative aspects of mine closure often outweigh the positive ones. Furthermore, the downscaling and closure of mines disrupt the potential benefits of mining. Typical consequences of mine closure include changes to the community's demographic and socio-economic profiles and negative impacts on local institutions when company support disappears. In addition, government revenue diminishes due to reduced mining royalties and taxes. This situation often directly impacts the promptness of public services in mining communities.

How mines address downscaling and mine closure issues is central to the industry's proclaimed commitment to sustainable development. A transition to a post-mining environment may involve the loss of wealth created by mining. In addition, poorly managed closure will exacerbate the pre-existing social ills of mining communities. Chapter two revealed that the mining industry has yet to develop the social performance capabilities required to mitigate and constantly identify social risks. Therefore, the under-researched socio-economic aspects of downscaling and mine closure require attention.

Chapter three evaluated policy and South African literature about mine closure. There are only limited guidelines for downscaling and mine closure. For example, it was only

in 1991 that the country's legislation started to include sustainable development initiatives to deal with issues of downscaling and closure. The White Paper on A Minerals and Mining Policy (1998) provided the people issues theme to deal with the regulation of the extractive industry. According to the White Paper, the government will play a significant role in alleviating the social consequences of closure. The MPRDA (Act no. 28 of 2002) provides guidelines for regulating mining operations. The act also ensures that the right to mine contributes to the socio-economic well-being of communities where mining occurs and that such activities are not hazardous to the environment. The policy requires extensive consultation with miners in the event of significant downscaling. The closure also requires the involvement of affected communities and municipalities.

The MPRDA requires the development of social and labour plans to promote economic growth and develop minerals and petroleum along with that of host communities. Although mine closure policies and legislation are reasonably broad in context, regulatory requirements can be strengthened. For example, the MPRDA says very little about the social aspects of downscaling and mine closure.

Chapter four discussed the empirical evidence. The study found that the respondents are highly concerned about the socio-economic consequences of downscaling and mine closure. The respondents largely fear that their communal needs will be overlooked, and previous experiences with downscaling and closure have created a negative perspective for the community. This is because the government and the mining industry have limited participation in downscaling and mine closure processes.

Chapter four also discusses the socio-economic ills accompanying downscaling and mine closure. The following factors are highlighted: dependence on the mining industry, human rights concerns, gender considerations, unemployment, crime and poverty. Regarding a post-mining economy, the respondents showed significant concern for their future well-being and standard of living in Ga-Nala. If the socio-economic consequences of downscaling and mine closure are not sufficiently dealt with, the sustainability of mine closure will continuously remain under threat.

5.3. Main Findings of the Study

This section presents an overview of the main findings of the research. It focuses on the socio-economic consequences of mine closure, systemic challenges of

downscaling and closure, a planned approach for mine closure, and the legacy of mining in Ga-Nala.

5.3.1. Mine closure brings an array of systemic and socio-economic challenges

A range of systemic challenges resulting from failed closure processes has been identified through the conducted research. Chapter three identified a lack of cohesion and cooperation between the structures that should hold the interaction between the government, the mining industry and the general community in preparation for the inevitable downscaling and closure of mines. The interaction mentioned above is crucial for effective strategic planning, building representative institutions, and partnerships throughout the life cycle of a mine.

In Ga-Nala, the respondents revealed that the supposedly perpetual interaction between mining companies, the government, and the community regarding mine closure is limited. This contradicts international and South African mining policies, as reviewed in chapters two and three of the study. Poorly managed mine closure can exacerbate pre-existent socio-economic insecurities. For example, when mines close, people lose their jobs, the economy shrinks, and mining regions cannot promote development or growth, thus creating a cycle of widespread poverty. Combining all these factors is most likely to result in increased socio-economic volatility.

Literature has pointed out that neglecting the socio-economic consequences of mine closure contributes to the failure of closure processes. These socio-economic impacts include dependency on the mining industry, employment factors, social services, and developmental aspects. In addition, the negative legacies of mining ultimately result from poor industrial social performance practices and the failure of developmental governance in mining towns.

The impacts of mine closure on host communities will vary with the degree of the community's dependence on the mining industry. The interviewed respondents in the study area showed dependency on the mining industry in terms of employment, business, municipal revenue, community development projects and the overall stability and functionality of the town. Amid a declining mining industry, the interviewed respondents in Ga-Nala fear that their long-term socio-economic needs will not receive adequate attention, and in the absence of mining companies, their socio-economic distress will deepen.

