



**Challenges and enablers of a strong and sustainable  
junior coal mining sector in South Africa**

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Management, University of the Witwatersrand**

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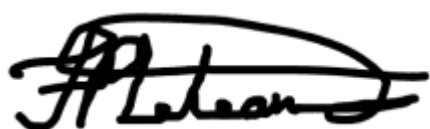


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## DECLARATION

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I Festus Puso Leteane declare that this research report entitled ‘Challenges and enablers of a strong and sustainable junior coal mining sector in South Africa’ is my own unaided work. I have acknowledged, attributed, and referenced all ideas sourced elsewhere. I am hereby submitting it in partial fulfilment of the requirements of the degree of Master of Business Administration at the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.



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Signed at Johannesburg on 9<sup>th</sup> September  
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## ABSTRACT

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**Thesis title:** Challenges and enablers of a sustainable junior coal mining sector in South Africa

The South African coal mining industry produces about 250million tonnes per annum, for the domestic and export markets. The industry is dominated by the major coal producers, with the top five producers producing about 80% of the coal in the country. It has few mid-tier producers and junior miners. The SA junior coal mining sector is mostly made up of single asset operating mines, located in the Witbank Coalfields, in Mpumalanga Province, and a few in the KwaZulu Natal province, mining anthracitic coal. The SA junior coal mining sector is fragmented, stagnant and not sustainable in its current form. Most of the junior coal miners are operating surface mining operations which require less upfront capital and are not costly to operate as compared to the underground operations. This study aims to understand the deep underlying issues that contribute to the challenges facing this sector, as well as the key enablers for a sustainable junior coal mining sector in SA. In the first objective, we investigated the challenges facing the sector, as well as their underlying root causes. In the second and third objectives, we established the key enablers and a roadmap necessary for a sustainable junior coal mining sector in SA. The literature highlighted the lack of enabling mineral policy as an underlying root cause of the challenges facing the sector. However, the study revealed that, the lack of access to funding remains the persistent and main challenge facing the sector as lot of effort has gone into improving the mineral policy, and the lack of execution in the process of policy implementation remains an obstacle to unlocking the key enablers of a sustainable junior coal mining sector in SA.

*Keywords:* sustainable coal mining, mineral policy, challenges and enablers, junior miners

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## DEFINITION OF KEY TERMS AND CONCEPTS

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**CEO:** Chief Executive Officer

**DMRE:** The South African Department of Mineral Resources and Energy

**DTI:** Department of Trade and Industry

**EA:** Environmental Authorisation. This is an authorisation issued by the South African Department of Environmental Affairs in terms of the National Environmental Management Act to allow certain listed activities that have an impact on the environment to take place at a mine in compliance with the approved Environmental Management Plan

**IDC:** Industrial Development Corporation

**JSE:** Johannesburg Securities Exchange

**KZN:** KwaZulu Natal Province

**MINCOSA:** Minerals Council South Africa

**Mine Host Communities:** This is the community living in the areas surrounding the mine, that need to be consulted as affected and interested parties as part of the public participation process before commencing with the prospecting activities or building a mine

**Mining Charter:** A policy instrument, first developed in 2002 after the MPRDA, used to drive the broad-based-black economic empowerment and transformation in the South African mining industry

**MPRDA:** Minerals and Petroleum Resource Development Act, 2002 (Act 28 of 2002)

**Mining Right:** A regulatory permit issued by the South African Department of Mineral Resources and Energy, allowing individuals or companies to mine the minerals in South Africa, valid for up to a maximum period of 30years

**NORAD:** Norwegian Agency for Development Co-operation

**Prospecting Right:** A regulatory permit issued by the South African Department of Mineral Resources and Energy, allowing individuals and companies to explore for minerals in South Africa. It is valid for a period of up to 5years and renewable for further 3years

**Quattro Allocation:** This is a scheme designed by the coal mining industry and the DMRE to facilitate access to export markets by allocating 4million tonnes of port capacity at RBCT for use by emerging and junior coal miners in South Africa

**RBCT:** Richards Bay Coal Terminal (Proprietary) Limited. It is in Richards Bay (KwaZulu Natal Province, South Africa) and is the largest coal export terminal in Africa, with an annual design capacity of 91million tonnes

**SA:** South Africa

**SLP:** Social and Labour Plan. This is a document that details the mine's plan to contribute to the socio-economic development of surrounding communities in terms of the MPRDA (it is a social license to operate, submitted as part of an application for a mining right)

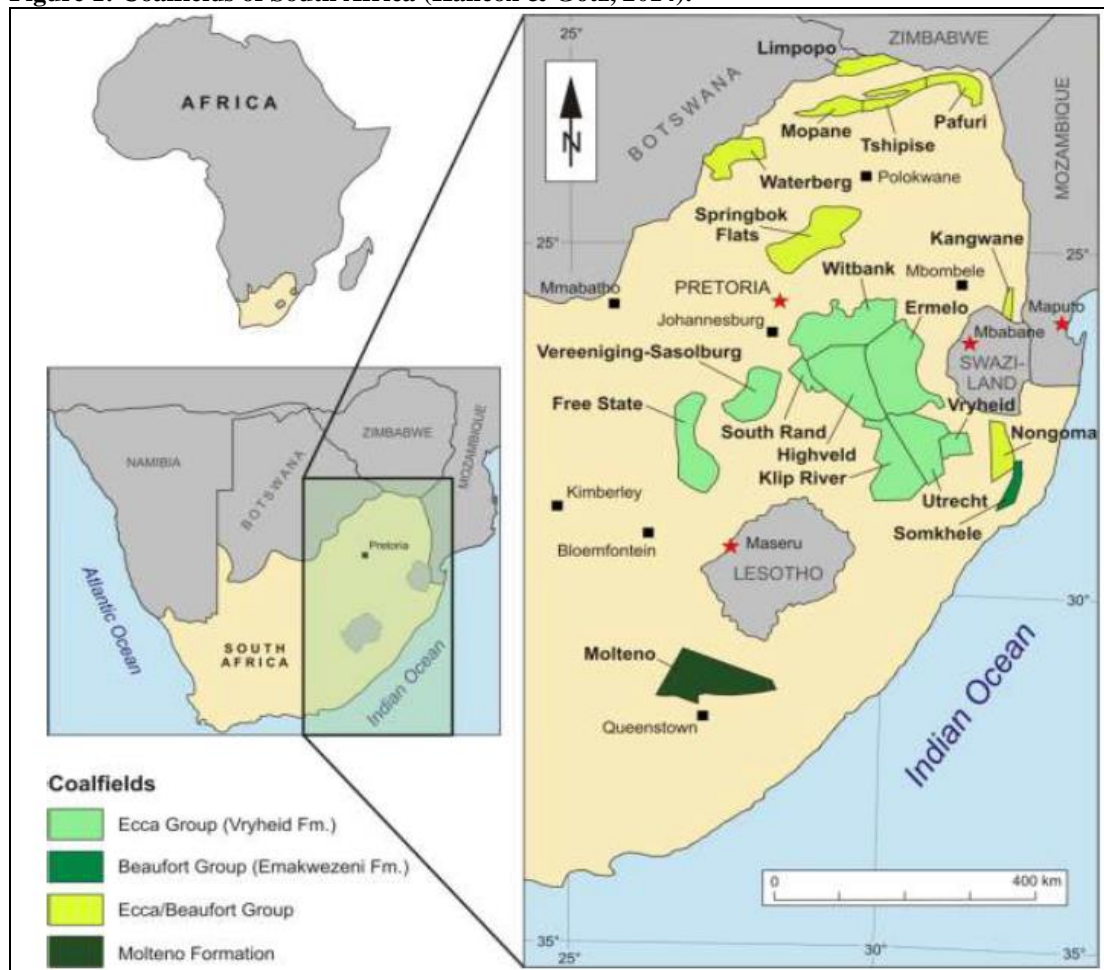
**WUL:** Water Use License. A licence issued by the Department of Water Affairs and Sanitation in respect of water uses for certain listed activities at the mine

# CHAPTER ONE: INTRODUCTION TO THE RESEARCH

## 1.1 Introduction

South Africa has 53 billion tonnes of coal reserves and is ranked number 8 in the world, with United States America, Russia and China ranked number 1, 2 and 3 respectively (Minerals Council South Africa, 2021). Coal in South Africa is found in 19 coalfields (Figure 1), located in KwaZulu Natal (KZN), Mpumalanga, Limpopo, and the Free State, with fewer amount in Gauteng, the Northwest Province and the Eastern Cape (Jeffrey, 2004). According to (Jeffrey, 2004) the main coal mining areas are Witbank-Middleburg, Ermelo and Standerton-Secunda areas of Mpumalanga, around Sasolburg-Vereeniging in the Free State/Gauteng and north-western KZN where smaller operations are found. In Ellisras and Tshipise, single, although large operations are found (Jeffrey, 2004).

Figure 1: Coalfields of South Africa (Hancox & Götz, 2014).



The South African coal mining industry produces about 250million tonnes per annum, of which about 70million tonnes is exported, 120million tonnes is consumed by Eskom, 40million tonnes is consumed by Sasol and the rest find its way into the inland market, mainly used in boilers and the manufacturing of cement and bricks (Minerals Council South Africa, 2021). The South African coal mining industry is dominated by major coal producers, with the top five producers producing more than 80% of the coal in the country and has a few mid-tier producers and a handful of junior miners (Hancox & Götz, 2014). The top 5 major coal producers in the country are:

- Exxaro;
- Seriti Resources, which was formed from the acquisition of former Anglo Thermal Coal SA Eskom tied coal mines and the South32 SA Coal Energy operations;
- Sasol Mining;
- Glencore; and
- Thungela, formerly known as Anglo Thermal Coal

The ownership and development of minerals in South Africa is governed by the Minerals and Petroleum Development Act of 2002 (MPRDA). Prior to 2002, the ownership of mineral rights in South Africa was held privately and in some instances by the state (Hermanus, Walker, Watson, & Barker, 2015). According to Hermanus, Walker, Watson, & Barker (2015), the MPRDA now vests all mineral rights in the state. The next section provides background for the South African junior coal mining and its context with the South African coal mining sector.

## **1.2 Background and Context**

### **1.2.1 The South African junior coal mining sector**

The Junior miners in South Africa are companies that are involved with the exploration and production of minerals, with a gross asset value between R18million and R8billion, and annual sales of between R30million and R8billion rand (Mitchell, 2016). In 2019, the total coal sales in South Africa were just over R140billion and employed just over 94 000 workers who were paid a total wage of about R30billion (Minerals Council South Africa, 2019). This shows that the coal mining sector is a significant contributor to the South African economy.

The term junior miner, internationally, generally refers to companies involved with exploration of minerals, and this is true for countries like Australia and Canada (Minerals Council South Africa, 2021). According to Minerals Council South Africa (2021), in South Africa, the term junior miner has a broader meaning and includes companies across all the stages of the mining project development phases in addition to exploration. The main challenges facing this sector are summarised in section 1.2.2, with more details in section 2.2.

### **1.2.2 The challenges and enablers of a sustainable junior coal mining sector in SA**

The main challenges facing the South African junior coal miners, along the mining and minerals value chain include challenges related to the development of coal mining projects, such as availability of good quality coal resources, availability of funding for these projects, complying with regulatory requirements, availability of technical skills and skilled labour, demands placed by mine host communities on junior mining companies, access to markets and availability of logistics and related infrastructures, as well as access to the markets.

## **1.3 Research conceptualisation**

### **1.3.1 The research problem statement**

The SA junior coal mining sector is fragmented and struggling. This sentiment is reflected in the Minerals Council of South Africa 2016 report, which emphasis that the sector remains unorganised and have little influence on the country's mineral policy (Mitchell, 2016). The gap between the major and junior coal mining producers in the country has been widening in the past decade, with little growth observed in the country's junior coal mining sector. Mining Mx media publication attributes the lack of growth of junior coal miners to the current campaign to move away from fossil fuels and transition to renewable energy sources like solar and wind (Ryan, 2020).

According to Mitchell (2016), Kriel (2019), DMRE (2020) and (Ryan, 2020), the top 4 main challenges facing the South African junior mining sector are regulatory environment, lack of funding, skills and human capital as well as strategic matters such as partnering and organising the sector to speak with one voice. The SA junior coal

mining sector was one of the participants in these prior studies by Mitchell (2016), Kriel (2020) and observations by the DMRE (2020) and (Ryan, 2020).

SA experienced a decline in coal sales for two consecutive years, with sales decreasing from R141billion in 2019, to R131billion in 2020 (Minerals Council South Africa, 2021). Despite this, SA coal mining industry remains one of the important contributors to the country's economy, employing about 92 000 employees, earning R31billion in wages in 2020 (Minerals Council South Africa, 2021). The SA junior coal mining sector forms a critical part of SA's coal mining industry, as it forms a base of the coal mining industry. On that basis, the challenges facing the SA junior coal mining sector cannot be left unchallenged, as they pose a risk to this sector that contribute significantly to the broader SA mining industry and the economy of the country. This statement is supported by Kriel (2019)'s analysis of 17 junior miners listed on the Johannesburg Securities Exchange (JSE), which indicated that the trading of shares of 41% of these junior miners were suspended, implying that some of them were experiencing financial difficulty, and on the brink of closing down and retrenching their employees. Therefore, the problem statement is the misunderstanding of underlying root causes of the persistent challenges that are threatening the sustainability of the SA junior coal mining sector.

### **1.3.2 The research purpose (aim and objectives) statement**

The purpose of this research is to use the qualitative research methods to investigate the challenges facing the South African junior coal mining sector. The main aim of this research is as follows:

**Aim:** To understand the deep underlying issues that contribute to the challenges facing this sector, as well as the key enablers for a strong, thriving and sustainable junior coal mining sector in SA.

The objectives of this research include:

**Objective 1:** To understand the main challenges facing the SA junior coal mining sector;

**Objective 2:** To understand the key enablers for a strong, thriving and sustainable junior coal mining sector in SA; and

**Objective 3:** To produce a roadmap towards establishment of a sustainable junior coal mining sector in SA.

The above three objectives are expanded further in section 1.3.3 as research questions and associated propositions. The research will establish the deep underlying root causes of the persistent challenges facing the SA junior coal mining sector, further add a new body of knowledge in establishing the key enablers of a sustainable junior coal mining sector and provide a clear path to transition from the current undesirable state. A sustainable junior coal mining sector can positively contribute to a growing SA coal mining industry, which can contribute more to the economy and assist in addressing the triple challenges of high unemployment rate, poverty and inequality in the country.

### **1.3.3 The research questions and propositions**

The research questions are structured in such a way that, answering the research questions in 1.3.3, assists in achieving the three research objectives stated in Section 1.3.2 above. From the challenges facing the junior miners as highlighted by Kriel (2019), the top two challenges were the lack of enabling regulatory environment and the lack of access to funding. Mining is a cyclical business, and as the trading environment changes, one would expect the challenges to change, so the research question 1 focuses on the main challenges and their underlying root causes, and the research question 2 focusses on the key enablers of a sustainable sector in SA. The research questions 1 and 2, are related to research objectives 1 & 2 respectively, with research question 3, relating to research objective 3 which focus on establishing a road map towards a sustainable junior coal mining sector in SA.

#### **1.3.3.1 Question 1: What are the main challenges facing the SA junior coal mining sector, as well as their underlying root causes?**

**Proposition:** Eliminate the root causes of the challenges facing the junior coal miners to build a strong and sustainable junior mining sector.

#### **1.3.3.2 Question 2: What are the key enablers of a strong, thriving and sustainable junior coal mining sector in SA?**

**Proposition:** Good quality, accessible coal resources, transparent and efficient mineral regulation administrative processes, enabling mineral policy, access to

funding, availability of necessary skills, well developed and logistics infrastructure and accessible coal markets are some of the key enablers of a sustainable junior coal mining sector.

### **1.3.3.3 Question 3: What is the potential of SA junior coal mining sector, and what does it take to reach this potential?**

**Proposition:** All the key stakeholders in coal mining value chain should acknowledge the changes facing the sector and agree to cooperate and work together to address the challenges.

## **1.4 Delimitations and assumptions of the research study**

SA is endowed with minerals and has well developed mining industry, made up of different sectors such as deep level gold mining, Platinum Group Metals, Ferrous Metals, Base Metals, Mineral Sands, Precious Stones (Diamond), Industrial Minerals and others. This study is limited in that it focussed primarily on the junior coal mining sector, with little peer reviewed literature available on this subject in South Africa. Most of the available literature is in a form of reports by industry bodies, experts and the regulator.

The study was carried out during the Covid-19 period, as well as at the period of the Russian and Ukrainian war, which impacted the logistics for bulk commodities and global energy markets. The world campaign on just energy transition, which advocates for ceasing of using fossil fuels like coal and replace them with renewable energy sources like solar and wind was at its peak during the period of this study. All these developments and trends could have influenced the market forces of supply and demand for coal and might have had an impact on the SA junior coal miners, and somehow exacerbated some of the challenges facing the sector. A perfect example was the unavailability of trains to evacuate more product to the export market to benefit from the high export coal prices caused by the imbalance of supply and demand forces as results of the war in Russia and Ukraine.

## **1.5 Significance of the research study**

Section 1.3 showed that the South African junior coal mining sector is a significant contributor to the economy. Although the previous studies have identified the main challenges facing the sector, they have not established the underlying root causes facing the sector. This research is significant as it identifies the underlying root cause for an unsustainable junior coal mining sector, the key enablers of a thriving and sustainable junior coal mining sector and crafts a path that will assist this sector to reach its potential and create jobs and business opportunities to assist the country to reduce the triple wicked problems of poverty, inequality and unemployment. The South African junior mining sector employs between 33 500 and 40 300 people (Kriel, 2019). The results of this study will be used by emerging and aspiring junior coal miners to understand the impediments of business development and growth in this sector, investors to correctly price their risks when investing in junior coal mining sector, host communities and other key stakeholders to understand the challenges and what can they do to land a hand, as well as the regulators, academics and policy makers in developing mining policies that enable investments and sustainability of the junior coal mining sector in South Africa.

## **1.6 Preface to the research report**

The report is made up of six chapters. The introductory chapter provides a background of junior coal mining sector in the context of the South African coal mining industry and its contribution to the country's economy, the research problem statement, the research purpose statement which outlines the aim and purpose of the research as detailed in the research questions and objectives. The introductory chapter also include the delimitations as well as the significance of the research study and is followed by Chapter 2, that provides a literature review on the problem, the historical studies, the explanatory and the conceptual framework for interpreting the research findings. It then summarises and concludes the literature reviewed, and proposes the research strategy, design, procedure and methods arising from the literature reviewed. Chapter 3 discusses the research strategy, design, procedures, reliability and validity measures as well as limitations. Chapter 4 and Chapter 5 presents and discusses the findings respectively, to interrogating the research questions and Chapter 6 summarises and concludes the research.

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## **CHAPTER TWO: LITERATURE REVIEW**

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### **2.1 Introduction**

Chapter 1 provided contextual background on South African coal mining industry, the junior coal mining sector and introduction to the research. This chapter consists of three main objectives; namely to understand the research problem, identify the knowledge gap, and develop a framework for interpreting the research findings. The research problem is detailed in Section 2.2. In Section 2.3, the literature on studies that have attempted a similar study or research is reviewed. With information arising from Section 2.3, the qualitative attributes that are key to this research in Section 2.4 as well as a framework that will be used to interpret the research findings in Section 2.5 are identified and explained in detail.

### **2.2 The challenges facing the SA junior coal mining sector**

In the research problem analysis section, the challenges facing the South African junior coal mining sector, along the mining and minerals value chain are being studied and analysed. The development of coal mining projects commences with the interested party compiling a prospecting work programme in preparation to apply for a prospecting right (South African Department of Minerals and Energy, 2022). A prospecting right is a license that provides one with permission to prospect for a mineral, in this instance the mineral being coal. According to the South African Department of Minerals and Energy (2022), the prospecting activities include drilling of exploration boreholes and trenching to establish the presence of a mineral of economic interest. A prospecting licence is valid for a period of five years and can be further renewed for a maximum period of three years (Republic of South Africa, 2002).

Once the prospecting activities are completed, and the interested party has established that there is enough coal on the ground, then the next step is to conduct the technical and commercial studies to determine the technical feasibility and commercial viability of the project. A positive outcome then means the project is economically viable, and the next step is for the interested party to apply for a mining right. The approval of a mining

right application by the Department of Mineral Resources and Energy (DMRE), provides the applicant with permission to mine the coal. Both the prospecting and mining rights applications are adjudicated by the DMRE and there are other regulatory permits that one needs to apply for before the mining right is granted by the DMRE (South African Department of Minerals and Energy, 2022). These additional applications include the Environmental Authorisation (EA), Water Use License (WUL) as well as waste management license if one plans to beneficiate the coal on site (South African Department of Minerals and Energy, 2022). Once all this is completed, the next step is to raise necessary funding, either from the commercial banks or developmental finance institutions and interested investors to fund the development of the mine. Once enough funds have been raised, then the coal project is constructed and commissioned into a fully operational mine.