Another challenge of the current processes for downscaling and mine closure is that only small amounts of financial revenue are legitimately directed to cover the impacts of downscaling and closure. In some cases, mines are simply left abandoned by their owners. In addition, there seems to be an abuse of temporary closure or care maintenance laws to avoid expensive closure processes. Likewise, there is a growing trend of passing down mines to smaller companies that can only afford to mine the remaining minerals and cannot cover the historical damages left in mining communities by their predecessors. This situation increases the risk of further abandoning mines while opening a loophole for illegal miners.

The systemic lack of regulatory bodies to monitor and hold mining companies for failing to comply with mining policies and closure requirements leaves mining communities and their residents bearing the cost of coal extraction and burning coal to generate electricity. When mining companies exit from host communities with unmitigated environmental, social and economic impacts, it clearly reflects failed regulatory bodies and poor systemic performance for closure processes. Likewise, the failure to hold to account companies that fail to comply with the directives of the MPRDA or other applicable legislation is a systemic compounding factor that contributes to the inability to achieve successful mine closure processes. Lastly, combining all the factors mentioned above and the poor interaction of the government, mining companies, and host communities in planning for closure and a post-mining economy results in the continued failure of mine closure processes.

5.3.2. Localities should plan for downscaling and mine closure

The literature points out that the downscaling and closure of mines is an inevitable process that can come as a planned or unplanned event. Therefore, the downscaling and closure of mines cannot be treated mechanically. However, plans for downscaling and closure should regularly be updated. The idea of effective planning for downscaling and mine closure must be built into the life cycle of a mine. Ideally, there should be plans for expected and unexpected closure. These plans should account for the ever-changing conditions and expectations of relevant stakeholders throughout the life cycle of a mine.

The White Paper (1998) on minerals and mining policy proposes that there should be extensive consultation with the affected communities in planning for downscaling and

closure. The policy document further outlines that the involvement of affected communities should be facilitated, including municipal structures on the downscaling and closure of mines. As part of South African closure policy and guidelines, the MPRDA emphasises that the mining right holder must take full responsibility for a mining area impacted by their operations. Environmental concerns morally inform the above guideline, and whilst South African mining policy says very little about the socio-economic impacts of mine closure, socio-economic liabilities should essentially form part of mine closure planning.

Amongst many, the following elements are of utmost importance for closure planning: human and socio-economic development, existing infrastructure, the quality of governance, potential socio-economic disruptions, and the size and physical structure of the local area. All plans for downscaling and closure should speak directly to these pertinent issues from the inception of mining operations. Even so, planning for downscaling and closure should avoid a simple checklist approach, but it should support and adhere to the basic principles and values of sustainable development. This way, a detailed assessment of the various dimensions of downscaling and mine closure from the local area is required. Such an assessment cannot be carried out at the end of a mine's life cycle when a range of closure issues align. The proposed evaluation should be an ongoing process involving the government, civic society, and a range of stakeholders interested in addressing closure risks and planning for a post-mining economy.

5.3.3. Mine closure and SLPs

The study has argued that the current SLP system fails to adequately address the adverse socio-economic consequences of mine closure. This situation can be attributed to the design and compliance with SLP commitments. Furthermore, developing SLPs should be highly consultative while accommodating inputs by communities and local governments, especially regarding the desired socio-economic outcomes. It is then proposed that the DMRE enforce compliance and develop strict sanctions for mining companies failing to comply with their SLP requirements.

It is also proposed that the DMRE should strengthen its regulatory and oversight functions by developing clear and binding requirements for the content of SLPs while ensuring that they are aligned with environmental impact assessments. In addition,

there should be a review of the current SLP limitations. Ideally, this review should determine to what extent consultation with local government, host communities and relevant stakeholders should be legislatively mandated to allow SLPs to respond to contextual socio-economic issues of downscaling and mine closure.

Another observable limitation to implementing SLPs is that they make provision for various plans, from community development plans to employment equity plans. Still, these plans do not require mining companies to think beyond the life cycle of a mine. Legislation requires social, and labour plans to remain until a final closure certificate is issued and received by the mining rights holder. It is recommended that such implementation of social and labour plans should be revisited as it limits social aspects of closure to a mine's life cycle planning, but many of the long-term social consequences will materialise once mining operations have ceased.