The South African junior coal mining sector is fragmented, stagnant and unsustainable. Compared to the major coal producers in the country, the junior coal mining sector remains unorganised, and the companies involved in this sector have little influence on the country's mineral policy (Mitchell, 2016). The literature review shows that the Minerals Council South Africa (MINCOSA) has conducted two studies on this matter, one inhouse in 2016 and the second one employing the services of an independent consultant in 2019. In addition to this, MINCOSA release annual publication, covering all the different mining commodities in the SA mining industry. Other available literature is from articles by mining journalists, as well as reports by the DMRE, which is a government department responsible for regulating South Africa's mineral resources. The outcomes of the research by MINCOSA, which was conducted by Mitchell (2016) and Kriel (2019), as well as other available literature, highlighting the challenges facing the South African junior coal mining sector are detailed in the next paragraphs.

The lack of mineral policy enabling investments in mining, the lack of access to funding, the dominance of the sector by few major producers and the lack of exploration for new coal deposits are attributed as the main challenges that lead to the current stagnant and unsustainable status of South Africa's junior coal mining sector by Mitchell (2016), Kriel (2019), Department of Minerals and Energy (2020) and Ryan (2020) and are detailed below.

### **2.2.1 The lack of enabling mineral policy**

(Mitchell, 2016), (Kriel, 2019) and (Minerals Council of South Africa, 2019) all believe that the lack of mineral policy enabling investments in mining is the sole underlying root cause of the status of SA junior coal mining sector. The Department of Mineral Resources and Energy (2020) agrees with Mitchell (2016) and Kriel (2019), however, the Department of Mineral Resources and Energy (2020) is also of the firm view that mineral policy cannot be the sole cause of the status of SA junior coal mining sector.

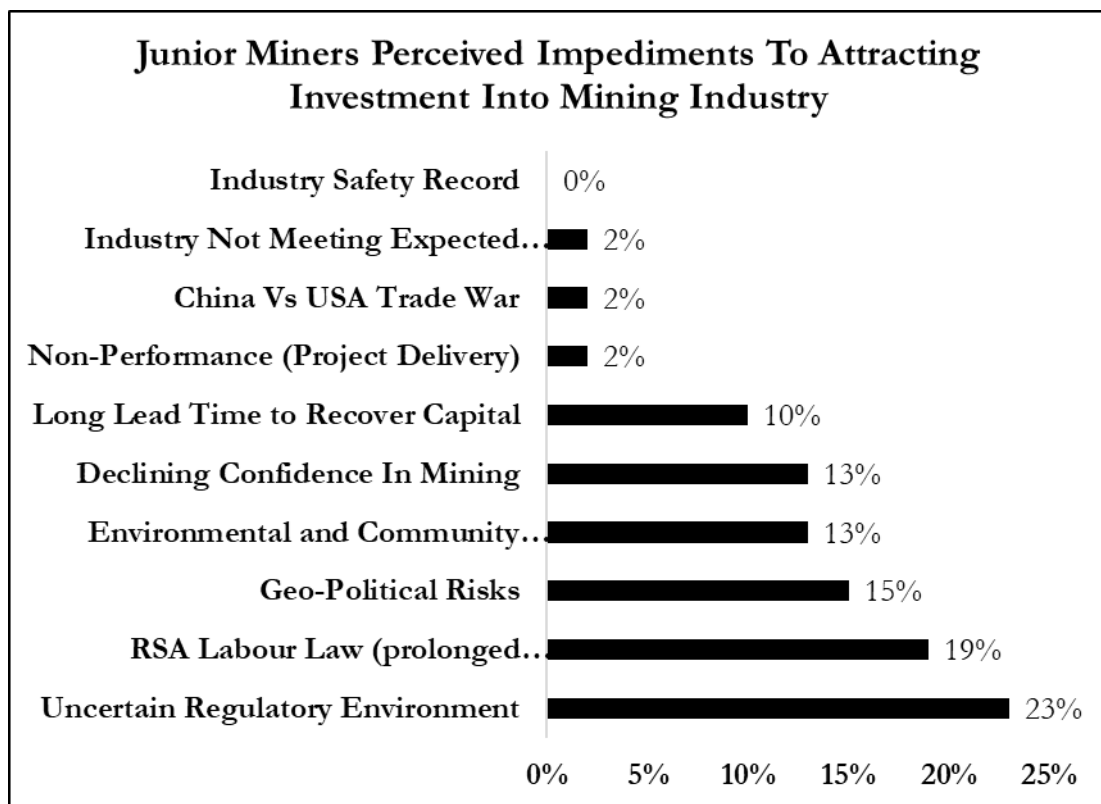
The DMRE, acknowledges that there are challenges with regards to licensing turnaround times and environmental compliance requirements. The department has also identified community activism as a challenge to the industry, and on that basis has established a new directorate that deals with communities and stakeholder engagements (Department of Minerals and Energy, 2020). The agreements and differences between the different reports about the underlying causes of the current unsustainable status of SA junior coal mining sector are acknowledged by this study, and the author believes that a strong mineral policy, should be able to withstand the changes taking place in the economy, both locally and globally.

The lack of transparent and efficient mineral regulation and administrative processes, results in long lead time to obtain regulatory permits, which leads to an unintended consequence of long lead time to develop mining projects. This remains a major challenge in SA junior mining space (Department of Mineral Resources and Energy, 2020) and SA junior miners cannot afford this as they rely on external funding for their mining projects. Most junior miners have highlighted that they have often lost funding that was secured to start a coal project, mainly due to waiting for prolonged period for regulatory permits to be approved (Mitchell, 2016). In the study by Kriel (2019), the South African junior miners who participated in the study highlighted “uncertain mining regulatory environment” as an impediment to attracting investment into the junior mining sector as shown in Figure 2.

### **2.2.2 The lack of access to funding**

The lack of access to funding is a major obstacle in promoting junior mining in South Africa (Mitchell, 2016). According to Mitchell (2016), this is attributed to the risk averse South African commercial banks, that have stringent requirements for funding, such as

completed bankable feasibility studies, proven reserves with credible geological studies and most junior miners do not have financial resources to take mining projects from exploration to bankable feasibility phase. According to Mitchell (2016), even the developmental funding institutions like the Industrial Development Corporation (IDC) has similar requirements as the commercial banks. The findings by Mitchell (2016), were also confirmed by Kriel (2019), who highlighted that the South African commercial banks have steered clear of junior miners and sometimes refuse to engage with the junior miners on matters of funding their projects. The study by Kriel (2019) highlighted that private equity is willing to fund junior miners, however, junior miners do not prefer this funding approach as private equity firms tend to dominate the junior miners and wants more equity from the junior miners' mining projects. (Ryan, 2020) strongly believes that the world's move away from coal to renewable energy sources, led to more institutions ceasing the funding of new coal projects and coal fired power plants which contributes immensely to the lack of access to funding in the junior coal mining sector. The perceived impediments to attracting investments into the mining industry are summarised in Figure 2 according to the study by Kriel (2019).



**Figure 2: Junior miners perceived impediments to attracting investment into mining industry (Kriel, 2019)**

### **2.2.3 The dominance of the sector by few major producers**

Few major coal producers dominate the SA coal mining industry, with 80% of the country's coal production being produced by about five companies. The current port capacity at the Richards Bay Coal Terminal (RBCT) is about 91million tonnes per annum (rbct, 2020), however, the rail capacity is about 70million tonnes per annum (Minerals Council of South Africa, 2019). Although the rail capacity does not match the port capacity, the major coal producers have access to this infrastructure, which is not the case for junior coal producers, who have access to a small portion of this infrastructure and this end up limiting the junior coal miners' access to the export market, which then result in a negative impact on their revenue generating capabilities.

The dominance of SA coal mining sector by few large players also distorts the labour markets, as most junior coal miners cannot afford to pay market related salaries and provide the same working conditions as the large coal producers. Retaining superior quality, experienced skills is a huge cost for junior coal miners, and they often rely on the services of independent consultants to keep their operations running (Mitchell, 2016). According to Mitchell (2016), there is very little collaboration between the major mining companies and junior miners in South Africa, which is supported by lack of support shown by major producers when MINCOSA invited them to share the portfolio of their non-core assets and make them available to the junior miners, only one out the seven major mining companies responded to MINCOSA's request.

### **2.2.4 The lack of exploration for new coal deposits**

“In 2017, South Africa accounted for 1% of the total global exploration expenditure with 14% for Canada, 14% for Australia and 13% for the rest of Africa. South Africa's share of African exploration budget was 8.3% in 2017 compared to 20% in the year 2000” (Department of Minerals and Energy, 2020). The lack of exploration for new mining resources was also highlighted by Mitchell (2016). Mitchell (2016) attributed the lack of exploration in South Africa to lack of suitable financial vehicles and models to stimulate exploration and likened exploration to research in manufacturing, emphasising that lack of exploration has a potential to collapse the whole mining industry. According to Mitchell (2016), the geological endowment is a pre-requisite for funding by commercial banks in South Africa, and this remain one of the challenges facing the junior miners in this country.

The consequences and the root causes of unsustainable junior coal mining sector in SA, using the Norwegian Agency for Development Co-operation (NORAD) problem tree analysis (NORAD, 1999) are summarised in Figure 3. As indicated in Figure 3, the underlying causes of the challenges facing the junior coal mining sector in SA, stems from the lack of a mineral policy that enables investments in mining. The consequences of these challenges then manifest in a form of under-capitalised mining operations, revenue losses, disruption of operations by endless community protests as well as junior coal miners' inability to attract and retain top talent and skills in the industry. The combination of these then lead to higher inputs costs of mining, which then results in unprofitable operations. Unprofitable operations limit the ability of junior coal miners to reinvest cash to grow their businesses. It also impact their capital raising capabilities, leading to a limited growth and a stagnant junior coal mining sector. According to Brendan Ryan (2020), the future of the South African coal mining industry appears bleak, and this trend has been observed for a while.

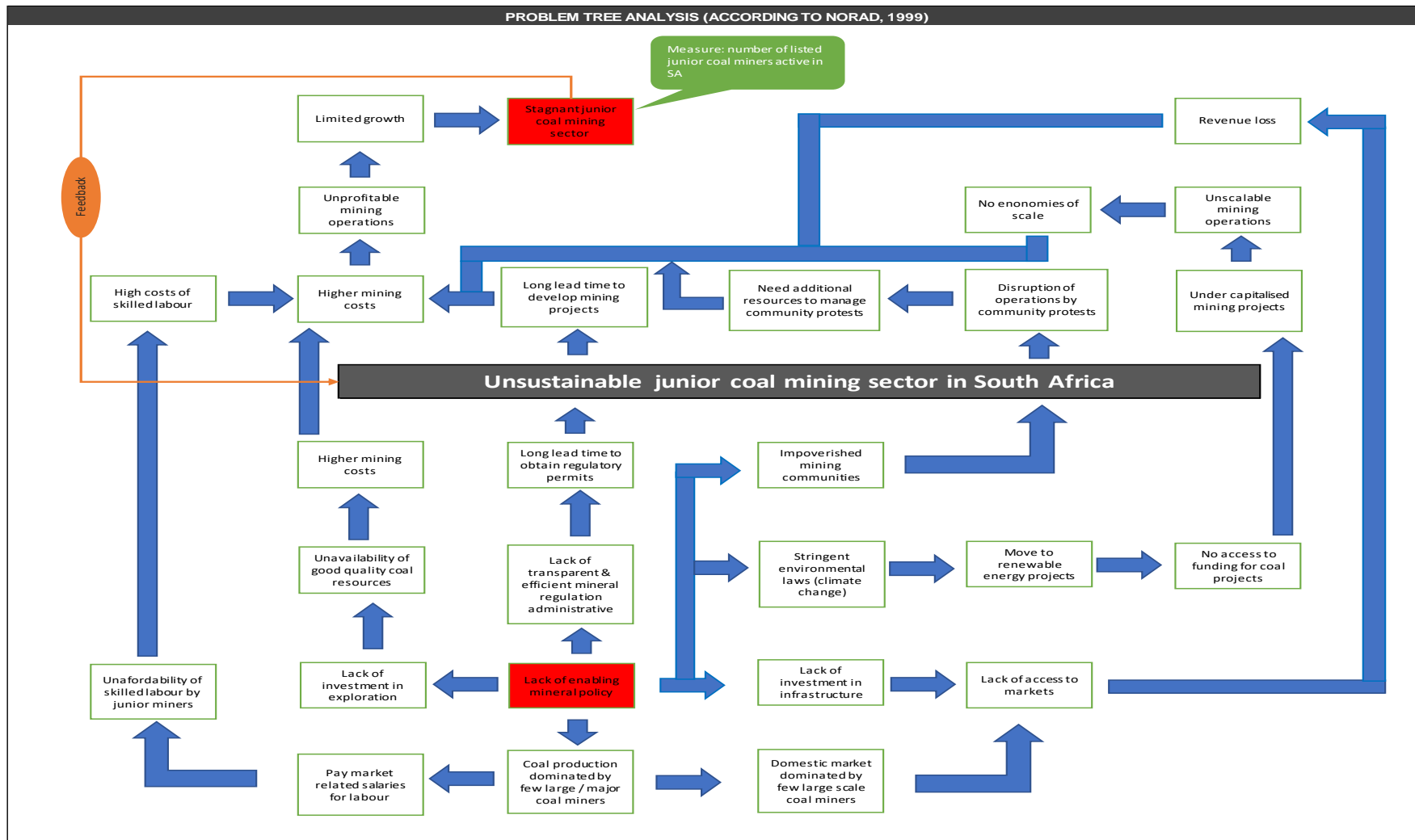


Figure 3: Problem tree analysis of challenges facing SA junior coal mining sector

## 2.3 Research knowledge gap analysis

This section reviews the available literature, studies and reports on the challenges facing the SA junior coal mining sector, as well as their underlying root cause. This is carried out to understand the knowledge gap with regards to the challenges facing the sector, as well as the underlying causes. This is achieved through analysing similarities and differences in the existing literature on challenges facing the SA junior coal mining sector and finding out why these challenges are still persistent, and the sector is remaining unsustainable.

Mitchell (2016) undertook a study to understand the challenges facing the emerging and junior miners in South Africa, supported by the empirical evidence in a form of industry reports on junior mining sector, documented workshops, conducted by the MINCOSA, seminars and evidence from engaging with the industry experts. Mitchell (2016)'s study was commissioned and funded by the MINCOSA, with an aim to sensitise the DMRE, government and major coal mining companies of the plight of junior miners in SA.

In 2018, the MINCOSA commissioned Hermanus Kriel, to undertake a study to determine the “*extent, nature and economic impact of the junior and emerging mining sector in South Africa*” (Kriel, 2019). The study was a continuation of the work conducted by Mitchell in 2016, and it included conducting literature review, as well as a survey using the junior miners in a database from the MINCOSA Junior and Emerging Miners Desk as a sample for the survey. The study by Kriel (2019), confirmed the challenges facing the South African junior mining sector identified by Mitchell (2016), which include the lack of enabling mineral policy, the lack of access to funding, dominance of the sector by few major companies and lack of exploration for new resources.

In 2020, Brendan Ryan published an article within the Mining Mx mining yearbook, titled “*future of SA coal is not what is used to be*” (Ryan, 2020). Ryan (2020) highlighted the impact of a move towards renewable energy sources on the SA coal mining industry, which indirectly affect the junior coal miners who are already struggling due to lack of access to funding, lack of access to markets, and high mining input costs. There were no limitations documented by both (Mitchell, 2016) and (Kriel, 2019) in their research. However, the author's assessment of Mitchell and Kriel's studies is that Mitchell's study

relied heavily on his past work around this subject, and did not engage other key stakeholders such as the DMRE to understand their perspective on the challenges facing the South African junior miners as the regulator in the industry.

The limitation to Kriel's study is that the sample size of the survey was based only on 25 junior miners who were in the database of the MINCOSA's Emerging and Junior Miners Desk, and was not extended to other junior miners who are not part of the MINCOSA database. A survey was conducted as part of Kriel's study. This survey was more prescriptive and had no open ended questions to allow the junior miners to state some of the challenges in addition to those that were already listed on the survey. The South African mining industry is broad, and some of the challenges faced by the different sectors are unique to that mining sector, and Kriel's study (2019) did not show the challenges by the different junior mining sectors, for example, coal, iron ore, chrome, gold and platinum group metals and others.

From the problem research analysis, the literature indicate that the challenges facing the South African junior coal mining sector highlighted by Mitchell (2016) and Kriel (2019), could be traced back to one root cause, which is the lack of mineral policy that enables investment in mining in South Africa. However, as indicated above, the studies were limited only to junior miners affiliated to MINCOSA emerging and junior miners desk, were more prescriptive and did not allow the junior miners the freedom to raise the challenges that might be unique to their sectors or common challenges that need fundamental shift in the country's mineral policy. The studies also only focussed on the challenges, and not the enablers of the junior mining sector.

On that basis, this study will build on the existing research by involving all the junior miners along the mining and mineral value chain in coal, and provide them with a platform to raise the challenges as they experienced them and not limit them to select from a pre-determined list of perceived challenges. The regulator in the form of the DMRE and MINCOSA will also be provided with an opportunity to raise the challenges facing this sector as they understand them. The study will explore some of the components of the South African mineral policy that have been highlighted by Mitchell (2016), Kriel (2019) studies, the DMRE and some of the junior miners in detail. The understanding of the challenges facing the SA junior coal mining sector, their

underlying root causes as experienced and understood by the junior coal mining sector as well the key enablers of a sustainable sector remain a knowledge gap and this will be explored in detail by this research study.

## **2.4 Qualitative attributes key to the research**

When carrying out the research knowledge gap analysis, similar research studies in literature show the research strategy, research design, research procedure and methods used, including the information collected and analysed.

The first qualitative attribute key to this research is the challenges facing the South African junior coal mining sector as indicated by the research problem analysis. The research used the challenges facing the sector highlighted in the literature by Mitchell (2016) and Kriel (2019). These include the lack of enabling mineral policy, the lack of access to funding, the dominance of the sector by few major companies and lack of exploration for new resources. An in-depth analysis of these challenges indicates that the lack of enabling mineral policy is not only a challenge facing the sector, but it is also an underlying root cause for the other challenges facing the sector.

The second qualitative attributes, which are not covered in the literature review, include the key enablers of a sustainable junior coal mining sector, and the final qualitative attribute that pursued by this research is the roadmap towards a sustainable junior coal mining sector in South Africa.

This research pursued the qualitative attributes listed above to answer the research questions in Section 1.3.3. The first qualitative attribute was pursued to answer research question 1, “What are the main challenges facing the South African junior coal mining sector, as well as their underlying root causes?” and used to prove the research proposition 1, “the root causes of the challenges facing the junior coal miners should be eliminated to build a strong and sustainable junior mining sector”.

The second qualitative attribute answered the research question 2, “what are the key enablers of a strong, thriving and sustainable junior coal mining sector in SA?” and used to prove the research proposition 2, “good quality, accessible coal resources; transparent and efficient mineral regulation administrative processes; enabling mineral policy; access

to funding, availability of necessary skills, well developed and logistics infrastructure and accessible coal markets are some of the key enablers of a sustainable junior coal mining sector”.

The final qualitative attribute was pursued to answer the research question 3, “What is the potential of SA junior coal mining sector, and what does it take to reach this potential”? and used to prove the research proposition, “all the key stakeholders in coal mining value chain should acknowledge the changes facing the sector and agree to cooperate and work together to address the challenges”.

The underlying root causes of the challenges facing the sector were identified and understood, to pave the way for enablers towards a sustainable sector and a roadmap that needs to be followed to assist the South African junior coal mining sector to pivot from the current undesirable status towards sustainability. The information for the qualitative attributes for this research was collected through interviews with the owners and executives on junior coal mining companies, the DMRE and MINCOSA.

## **2.5 Frameworks for interpreting research findings**

The review and interrogation of literature on challenges facing the SA junior coal mining sector, as well existing qualitative research allows for identification of existing and well-established frameworks utilised to analyse and interpret the research findings. In this section, the research findings on the challenges facing the South African junior coal mining sector, as well as the key enablers of a strong and thriving junior coal mining sector are being interpreted. The interpretation of these findings will assist with understanding the root causes and recommending the measures that will ensure a strong and thriving junior coal mining sector in South Africa. This is achieved through using established frameworks for interpreting the findings of a research of this nature.