5.4. Recommendations

The inevitable downscaling and closure of mines and their probable impacts is a complex reality requiring a multi-pronged approach. This section provides recommendations to deal with the complex reality of downscaling and mine closure while considering the various challenges faced by the government and the mining industry as accounting bodies.

5.4.1. Addressing the negative effects of mining in Ga-Nala

The social and economic legacy of the mining industry in Ga-Nala is somewhat of a controversial issue. Even though mining has contributed to the area's development through municipal support, community development projects and infrastructural development, it still lacks social performance capabilities that can proactively respond to the socio-economic consequences of downscaling and mine closure. As a result, the interviews and the respondents' reflections on previous experiences showed that the support of mining companies disappears at the end of mining operations. Without the mining industry's support, mining communities are left vulnerable as they face increased social and economic distress.

The literature revealed that when mines close or downsize, social issues unfold. Typical issues of concern include changes to the community's demographic and economic structure. For example, local institutions and facilities for well-being may be

affected, especially if a company's support disappears. Also, government revenues diminish due to reduced mining royalties and taxes. In most cases, this leads to the direct loss of public services in mining communities.

The White Paper on minerals and mining policy proposes that the damages caused by the mining industry should be managed and contained irrespective of the scale of mining. Furthermore, mining entities are obligated to conduct their operations in a manner that takes heed of the rights and needs of local communities. Therefore, the mines must ensure the continued availability of useful infrastructure and land at closure. The mentioned provision of the mining policy on the closure of mines needs to be revisited. It should include an explicit and detailed directive on the continuation of socio-economic benefits that have come through mining. Especially considering that when the support of mining companies disappears, mining communities are left in dire socio-economic conditions while bearing the negative consequences of mine closure.

Thus far, the mining industry in the study area has not paid adequate attention to the socio-economic consequences of downscaling and mine closure. The current operational mines in the area are obligated to restore the outlook and legacy of the mining industry from that of their predecessors. The failure of mine closure processes can be attributed to various aspects, but the socio-economic aspects of downscaling and closure have received little attention in research, mining practice in general, and the provision and implementation of standing legislative policies. Therefore, paying adequate attention to this dimension of closure without losing grip of environmental concerns and other areas would be a step toward building a positive mining legacy.

5.4.2. Rehabilitation and mine closure

Although literature, in general, has sufficiently dealt with the idea of mine closure and environmental issues, it is still worth commenting on. The evolving concepts of sustainability and development have shaped the envisioned practices of rehabilitation. Consequently, the literature advocates that it may not be sufficient to return the land to its pre-existing condition. The literature review revealed that policies should avoid simplistic approaches that advocate a return of land to its pre-existing condition, as this might not always be the most practical goal. Conversely, policy should focus on post-closure land use that starts in the early phases of mining and continues through

operation as part of a responsive and dynamic plan for mine closure. Efforts for rehabilitation should also include a social and economic plan to benefit the community.

Mining companies should provide adequate information to allow host communities and local governments to understand how the land can be used post-closure. The idea of land use planning is derived from the above line of thinking. Land use planning can be seen as an essential tool for endorsing sustainable mining communities. Likewise, the White Paper proposes that there should be an explicit budgetary allocation, especially for land rehabilitation programmes. When the DMRE and mining companies fail to tabulate and secure sufficient financial provisions for land rehabilitation through the implementation of environmental impact assessments, land rehabilitation cannot succeed. In this regard, it is proposed that licences should not be granted without providing long-term, sustainable land use initiatives for a post-mining economy.

5.4.3. Sustainability and transitioning to a post-mining economy

The literature referred to today's guiding rationale for mine closure that stems from sustainable development. However, the general practice of mine closure has proven to diverge from this guiding rationale. A sustainable approach to mine closure and downscaling requires the commitment and cooperation of all institutions and individuals concerned. The envisioned approach for sustainable mine closure and sizable downscaling should account for social, economic and environmental risks altogether. This should be done while ensuring that communities living in mining areas can sustain their well-being and living standards after mining has ended.

For sustainability and a just transition to a post-mining economy, it is proposed that development opportunities created by mining during operations must continue after closure. Through the approach mentioned above, dependencies created by mining can be reduced. With proper planning and coordination, mine closure might offer feasible opportunities aligned with sustainable development. For example, developing and transferring skills and repurposing land and infrastructure for innovative use can support the transition to a post-mining economy. In addition, planning for a post-mining economy cannot only be limited to land restoration but should entail finding new productive economic activities to support the socio-economic base of post-mining economies.