## **2.6 Summary and conclusion**

### **2.6.1 Summary of literature reviewed**

The literature reviewed indicated that the South African junior coal mining sector is a critical sector within the South African coal mining industry. The literature also confirmed that there are challenges facing the sector. These challenges have different

underlying causes, and a stagnant and unsustainable junior coal mining sector is just a symptom of these challenges. An in-depth analysis of these underlying causes showed that they stem from a root cause, which is the lack of an enabling mineral policy.

The literature review also showed that, the consequences of these challenges, manifest in a form of under-capitalised mining operations, revenue losses which affect the profitability of the operations, community protest, long lead time to develop projects as well as high input costs of mining.

Mitchell (2016), Kriel (2019) and Ryan (2020) agree on the challenges facing the sector, although Ryan (2020) highlighted the campaign to move away from coal generated power to renewable energy as a serious concern to the coal mining industry at large. The DMRE does not believe that mineral policy alone can eliminate all the challenges facing the junior miners, however, the department acknowledges that there are challenges related to mineral policy and such challenges, for example, long turnaround times related to permitting and licensing are being addressed as a matter of priority (Department of Minerals and Energy, 2020). The knowledge gap analysis showed that there's research work that needs to be done around mineral policy in SA, to prove its real impact on the sustainability of junior miners in South Africa.

### **2.6.2 Proposed research strategy, design, procedure and methods arising from the literature reviewed**

The studies reviewed in literature showed the research strategy, research design, research procedure and research methods used, including detailing the information collected and analysed as part of the study. The first qualitative attribute is the challenges facing the South African junior coal mining sector in the context of South African mining industry, which has coal mining, precious metals (gold and platinum group metals), ferrous metals, industrial minerals and others like clay and aggregates. The second qualitative attribute is the key enablers of a sustainable junior coal mining sector, and the final qualitative attribute is the roadmap towards a sustainable junior coal mining sector in South Africa, which paves the way for closing the gap between the status of the South African junior coal mining sector and where it supposes to be in terms of its potential.

The interrogation of earlier literature by other researchers on the challenges facing the South African junior mining sector, as well as analysis of multiple challenges that results in more undesirable effects has helped in identifying the existing established frameworks used in research for this study. The NORAD problem tree analysis interpretive framework was used in finding the root cause of multiple undesirable effects, which are often the symptoms of a deep underlying problem. If the deep underlying problem is not accurately diagnosed, the proposed solution ends up only addressing the undesirable effects, leaving the deep underlying problem untreated.

The use of the NORAD problem tree analysis method was not common in the literature reviewed on the challenges facing the South African junior mining industry. This study focusses on the main challenges and key enablers of a sustainable junior coal mining sector in South Africa, hence it appeared proper to use the NORAD problem tree analysis to understand the root cause of the challenges facing the South African junior mining sector as highlighted in the established literature. The existing literature mostly focussed on the challenges facing the South African junior coal mining sector, and little on the key enablers and a roadmap towards a sustainable junior mining sector.

The earlier studies used workshops, surveys, were more prescriptive when collecting the data on the challenges facing the sector and left no room for the sector to raise any challenges that it was experiencing. The questions about the root causes and key enablers of a sustainable sector were not included in the survey, and to overcome this shortcoming, this study used face to face, as well as telephonic interviews with open ended questions to collect the information from the sector, and more details on the research strategy, procedures and methods used are detailed in Chapter 3.

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## **CHAPTER THREE: RESEARCH STRATEGY, DESIGN, PROCEDURE AND METHODS**

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### **3.1 Introduction**

Research strategy refers to a way research is conducted (Bryman, 2012). Based on the literature reviewed, the qualitative research strategy was proposed for this study. Research design provides a structure of how research will be carried out. It provides the blueprint of how the data will be collected and processed. There are five generic research designs, namely: experimental, cross-sectional, longitudinal, case study and comparative (Bryman, 2012). The longitudinal research design was proposed for this study.

The research procedure and methods are about the actual procedure and the methods employed in research to collect, collate, process, and analyse empirical evidence. The research data collection instrument is an instrument designed to extract the data that will be needed for analysis to complete the research work (Babbie, 2013). Based on the literature reviewed, the proposed instrument for this research is the interview schedule research data collection.

The target population is made up of several cases that a research sample maybe be derived from (Bryman, 2012). The target population for this study included junior coal mining companies with active coal mining projects at various development stages, as well as operating mines in South Africa. It also includes key stakeholders like the industry body in the form MINCOSA and the regulator in a form of the DMRE. Utilising this target population was of great benefit to this study as the participants are at the coal face of the challenges facing the sector, and the researcher has well established access to the majority of the target population

In Section 1.3.3, three questions that this research report intends to answer are posed: ‘What are the main challenges facing the SA junior coal mining sector, as well as their underlying root causes?’, ‘What are the key enablers of a strong, thriving and sustainable junior coal mining sector in SA?’, and ‘What is the potential of SA junior coal mining sector, and what does it take to reach this potential?’ The literature has been reviewed and an interpretative as well as a conceptual framework developed. These guided the

choices of techniques used. Chapter 3 identifies and describes the research approach, design as well as a procedure and methods employed in this research to collect, process, and analyse empirical evidence. Broadly, it has three objectives; namely, to identify and describe the research strategy (Section 3.2), the research design (Section 3.3), as well as the procedure and methods (Section 3.4). Chapter 3 also describes the reliability and validity measures (Section 3.5) that this research applies to make it credible as well as the technical and administrative limitations of the choices made (Section 3.6).

## **3.2 Research strategy**

Research strategy refers to a way research is conducted (Bryman, 2012). There are three types of research strategies, namely: qualitative, quantitative and mixed research strategy. In this study, the literature review shows that the lack of mineral policy that enables investments in the South African mining industry is at the core of challenges facing this sector. The challenges facing this sector are well documented, and the knowledge gap analysis shows that the focus area for this research should be on SA mineral policy, concentrating more on the components of the policy that have been flagged by the DMRE and some of the junior coal miners in the country.

For purpose of this research, the data was sourced and obtained through studying existing literature, observations and conducting interviews with different key role players in the South African junior coal mining sector. The identified key role players include junior coal mine producers, service providers, relevant government departments like the DMRE, and end users of coal in SA. In summary, qualitative research strategy was adopted for this study.

In 2016, Grant Mitchell adopted a qualitative research strategy in conducting a similar study commissioned by MINCOSA, which was then called the South African Chamber of Mines. The main aim and objective of Mitchell's study was to unpack the existing knowledge about the South African junior mining sector and explain the main challenges facing the sector. Mitchell's research was supported by empirical evidence based on reports on the sector, workshops and seminars and interviews from the industry experts.

Mitchell adopted a qualitative research strategy to achieve the main aim and objective of his research, and produced practical challenges and solutions, with inputs from the role players, which could be taken back to the same industry for consideration and implementation by the role players and regulatory bodies. The aim of Mitchell's study was achieved and led to a second study which was commissioned in 2019, to conduct further research on the knowledge gap from Mitchell's 2016 study. The 2019 study was conducted by Hermanus Kriel on behalf of MINCOSA.

Qualitative research strategy was beneficial for this research on the challenges facing the South African junior coal mining sector, as it offered an opportunity to develop specific insights about the industry, and it does not require a large sample size in collecting the relevant data about the sector, as key role stakeholders were interviewed as part of data collection.

### **3.3 Research design**

Research design provides a structure of how research will be carried out. It provides the blueprint of how the data will be collected and processed. Different components of the research process need to be taken into consideration when designing a study. These include among others, the main aim and objectives of the study. There are five generic research designs, namely: experimental, cross-sectional, longitudinal, case study and comparative (Bryman, 2012).

This study used a longitudinal research design. This design entails qualitative content analysis of literature relating to different periods and interviewing on more than one occasion (Bryman, 2012). Conducting interviews as part of research process is one of the benefits of using longitudinal research design, and this is used in this study. Longitudinal research design has been used in prior studies on junior coal mining sector in South Africa as indicated below.

(Mitchell, 2016) undertook a study to examine the challenges facing the junior mining sector in South Africa. Mitchell's study focused on junior mining sector across all commodities, and its objective was to review the existing knowledge about the emerging and junior mining sector in South Africa. The rationale behind using longitudinal research design was to ensure that Mitchell is able to rely on his and the experience of

other experts in the sector, as well as the well documented content from the various workshops and interviews about the sector.

Utilising the longitudinal research design was beneficial to this research as existing literature on junior mining sector in South Africa was reviewed, and in-depth interviews were conducted with the key role players in the sector to understand the challenges facing the sector, their root causes and the path that can be followed to establish a sustainable junior coal mining sector in the country.

### **3.4 Research procedure and methods**

The research procedure and methods are about the actual procedure and the methods employed in research to collect, collate, process, and analyse the resultant data (Bryman, 2012). The research data collection instrument is an instrument designed to extract the data that will be needed for analysis to complete the research work (Babbie, 2013). According to Neuman (2014), the research methods have techniques that are used in a study to gather and process data and report on the findings.

This section of the research documented the actual procedure and methods employed in this research to collect, collate, process, and analyse empirical evidence as outlined by Neuman (2014). Broadly, the data and information collection instruments (Section 3.4.1) are detailed, the target population and sampling of respondents (Section 3.4.2), the ethical considerations during the research process (Section 3.4.3), data and information collection process and storage (Section 3.4.4), data and information processing and analysis (Section 3.4.5) as well as the background description of the respondents who provided empirical evidence for this research study (Section 3.4.6).

#### **3.4.1 Research data and information collection instrument(s)**

Research data collection instrument is an instrument designed to extract data needed for analysis to complete the research work (Babbie, 2013). In qualitative research, there are two types of research data collection instruments, namely: observation schedule and interview schedule (Bryman, 2012).

This research utilised the interview schedule research data collection instrument as it provides more flexibility and allows the researcher to obtain deeper meaning on the topic (Bryman, 2012).

Qualitative research is less structured compared to quantitative research, and it does not limit the researcher in terms of obtaining deeper meaning of the concepts being researched from the respondents (Bryman, 2012). According to Bryman (2012), there are three types of data collection instrument structures, namely: unstructured, semi-structured and fully structured. This study used a semi-structured interview schedule data collection instrument. A set of questions were prepared and shared with the respondent prior to the interview taking place.

The questions were classified into two categories, namely category A and category B. The category A questions were the research question 1 “What are the main challenges facing the South African junior coal mining sector, as well as their underlying root causes”? and the research question 2 “what are the key enablers of a strong, thriving sustainable junior coal mining sector in SA”? These questions were treated as broad questions and were asked to all the key role players in the junior coal mining sector who participated in the interviews.

The category B questions were specific and classified according to the following groups:

- **Companies with projects at exploration phase** – three questions were asked, relating to how long it took the junior miner to obtain a prospecting right, experience of a junior miner on the prospecting right application process and interacting with the DMRE and whether the junior miner thinks there is a room for improvement when it comes to the DMRE process to grant the prospecting rights;
- **Companies with projects at development phase** – four questions were asked, relating to how long it took the junior miner to obtain the mining right, junior miner’s experience on the mining right application process and interacting with the DMRE; whether the junior miner thinks there is a room for improvement when it comes to the DMRE process to grant the mining rights and find out if the other regulatory permits like the environmental authorisation (EA) and the water use license (WUL) were granted on time;

- **Companies with operating mines** – three questions were asked, relating to what the junior miners think the DMRE can do to reduce the regulatory burden on junior miners, what is the most difficult part to junior miners when it comes to complying with the conditions attached to their regulatory permits and what is working and not working with the current mining legislature, with special focus on the MPRDA;
- **The Department of Mineral Resources and Energy (DMRE)** – only two questions were asked, relating to understanding why the processing of applications for regulatory permits takes longer than anticipated, and what is the DMRE doing to enable the junior miners from a mineral policy perspective; and
- **The Minerals Council South Africa (MINCOSA)** – only two questions were posed to MINCOSA, relating to understanding what is MINCOSA as a mineral industry body that ensure the industry speaks with one voice, doing to assist the struggling junior mining sector from a policy perspective, and does the MINCOSA believe that the junior miners should be subjected to the same regulatory requirements as the major coal producers? (See **Appendix 1.1** for more details on the data collection instrument)

The semi-structured interviews and sharing of questionnaires prior to the interview assisted with ensuring that the interview is structured in terms of addressing the research questions, and that there's added flexibility to obtain deeper meaning of the concepts during the live interview process. A semi-structured interview data collection has been utilised in previous studies as outlined below.

In a similar study commissioned by the Emerging and Junior Miners Desk of the Minerals Council of South Africa, (Kriel, 2019) utilised a semi-structured interview data collection instrument in investigating the extent, nature and economic impact of the emerging and junior mining sector in South Africa. The main objective of this study was to provide insights on the junior mining sector in terms of its size, as well as economic impact in South Africa. Kriel selected this combination of data collection instrument mainly due to the flexibility it provided, and he benefited from applying this approach as he was able to establish the size and economic contribution of the sector to South Africa, as well as pointing out the challenges facing this sector from the interviews conducted with the key role players in the sector.

## **3.4.2 Research target population and selection of respondents**

### **3.4.2.1 Research target population**

The target population is made up of several cases that a research sample maybe be derived from (Bryman, 2012). The participants in the research are selected based on the research focus area. This is critical for enabling the researcher to achieve the aims and objectives of the research (Symon & Cassel, 2012). The target population for this study included junior coal mining companies with active coal mining projects at various development stages, as well as operating mines in South Africa. Prior studies have used similar target population as detailed below.

Mitchell (2016) and Kriel (2019)'s studies included similar target populations in their studies. The objective of Mitchell's research was to review the existing knowledge about the emerging and junior mining sector in South Africa. Although Mitchell's target population was broader as it cut across all mining commodities, Mitchell chose this target population because of its significant contribution to the South African mining industry and economy. The benefits of using this target population are evident in how Mitchell successfully unpacked insights about this sector, as well as highlighting the challenges facing this sector.

Utilising this target population was of great benefit to this study, as the participants were accessible despite the notable challenges due to Covid-19, and were willing to share their lived experiences, as well as daily challenges and hardships they have to endure to keep their business alive.

### **3.4.2.2 Sampling or selecting respondents from the target population**

Sampling is a process of selecting a group of participants for a purpose of conducting research (Wagner, Kawulich, & Garner, 2012). A sample is a small number of cases, selected from a large group or pool of cases and analysed as a representative of the larger group (Neuman, 2014). There are three concerns when selecting a sample for research purposes, namely: assurance that the sample assists the researcher to collect appropriate data, usage a relevant sample technique to participants who are suitable for the research aim, and lastly, the number of participants or the sample size (Symon &

Cassel, 2012). According to Symon and Cassel (2012), the sampling method can be based on one of two principles, namely: probability sampling or non-probability sampling.

This study will use a non-probability sampling technique. The non-probability sampling technique entails a sample that has not been chosen through random selection (Bryman, 2012). When this sampling technique is used, the selection for suitable participants is based on the researcher's judgement of the characteristics of the population required for the data to achieve the aim of the research (Symon & Cassel, 2012) Furthermore, participants tend to be involved in the study using non-probability sampling technique because of their availability and willingness to participate (Wagner, Kawulich, & Garner, 2012). The common non-probability sampling techniques are convenience sampling (also known as purposive sampling), snowball sampling, and quota sampling (Bryman, 2012; Neuman, 2014). For this study, I am working in the coal mining sector and have access to most junior coal miners in South Africa, the DMRE and the industry bodies like MINCOSA, hence purposive sampling technique will be used.

This technique has been used in similar prior studies. For example, a study by Kriel (2019), which investigated the extent, nature and economic impact of the emerging and junior mining sector in South Africa. Kriel (2019) targeted about 25 junior miners, and only 68% participated, however Kriel was able to achieve the research objectives as he successfully established the size and economic contribution of the sector to South Africa, as well as pointing out the challenges facing this sector.

The target population for the proposed research includes junior coal miners that are at different project development phases along the mining value chain, MINCOSA, which is the industry body which represent most major and junior mining companies in South Africa and the regulator in a form of the DMRE. Twelve junior coal miners were identified and shortlisted for the study, and only eight participated in the study.

### **3.4.3 Ethical considerations when collecting research data**

Ethics in research is about behaving and conducting oneself in a morally acceptable way when conducting research project. Ethical issues must be considered at every step of the research process, from the research strategy, design and implementation (Wagner,

Kawulich, & Garner, 2012). This is to ensure that the rights of the subject being studied or investigated are respected and protected, as well as those of other participants in the research process. Ethics requires the researcher to strike a balance between the rights of all participants in the researcher's pursuit for knowledge to fulfil the research aims and objectives.

The researcher for this study is a part time Master of Business Administration (MBA) student at the Wits Business School (WBS) and a full-time employee of one of the major coal mining companies in South Africa. The researcher's interest in the study is for academic purposes and neither the researcher nor his employer, who is funding the MBA studies benefited commercially from this research (see **Appendix 2.1** for Research's brief biography). Ethical considerations as highlighted by Bryman (2012) were thoroughly observed and complied with as outlined below.

#### Deception of Respondents:

The researcher assures the research community that the participants in the proposed research were not deceived, and all disclosures related to the researcher and the research work were disclosed upfront before engagements on the subject being investigated.

#### Cause Harm or Stress to the Participants:

The researcher makes a pledge to the research community that in conducting this research, no harm or stress, physically or developmentally were caused to the respondents or drive them to a point where they lost their confidence. In addition to this, the researcher would like to highlight that this research and its supporting research data collection instrument were subjected to WBS Ethics Committee scrutiny and obtained ethics clearance before the research work could commence.

#### Informed Consent to Interview:

The researcher assures the research community that informed consent was obtained in advance, to interview the respondents and if necessary, record them. Participants were issued with a consent form which explained to them what the research is about, and that participation is on a voluntary basis (See **Appendix 2.2**).

#### Protection of Respondents and Data:

The researcher assures the research community that the respondents were protected. Their identity will not be revealed and the data they shared is secured. The data is stored electronically and accessible through password protected devices like computers and tablets.

### **3.4.4 Research data and information collection process**

Research data or information collection is a process of collating data or information from the research sample to address the research questions (Bryman, 2012). There are four modes of research data collection, namely: participant observation, or ethnography, interviews (face-to-face, telephone or internet based) (Bryman, 2012).

The face to face, telephone and internet-based interviews were utilised to collect information for this study. This was beneficial to this study as it provided a seamless access to the target population, given the tight time frames that the researcher was working under, as well as the current Covid-19 situation in the country, which prohibited coming into contact when not necessary to reduce the probability of spreading the Corona virus in the country. Eight out of the twelve identified and shortlisted junior coal miners participated in the study. The additional participants were the DMRE and MINCOSA, so the total number of participants in this study is ten. Four out of eight junior miner interviews were conducted face to face, notes taken, and the participants requested not to be recorded. The other four junior miner interviews were conducted visually using Microsoft Teams, notes were taken on all of them, and only one junior miner agreed to be recorded. The MINCOSA interview was conducted through Microsoft Teams, and notes taken. The DMRE interview was conducted face to face, notes taken and the representative from the DMRE also opted not to be recorded. Prior studies have used similar mode of research data and information collection. For example, Mitchell (2016) and Kriel (2019) have used similar mode in similar research in the emerging and junior mining sector in South Africa.

### **3.4.5 Research data and information processing and analysis**

#### **3.4.5.1 Research data and information processing**

Research data processing is a process of extracting information from a collected data. Before the information can be extracted from collected data, the following process must

be carried out: transcribing, determining themes theoretically or data driven and data fragmentation.

Transcribing is a process of transforming the information from audio to text, in qualitative research where the information was recorded from an interview. Determining themes refers to a process of conceptualising themes from the collected data. This can either be based on theory or driven by the collected data. Data fragmentation refers to a process of packaging collected data into different themes.

In this study, information was collected through interviews and recorded electronically. The recorded information was then transcribed into text, and themes conceptualised before being packaged into different themes.

#### **3.4.5.2 Research data and information analysis**

Research data and information analysis is a process of disseminating data and information to create meaning from the collected data, to answer the research question (Wagner, Kawulich, & Garner, 2012). Narrative analysis and thematic content analysis are the common data and information analysis methods in qualitative research. Narrative analysis method focusses on how people make sense of events that have already taken place, and thematic content method is subjective dissemination of information after it was systematically classified into different themes.