At the centre of the ongoing conversation at a global level on the closure of mines is the issue of climate change and the sustainable use of energy. Using coal-fired power stations and burning fossil fuels to generate electricity has proven unsustainable with detrimental environmental and socio-economic impacts. While the transition from fossil fuels to renewable energies is imminent, the energy crisis in South Africa is a multifaceted one that requires a well-informed and strategic approach.

The current electricity situation and consequent load-shedding racking the South African economy will not be solved by building renewable energies alone, especially in the short-medium term. What is needed now is dispatchable electricity which requires strict maintenance of the current energy grid, revived procurement strategies, and a viable strategy to support the country's energy grid with renewable energies while crafting a future of sustainable energy use. Such an approach could also help reinstate ex-miners who are most vulnerable to the foreseeable issue of downscaling and mine closure by placing them in the renewable energy industry through skills development and transfer programmes. In applicable cases, implementing strategic labour mobility schemes could also help reinstate miners who are left vulnerable to the issue of downscaling and mine closure.

5.5. Further research

The study conducted on the socio-economic consequences of downscaling and mine closure for mining towns can be replicated in other areas of the country, and the results will have some similarities. Future research can, however, focus on the impacts of the declining mining industry on public finances, municipal tax, mining royalties, and the link to public services in mining towns. The research's significance lies in the fact that the study alluded to the correlation between prompt public services and the financial support of the mining industry in mining towns. With mine closure, such financial support disappears, and local government is left vulnerable in terms of its functionality and ability to cater to the needs and demands of post-mining economies without the support of the mining industries. It is, therefore, crucial to get a handle on this to ensure a better future for mining towns and a more sustainable future for the mining industry.

List of References

Ackerman, M., Botha, D. & Van der Waldt, G. 2018a. Potential Socio-Economic Consequences of Mine Closure. *The Journal for Transdisciplinary Research in Southern Africa*, 14(1), pp. 1-11.

Ackerman, M., Botha, D. & Van der Waldt, G. 2018b. Mitigating the socio-economic consequences of mine closure. *The Journal of the Southern African Institute of Mining & Metallurgy*, 118(14), pp. 439-447.

Alec, B.J. 2020. *Mine closure narratives in the Free State Goldfields, South Africa*. Bloemfontein: Centre for Development and Support, University of the Free State.

Amirshevana, S. & Osanloo, M. 2018. Mine Closure Risk Management: An integration of 3D Risk Model & MCDM Techniques. *Journal of Cleaner Production,* 181(1), pp. 389-401.

Anderson, A.M., Dodd, A. & Roos, M.C. 2016. *Everyone's guide to South African law.* Cape Town: Penguin Random House.

Asia-Pacific Economic Cooperation (APEC). 2018. *Mine Closure List for Governments*. Canada: Natural Resource Canada & Golder Associates Ltd.

Bainton, N. & Holcombe, S. 2018. *The Social Aspects of Mine Closure*. Australia: The University of Queensland.

Bongwe, A. 2017*. Benefits accruing to rural communities from the mining industry corporate social responsibility projects in Moses Kotane Local Municipality of the Northwest province*. South Africa: University of Venda.

Bryman, A. 2012*. Social Research Methods*. United States: Oxford University Press Inc.

Chinomona, R. & Mathu, K. 2013. South African coal mining industry: socio-economic attributes. *Mediterranean Journal of Social Sciences,* 4(14), 347-357.

City population. 2016. *Kriel.* [Online] City population. Available at: <https://www.citypopulation.de/en/southafrica/mpumalanga/_/868025001__kriel/>

Clark, A.L. 2000. *An International Overview of Legal Frameworks for Mine Closure.* Hawaii: East-West Centre.

Crous, C., Owen J.R., Marais, L., Khanyile, S. & Kemp, D. 2020. Public disclosure of mine closures by listed South African mining companies. *Corp Social Responsibility and Environmental Management*, 1, pp. 1-11.

De Lange, A. 2019. *The unintended consequences and spatial implications of mining downscaling in South Africa – A case of mining in Merafong City Local Municipality*. Bloemfontein: Centre for Development and Support, University of the Free State.

Davids, I. & Theron, F.K.J.2014. Development, the State and Civil Society in South Africa. Pretoria: Van Schaik.

Department of Mineral Resource (DMR). 2010. *Social and Labour Plan guidelines for the mining and production industries*. Pretoria: Department of Minerals and Energy.

Department of Mineral Resource (DMR). 2018. *Broad-Based Economic Empowerment Charter for the mining and minerals industry, 2018.* Pretoria: Government Printers.

Department of Minerals and Energy. 1998. *White Paper, A Minerals and Mining Policy for South Africa*. Pretoria: Government Printers.

Emalahleni Local Municipality. 2021. *Emalahleni Local Municipality Final IDP.* [pdf] Cooperative Governance and Traditional Affairs (CoGTA). Available at: <https://www.cogta.gov.za/cgta_2016/wp-content/uploads/2021/02/Emalahleni-Municipality-Final-IDP.pdf> [Accessed 12 September 2021].

Espin, J. 2020. *What happens to the community when a mine closes?.* BIZCOMMUNITY [Online]. Available at: <https://www.bizcommunity.com/Article/196/608/184255.html> [Accessed 11 August 2020].

Everingham, J.A., Mackenzie, S., Svobodova, K. & Witt, K. 2020. *Participatory Processes, Mine Closure and Social Transitions.* Australia: University of Queensland.

Fourie, F. & Burger, P.2013. *How to think and reason in Macroeconomics*. South Africa: Junta & Co Ltd.

Glen, V., Doley, D., Unger, C., McCaffrey, N. McKenna, P., Gillespie, M. & Williams, E. 2014. *Mined land rehabilitation – is there a gap between regulatory guidance & successful relinquishment?*. Australia: The University of Queensland.

Gloy, M. 2014. *The use of Section 54 stoppage orders in terms of Mine Health and Safety act.* Potchefstroom: North-West University.

Gregory, T., Sincovich, A., Wilson, A. & Brinkman, S. 2018. The social impacts of mining on local communities in Australia. *Rural Society*, 27(1), 18-34.

GroundUp & Davies, T. 2014. GroundUp. *Mpumalanga crisis: why is nobody listening?* [Online]. Available at: <https://www.groundup.org.za/media/features/mpumalanga/mpumalanga_0002.html> [Accessed 26 April 2020].

Human Rights Watch (HRW). 2022. *The Forever Mines: Perpetual Rights Risks from Unrehabilitated Coal Mines in South Africa* [Online]. *Human Rights Watch*. Available at: <https://www.hrw.org/report/2022/07/05/forever-mines/perpetual-rights-risks-unrehabilitated-coal-mines-south-africa> [Accessed 25 September 2022].

ICMM. 2008. *Planning for Integrated Mine Closure: Toolkit.* London: International Council on Mining & Metals.

IIED. 2002. *Research on mine closure policy.* England: International Institute for Environment & Development (IIED).

International Finance Corporation (IFC). 2014. *Sustainable & responsible mining in Africa*. Kenya: World Bank Group.

Kabir, S.M.S. 2018. *Methods of data collection*. Australia: Curtin University.

Kretschmann, J. 2018. Post-mining excellence: Strategy and Transfer. *The journal of the Southern Institute of mining metallurgy,* 118(8), pp. 853-859.

Kung, A., Everingham, J. & Vivoda, V. 2020. *Social aspects of mine closure: governance & regulation.* Australia: The University of Queensland.

Laduma, The African Planning Partnership. 2014. *A Revitalisation Strategy for Dying Mining Towns within Mpumalanga.* [pdf] Cooperative Governance and Traditional Affairs (CoGTA). Available at: <https://cogta.mpg.gov.za/Resources_Documents/RevitalisationStrategyDyingDining.pdf> [Accessed 2 March 2022].

Mancini, L. & Sala, S. 2018. Social impact assessment in the mining sector: Review and comparison of indicators frameworks. *Resource Policy,* 57(1), pp. 98-111.

Manson, J. 2018. *Qualitative Researching.* California: SAGE Publication Ltd.

Marais, L. & Cloete, J. 2013. Labour migration, settlement, and mine closure in South Africa. *Geography*, 98(2), pp. 77-84.

Marais, L. & De Lange, A. 2021. Anticipating & planning for mine closure in South Africa. *Futures,* 125, 102669.