This study utilised the thematic content analysis. This was beneficial to this study as information was collected through semi-structured data collection instrument and classified into different themes before being analysed. Notes were made from face to face as well as telephonic interviews where the participants opted not to be recorded. All the hand-written notes and information from audio recording were transcribed into an excel sheet, stored in an electronic format for further analysis. In excel, the information was systematically packaged and classified according to two categories of questions, and the different role players in the junior coal mining sector. It was then analysed, to identify similarities and differences and repetitions. Prior research in similar research has successfully used this analysis method. The most recent ones are the studies by Mitchell (2016) and Kriel (2019), who conducted studies in the South African emerging and junior mining sector.

### **3.4.6 Description of the research respondents**

The following information was collected to authenticate the respondents in the research process:

- The project phase in the mineral value chain (exploration project, development project or operating mine),
- The role of the respondent in the company (director/executive, manager or specialist); and
- Years of experience in the mining industry (less than 20, 20 – 30 and more than 30 years). See more details on the data collection instrument in **Appendix 1.1**.

### **3.5 Research strengths—reliability and validity measures applied**

Reliability in research is a question of whether the study can be replicated to test its reliability, and validity in research is more about the integrity and credibility of the research process used to complete the study. Reliability and validity are critical to determine the quality of research (Bryman, 2012). Research reliability is mostly dependent on the detailed description of the research process. The research strategy, design procedure and methods for the proposed research are detailed and well defined to ensure reliability of this study.

Mitchell (2016) undertook a similar study, reviewing the existing knowledge on the emerging and junior mining sector in South Africa, as well as highlighting the challenges facing the sector. Mitchell's research process was well defined, and its reliability was tested by Kriel (2019) who replicated Mitchell's study, but with an added scope of work. Kriel (2019) proceeded to make recommendations that Mitchell (2016)'s definition of a junior miner should be adopted as a standard definition of a junior miner in South Africa.

Kriel (2019) also tested the validity of Mitchell (2016) study as he demonstrated dependability on the previous work from Mitchell. The research process for this study is well defined and was followed to the teeth to maintain its integrity and credibility. The

interviews were recorded where participants gave consent for their interviews to be recorded.

### **3.6 Research weaknesses—technical and administrative limitations**

The technical and administrative limitations that were encountered in carrying out this research are outlined below:

#### Technical Limitations:

- **Research data collection instrument** – a semi-structured interview schedule has been selected – some of the respondents were biased in their response (telling the researcher what they think the researcher wants to hear and not answering the questions objectively). This was minimised by listening attentively and asking for further clarity on answers where necessary.
- **Research target population** – the junior mining sector was already struggling prior to covid-19 pandemic which led to prolonged lockdown in 2020 and 2021, this resulted in a shrinking pool of target population as some of the junior miners closed their businesses due to poor economic conditions. This was mitigated by targeting all the junior miners who were in operation prior to the Covid-19 pandemic. Availability of some of the target population personnel was a challenge, as people prioritised struggling mining operations under Covid-19. This was mitigated by working according to the availability schedule of the target population. The change of leadership at the DMRE national office also posed a challenge, and this was mitigated by interviewing a senior DMRE representative from a regional office with more coal mining operations in the country.
- **Sampling and selection of respondents** – the shrinking pool of target population impacted availability of the required sample size. Although this led to research not being completed at the researcher’s initial target date, this was mitigated by being patient, and ensuring that most of the identified personnel are interviewed.
- **Ethical considerations when collecting data** – some of the respondents were not comfortable in conducting interview with a researcher operating in the same sector as them. This was mitigated by sharing what the research is about and

providing the respondents with the interview consent form timeously, before setting up the interviews.

Administrative Limitations:

- **Accessing respondents** – some respondents preferred face to face interviews, which brought logistical complexities as the country was under Covid-19 lockdown most of the time.
- **Time Frames** – the research was carried out under limited time frames and any slippage of time management had an impact on the final submission of the report. This was mitigated by being patient and ensuring that most of the identified personnel are interviewed, although the initial target submission date was not met, the researcher is grateful that the interviewee made time which ensured that the research objectives are achieved at the end.

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## **CHAPTER 4: PRESENTATION OF RESEARCH RESULTS**

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### **4.1 Introduction**

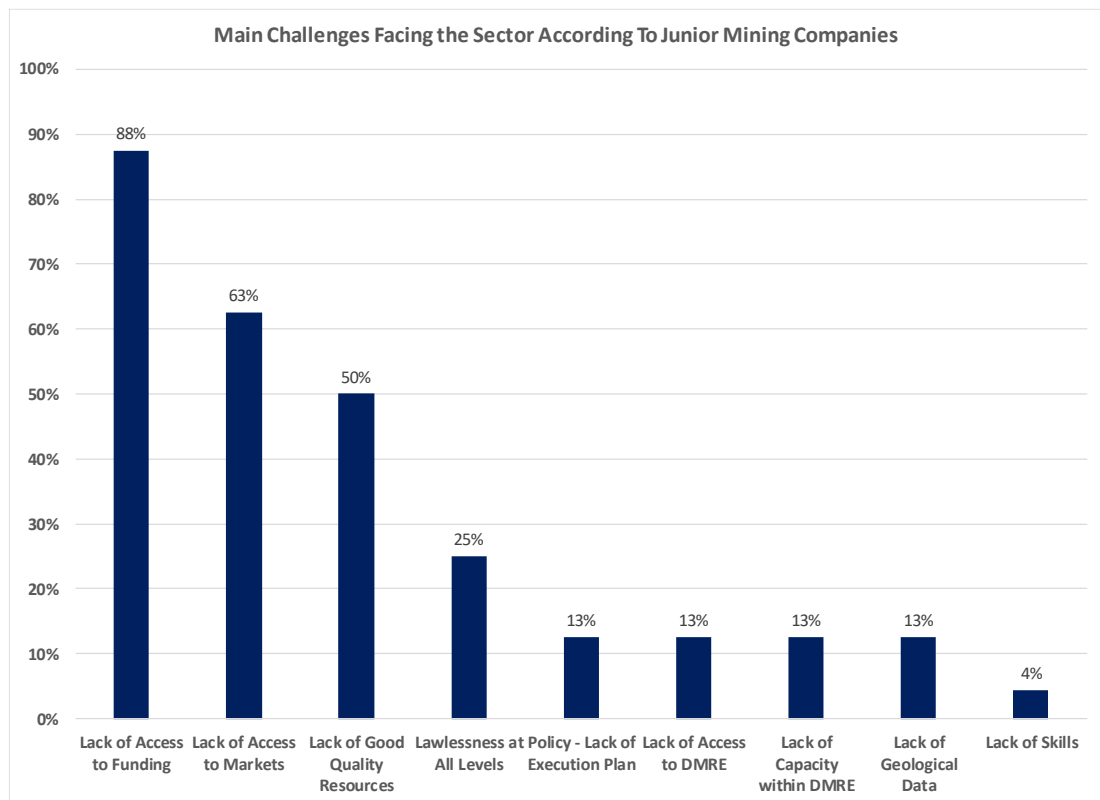
The research results are presented in this section, answering the following three research questions as posed in section 1.2.3:

1. What are the main challenges facing the SA junior coal mining sector, as well as their root causes?
2. What are the key enablers of a sustainable junior coal mining sector? and
3. What is the potential of the SA junior coal mining sector, and what does it take for this sector to reach its potential?

### **4.2 The main challenges facing the SA junior coal mining sector**

The main challenges facing the South African junior coal mining sector, as well as their underlying root causes are presented. It is critical to understand the challenges and their underlying causes, to eliminate the root causes of identified challenges to build a strong and sustainable junior coal mining sector in SA. This was achieved through interviewing the leadership of SA junior coal producers as well as key stakeholders in the sector.

Eight out of twelve junior coal mining companies (Companies A to H in **Appendix 3.1**), representatives from the Minerals Council South Africa (MINCOSA), as well as the Department of Mineral Resources and Energy (DMRE) were interviewed and the summary of the interview results in terms of the key challenges facing the SA junior coal mining sector and their underlying root causes are summarised in Figure 4 and Table 1 respectively.



**Figure 4: The key challenges facing the SA junior coal sector according to SA junior coal miners**

The junior coal mining companies interviewed as part of this study believe that the top four key challenges facing the SA junior coal mining sector in descending order are as follows:

- Lack of access to funding – raised by 88% of the participants;
- Lack of access to markets – highlighted by 63% of the participants;
- Lack of Access to good quality coal resources – mentioned by 50% of the participants; and
- Lawlessness at all levels – raised by 25% of the participants.

The results in Figure 4 are the responses to the question, “what are the main challenges facing the South African junior coal mining sector”?

The underlying root causes for the top three key challenges as highlighted by the SA junior coal miners are summarised in Table 1 below.

**Table 1: The underlying root causes of the top three key challenges facing the sector**

No	Key Challenges	Underlying Root Causes
1	Lack of access to Funding	The drying out of traditional funding instruments due to the current campaign to move away from fossil fuels to renewable energy resources (climate change)
2	Lack of access to Markets	Domestic Market – lack of enforcement of preferential procurement policy to ensure Eskom as the largest domestic consumer of coal procures certain volume of their annual coal consumption from junior miners. Export Market – lack of access to rail (Transnet Freight Rail) and port (Richards Bay Coal Terminal) where highlighted as major impediments to export markets.
3	Lack of access to good quality, long life coal resources	Good quality, long life coal resources have been taken by major coal producers as they have stronger balance sheets to explore for better quality coal resources.

Despite most of the interviewed companies highlighting the top three key challenges mentioned above, Company B, which is like the other junior coal miners, that is, it has prospecting rights, mining rights and operating mines, differed with the others when it comes to lack of access to funding. Company B believes that lack of access to funding is a symptom of another key challenge, which is “lack of execution plan” for the country’s mineral policy, and its owner and Chief Executive Officer (CEO) made comparisons to countries like Canada and Australia, highlighting that, the difference between SA and these countries is that, when a mineral policy is developed, it is accompanied by a clear execution plan to ensure that the mineral policy objectives are met.

The other challenges highlighted by the junior coal miners include lawlessness at all levels, lack of execution plan to the existing mineral policy, lack of capacity within the DMRE, lack of geological data and lack of skills. The lawlessness was highlighted in relation to some of the uncontrollable community protests that often result in loss of mine property, as well as prolonged production interruptions.

Table 2 shows the summary of key challenges facing the SA junior coal mining sector according to MINCOSA and the DMRE.