Marais, L. & Nel, E. 2016. The dangers of growing on gold: Lessons for mine downscaling from the Free State Goldfields, South Africa. *Local Economy*, 31(1-2), pp. 282-298.

Marais, L. 2013. *The impact of mine downscaling on the Free State Goldfields*. South Africa: Springer.

Marais, L., Cloete, J. & Stevens, S.D. 2019. *Mining Towns & Urban Sprawl in South Africa*. *Land Use Policy*, 04, 014.

Marais, L., McKenzie, F.H., Deacon, L., Nel, E., Van Rooyen, D. & Cloete, J. 2018. The changing nature of mining towns: Reflections from Australia, Canada & South Africa. *Land use policy,* 76(1), pp. 779-788.

McConnel, C.R. & Brue, S.L. 2011. *Economics South Africa Edition*. New York: McGraw Hill.

Milaras, M., Ahmed, F. & McKay, T.J.M. 2014. *Mine Closure in South Africa: A survey of current professional thinking and practice.* Johannesburg: University of the Witwatersrand.

Minerva, C. 2017. *Mine Closure Anticipating the end before the beginning*. Philippines: Routledge.

Nel, E. & Binns, T. 2002. Decline and response in South Africa's Free State goldfields. IDPR, 24(3), pp. 249-269.

Office of the President. 1995. No. 66 of 1995: Labour Relations Act, 1995. [Online]. Available at: <https://www.gov.za/sites/default/files/gcis_document/201409/act66-1995labourrelations.pdf> [Accessed 16 May 2021].

Owen, J. & Kemp, D. 2018. *Mine closure and social performance*. Australia: The University of Queensland.

Samuel, J. 2012. *Anglo American's Socio-Economic Assessment Toolbox* [Online]. Available at: <https://businessfightspoverty.org/anglo-americans-socio-economic-assessment-toolbox/#:~:text=The%20Socio%2DEconomic%20Assessment%20Toolbox,otherwise%20impacted%20by%20our%20operations> [Accessed 04 April 2021].

Sesele, K., Marais, L. & Van Rooyen, D. 2021. Women & Mine Closure: A case study of policy in South Africa. *Resource Policy,* 72, 102059.

South African Police Services (SAPS). 2019. *Crime Stats* [Online]. Available at: <https://www.saps.gov.za/services/c_thumbnail.php?id=405> [Accessed 5 June 2022].

Stacey, J., Naude, A., Hermans, M. & Frankel, D. 2010. The Socio-Economic Aspects of Mine Closure & Sustainable Development. Johannesburg: University of the Witwatersrand.

Statistics South Africa (Stats SA). 2019. *National Poverty Lines.* [pdf] Statistics South Africa. Available at: <http://www.statssa.gov.za/publications/P03101/P031012019.pdf> [Accessed 24 May 2022].

Stevens, C.I. 2017. *The international comparative legal guide to mining law 2017*. United Kingdom: Global Legal Group.

Strambo, C., Burton, J. & Atteridge, A. 2019. *The end of coal? Planning "a just transition'' in South Africa.* Stockholm: Stockholm Environment Institute.

Swart, E. 2003. The South African legislative framework for mine closure. *Journal of the Southern African Institute of Mining and Metallurgy*, 103(8), pp. 489-492

Tanner, P. 2007. *Guidelines for the rehabilitation of mined land*. Johannesburg: Coaltech.

Thobatsi, J.T. 2014. *The Alignment of Social Labour Plan (SLP) Commitment with Municipal Integrated Development Plans (IDPs)*. Potchefstroom: Northwest University.

Van der Watt, P. & Marais, L. 2019. Normalising mining company towns in Emalahleni, South Africa*. The Extractive Industries and Society,* 6(4), pp. 1205-1214.

Van der Watt, P. & Marais, L. 2021. *Implementing social and labour plans in South Africa: Reflections on collaborative planning in the mining industry. Resource Policy*, 71, 101984.

Verster, B., Young, L-C., Steenkamp, F., Broadhurst, J.L. & Harrison, S. 2018. *Finding ways to keep communities alive after mine closure*. The Conversation [Online]. Available at: <https://theconversation.com/finding-ways-to-keep-communities-alive-after-mine-closures-98505> [Accessed 13 August 2020].

Vivoda, V., Kemp, D. & Owen, J. 2019. *Regulating the social aspects of mine closure in the three Australian states*. Australia: Routledge.

Watson, I. & Olalde, M. 2019. The state of mine closure in South Africa – What the numbers say. *Journal of the Southern African Institute of Mining and Metallurgy*, 119(7), pp. 639-645.

World Bank Group. 2018. *Managing coal mine closure: Achieving a just transition for all.* Washington D.C.: World Bank Group.

Annexure A – List of Interview Questions

a) Structure of questions for mine workers

b) Structure of questions for other professionals

c) Structure of questions for general community

- What is the typical response to problems in the community?
- What are the social consequences of mine closure?
- What are the economic consequences of mine closure?
- What should the government do to prevent or manage closure?
- Did the mining companies listen to you in the process of closure? Give examples.
- Are there human rights concerns that accompany mine closure?
- What are the current programmes for the community that have come about through mining?
- Will these plans continue after closure?

d) Structure of questions for local authorities

- ELM (Emalahleni Local Municipality)
  - Describe the nature of mine closure and mine downsizing in the area.
  - What are the reasons for mine closure or possible closure?
  - What are/were/will the consequences be of mine closure and downscaling for municipal planning, finance, the local economy and population?
  - How can local government legislation assist in making mine closure easier?
  - How does legislation create problems to the management of mine closure?
  - What mitigating plans or projects will the municipality implement to manage mine closure in terms of land use, economic diversification, housing, the environment, infrastructure, and municipal finance?
  - What consequences of mine closure and downscaling does the local government foresee?
  - Have any disputes developed with the mine closure and downscaling (these can be legal disputes or social unrest) what have the outcomes been (if any)?
- SAPS Kriel Official
  - What is the typical response to problems in the community?

- What are the social consequences of mine closure? Think about crime, unrest, and gender issues.
- What are the economic consequences of mine closure?
- What should the government do to prevent or manage closure?
- Did the mining companies consult with the office in the process of closure? Give examples.
- Are there human rights concerns that accompany mine closure?
- What are the current programmes for the community that have come about through mining?
- Will these plans continue after closure?

- NUM (National Union of Mineworkers) Official
- Mining Manager
  - Explain your current or past closure strategy for the area/specific mine?
  - What pieces of legislation do you find inappropriate and/or most appropriate to deal with closure?
  - What do you think will the consequences be (have been) of mine closure?
  - What dependencies are you aware of that will make mine closure difficult?
  - Will there be positive consequences of mine closure?
  - What aspects of mine closure are disclosed in your sustainability reports?
  - Are you aware of skills training programmes by the mines to manage closure and do you keep track of what happens to retrenched mineworkers?

e) <u>Structure of questions for business enterprise</u>

- What is the typical response to problems in the community?
- What are/will be/have been the consequences of mine closure for business?
- How did/does/could business react to closure and the decline of the coal industry in the area?
- Does closure affect the municipality that, in turn, affects you?
- What are the unintended costs in your business because of mine closure?
- Do you anticipate an increase/decrease in the demand of your specific product?
- Are there any human rights concerns that you think should accompany mine closure?

Annexure B – Participant Consent Form

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

RESEARCH STUDY INFORMATION LEAFLET AND CONSENT FORM

DATE

2021

TITLE OF THE RESEARCH PROJECT

Social aspects of mine closure in South Africa

PRINCIPLE INVESTIGATOR:

Prof Lochner Marais MaraisJGL@ufs.ac.za 051 401 3599

FACULTY AND DEPARTMENT:

Faculty of Economic and Management Sciences
Centre for Development Support

WHAT IS THE AIM OF THE STUDY?

To investigate the consequences of mine closure and downscaling in eight case studies:

1. West Rand
2. Richtersveld land claim
3. Koffiefontein
4. Tshikondeni Mine
5. Rustenburg
6. Matjhabeng
7. Kleinzee
8. Emalahleni

WHO IS DOING THE RESEARCH?

We are a diverse team consisting of researchers from varied fields across several universities, our students, and leading international experts in mining and communities.

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

This study has received approval from the General Human Research Ethics Committee of the UFS. On request, the researcher can provide a letter.

Approval number: UFS-HSD2020/2004/2201

WHY ARE WE INVITING YOU TO TAKE PART IN THIS RESEARCH PROJECT?

We will be talking to representatives from companies; government at local, district, provincial, and national level; and, non-profit organisations in (or responsible for) the affected communities. We believe that you have information that is valuable to our project.

WHAT IS THE NATURE OF YOUR PARTICIPATION IN THIS STUDY?

Your participation will consist of an interview between 30 and 60 minutes. We will interview you at your convenience, and likely, over the phone. If you consent, we will record the interview, solely to ensure that we accurately capture the discussion.

CAN YOU WITHDRAW FROM THE STUDY?

Your participation is voluntary and that there is no penalty or loss of benefit for non-participation. Being in this study is voluntary, and you are under no obligation to consent to participation. You are free to withdraw at any time and without giving a reason.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

While there are no direct benefits (and no payments or rewards) to you, your organisation, or your community, the information collected will help our understanding of the impacts of mining, mine downscaling, and mine closure on communities. The information will help inform policy and planning in communities, the country, and internationally.

WHAT IS THE ANTICIPATED INCONVENIENCE OF TAKING PART IN THIS STUDY?

We do not foresee any potential risks in participating in this research.

WILL WE KEEP WHAT YOU SAY CONFIDENTIAL?

Any information you share will be confidential. We will not record your name, and no one will be able to connect you to the answers you give. We will give your answers a pseudonym, and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings. People responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Committee may review your data. However, they are all bound by the principles of research ethics and respect for the participant. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records. Information that identifies you will be destroyed two years after the research has been concluded. We may use your anonymous data in future for other purposes, such as research report, student submissions, journal articles, and conference presentation.

HOW WILL WE INFORM THE PARTICIPANT OF THE FINDINGS OF THE STUDY?

If you would like us to inform you of the final research findings, if you require any further information, or if you have concerns about how the research has been conducted, you may contact the principal researcher listed on the cover. A seminar on all the case studies will be held at the end of 2021.

Thank you for participating in this study.

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet. I have had sufficient opportunity to ask questions and am prepared to participate in the study. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty. I am aware that the findings of this study will be anonymously processed into a research report, journal publications and/or conference proceedings.

I agree to the recording of the interview.

I have received a signed copy of the informed consent agreement.

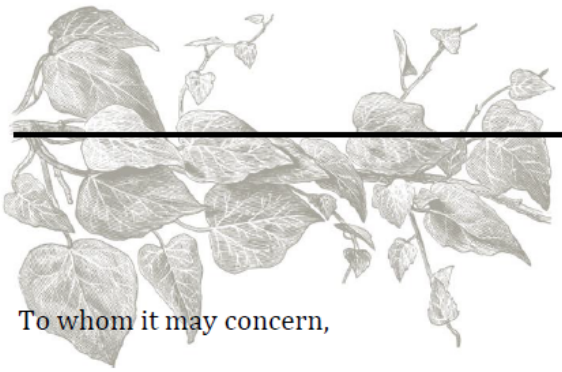
Full Name of Participant: _____

Signature of Participant: _____ Date: _____

Full Name(s) of Researcher(s): _____

Signature of Researcher: _____ Date: _____

Annexure C – Letter of Confirmation from Editor



Confirmation of Language Editing

14 November 2022

To whom it may concern,

CONFIRMATION OF LANGUAGE EDITING

In relation to the mini-dissertation of Z.A. Mqotyana (2012066755), entitled:

THE SOCIO-ECONOMIC IMPACTS OF MINE CLOSURE: A CASE STUDY OF GA-NALA IN MPUMALANGA

To be submitted at the Centre for Development Support, Faculty of Economic and Management Sciences at the University of the Free State, I, in my capacity as Language Practitioner, confirm that the abovementioned document has been edited with specific focus on the following:

- Language use and spelling (UK English)
- Coherence and linguistic flow
- Consistency of terminology and formatting
- Reference list and citations conform to Harvard Referencing Style
- All cited sources have been acknowledged in the list of references
- Outliers in referencing, consistency, etc. have been brought to the author's attention.

In relation to the above, Track Changes were used in MS Word to indicate changes, and comments were provided where necessary. Please note that changes are made solely at the client's discretion and remain their own responsibility. Any comments provided are purely suggestions and reflect the best efforts and opinions of the Editor and not necessarily subject-specific expertise. It remains the responsibility of the client to confirm the content of their final submission.

For any questions, please feel free to contact me at guillaume.annam@gmail.com during normal business hours.

Kind regards,

A.M. Guillaume-Combrink
LANGUAGE PRACTITIONER