**Table 2: The key challenges facing the sector according to MINCOSA and the DMRE**

Description	Key Challenges
MINCOSA	1. Most junior miners, not just coal are under-resourced (e.g. most junior miners lack financial resources to attract and retain critical skills in-house). 2. They also lack capabilities that are needed to navigate the coal mining environment (those necessary capabilities are almost non-existent in junior miners).
DMRE	The DMRE agrees with the junior miners on the top three challenges facing the sector, which are: 1. Lack of access to funding. 2. Lack of access to markets. 3. Lack of access to good quality resources.

The problem tree analysis of the challenges facing the SA junior coal mining sector under the literature review section of this study (section 2.2), indicates that lack of enabling mineral policy that enables investments in the sector is the root cause of the challenges facing this sector. So, as part of this research, further questions were posed to the participating junior coal mining companies, to understand some of the mineral policy related challenges they encounter along the mining projects development value chain, with special focus on applications for prospecting rights, mining rights and running operational mines and the results are summarised in Table 3 to Table 5.

**Table 3: Practical experience by coal junior miners in applying for prospecting rights**

1. How Long did it take to obtain your Prospecting Right?	2. What was your experience with the process and your interaction with the DMRE?	3. Do you think there is any room for improvement in the application process?
<p>The companies interviewed indicated that a prospecting right application can take anything between 6months to 7years before it is granted. The worst case was experienced by Company D, which applied in 2014 and was still awaiting for their application to be granted by December 2021. The time lines experienced by the different junior coal miners are summarised below:</p> <ol style="list-style-type: none"> <li>1. Company A - 18months;</li> <li>2. Company B - less than a year to 5years;</li> <li>3. Company C - never dealt with prospecting rights applications;</li> <li>4. Company D - 7years;</li> <li>5. Company E - never dealt with prospecting rights applications;</li> <li>6. Company F - never dealt with prospecting rights applications;</li> <li>7. Company G - never dealt with prospecting rights applications; and</li> <li>8. Company H - 12months.</li> </ol>	<p>Negative experience, especially with the manual application system (filling remains a challenge due to the huge volume of documents submitted, often resulting in documents getting lost in the system). The online system is not fully automated, and is still augmented by the manual system. Despite this negative experience in dealing with the DMRE, Company H has a positive experience and highlighted that the DMRE officials are willing to assist especially if you are working with them.</p>	<p>The junior miners believe that there is a room for improvement especially if the online system can be implemented completely, train the all the officials on how to use the it and discontinue the manual application system.</p>

**Table 4: Practical experience by junior coal miners in applying for mining rights**

1. How Long did it take to obtain your Mining Right?	2. What was your experience with the process and your interaction with the DMRE?	3. Do you think there is any room for improvement in the application process?	4. Were the other regulatory permits like EA and WUL granted on time?
<p>The companies interviewed indicated that a mining right application can take anything between 12months to more than 5years before it is granted. The time lines experienced by the different junior coal miners are summarised below:</p> <ol style="list-style-type: none"> <li>1. Company A - 3years;</li> <li>2. Company B - 12 to 18months;</li> <li>3. Company C - more than 3years;</li> <li>4. Company D - never applied for a mining right;</li> <li>5. Company E - 2 to 5years;</li> <li>6. Company F - never dealt with mining rights applications;</li> <li>7. Company G - never dealt with mining rights applications; and</li> <li>8. Company H - 12months (through relentless follow ups with the DMRE).</li> </ol>	<p>The main challenge with the application process when interacting with the DMRE is the application for EA and WUL, which take longer time. The approvals for SLP also take time. Other challenge is the lack of transparency in the adjudication of the application process.</p>	<p>The junior miners believe that there is a room for improvement especially if the online system can be implemented completely, train the all the officials on how to use the it and discontinue the manual application system.</p> <p>The junior coal miners also believe that a separate unit dedicated to junior miners applications (within the department) can be of good assistance to fast track the applications for junior coal miners.</p>	<p>It has already been mentioned that the EA and WUL take longer time to be granted, delaying the approval for an application for a mining right.</p>

**Table 5: Proposed solutions and other DMRE and legislature related challenges**

1. What do you think the DMRE can do to reduce the regulatory burden on junior miners?	2. What is the most difficult part when it comes complying with the conditions of the regulatory permits?	3. What is working and not working about our current mining legislature, with special focus on the MPRDA?
<p>One concern that came out strongly from almost junior miners pertaining to regulatory burden is around the application of the Mine Health and Safety Act. The junior miners are of the view that the DMRE officials tend to apply the industry best practice, mainly developed by major coal producers, who are well funded and have stronger balance sheets when judging them, and forget to use the minimum requirements of the MHSA. They used a requirement to install anti-collision devices as an example, highlighting that, a junior miner operating a small mine, with less than 100 people on site cannot be compared to a neighbouring major coal mining company's operation with larger mining equipment and more than 2000 people on site.</p>	<p>Compliance with SLP requirements was highlighted as a major challenge by junior coal miners. Areas of concern include the following:</p> <ol style="list-style-type: none"> <li>1. Cost of compliance - most junior miners have no in-house skills, and often rely on the services of external consultants who are not affordable in most cases;</li> <li>2. Local communities - There's also a misunderstanding of SLPs by local communities, and they are often impatient, which then result in them disrupting mining operations, threatening the sustainability of the same operation they relying on for jobs and business opportunities; and</li> <li>3. DMRE rigid approach to enforce compliance - the DMRE needs to be a little bit understanding and balance the SLP compliance issues with the cash flow needs of the business at that particular time (the DMRE should not be rigid on timelines, and should be willing to extend timelines if possible, just to allow the business to recover and continue with implementing its SLP commitments).</li> </ol>	<p>The following issues came out strongly in terms of what is working in the current legislature, with special focus on the MPRDA:</p> <ol style="list-style-type: none"> <li>1. SLP - the junior miners believe that there is a complete misunderstanding of SLPs by local communities, and this has a potential to kill the sector if not addressed from a policy perspective, or by the DMRE and local community leaders (playing an educating role);</li> <li>2. Long lead times to obtain approvals for EA and WUL applications which end up delaying the approvals for mining right applications; and</li> <li>3. BBBEE Ownership - the government needs to make a decision on this to create certainty in the industry. The current situation whereby the BBBEE ownership is being challenged through the court, makes it difficult for junior miners to raise funding as potential funders do not want to commit funds in an uncertain policy environment.</li> </ol>

### 4.3 The enablers of a sustainable junior coal mining sector in SA

According to the leadership of the SA junior coal mining sector, there are three key enablers of a sustainable junior coal mining sector in this country, and they are (listed in descending order):

1. Access to coal markets (both domestic and exports);
2. Access to funding; and
3. Prevention of lawlessness, especially at the early stages of development of mining projects.

In principle, both MINCOSA and the DMRE agree with the junior miners in terms of “access to markets” and “access to funding” as key enablers of a sustainable junior coal mining sector in the country, however, slightly differ on the initiatives or paths to be followed to unlock these enablers as summarised below:

#### MINCOSA:

**Access to markets** - government department like the Department of Trade and Industry (DTI) and DMRE need to work together to support the junior miners to access both the export (through effectively managed Quattro Allocation) and domestic markets (Eskom).

**Economic stability in the country** - stable trading environment that enables junior miners to plan and manage their input costs (e.g., it is difficult for junior miners to survive in an environment where the electrical power supply is unreliable, and the increase in cost of electricity is continuously above inflation - such environment makes it very difficult for junior coal miners to plan).

**Development and implementation of a policy** for funding of junior miners (e.g., introduce tax incentive schemes for entities investing in junior miners).

#### DMRE:

**Access to domestic markets** - the country should do more at a policy level, to encourage preferential procurement of coal from junior miners by major domestic coal consumers like Eskom;

**Access to export markets** - infrastructure capacity needs to be improved and provide junior miners with access to sidings, rail and port. The DMRE highlighted that there is

lot of improvement that can be done on Quattro Allocation at RBCT to enable junior miners to access the export market (The DMRE took responsibility for challenges faced by junior miners using the Quattro Allocation and believe that there is significant room for improvement to unlock this opportunity).

**Access to funding** - the DMRE is of the view that the SA coal junior mining sector should be able to overcome this challenge if the participants in this sector can pull their resources together and collaborate more. The DMRE further highlighted that the sector remains fragmented, with participants working in silos and this does not serve the sector very well.

#### **4.4 The potential of SA junior coal mining sector**

The potential of the South African junior coal mining sector and what will it take to reach this potential is explored in detail in this section. The South African junior coal mining sector has a potential to create the much needed jobs and business opportunities in the country, as well as supplying a significant portion of the quantity of coal required for the country's electrical power generation, however, it will take an acknowledgement by all key stakeholders that there are challenges facing the SA junior coal mining space, and making commitments to supporting this sector to reach its potential. The key stakeholders include coal producers, government, industry bodies, trade unions, mine-host-communities, coal logistics service providers, other service providers and coal end users in the country. This was determined through literature review and interviews conducted with some of the key stakeholders in the sector.

#### **4.5 Conclusion**

This chapter presented the results that answered the research questions in section 1.2.3, which entail the key challenges facing the SA junior coal mining sector, their root causes, the enablers of a sustainable sector as well as the potential of SA junior coal mining sector and what is needed to assist this sector to reach its potential. The insights on the practical challenges related to applications for prospecting and mining rights, as well as compliance with regulatory requirement from operating mines were also presented. The discussion of research findings presented above is covered in Chapter 5.

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## **CHAPTER FIVE: DISCUSSION OF RESEARCH FINDINGS**

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### **5.1 Introduction**

This research set out to investigate the challenges and enablers of a sustainable junior coal mining sector in South Africa. To understand the challenges and enablers of the sector, the study posed three questions. First, what are the main challenges facing the SA junior coal mining sector, as well as their root causes? Second, what are the key enablers of a sustainable junior coal mining sector? Lastly, what is the potential of the SA junior coal mining sector, and what does it take for this sector to reach its potential? This chapter interprets and discusses the research findings presented in Chapter 4, with Section 5.2 discussing the main challenges facing the SA junior coal mining sector, Section 5.3 discussing the enablers of a sustainable junior coal mining sector in SA and Lastly, the potential of SA junior coal mining sector is discussed in Section 5.4.

### **5.2 The challenges facing the junior coal mining sector**

The objective 1 of the study was to understand the challenges facing the SA junior coal mining sector. This was achieved by interviewing the owners and executives of junior coal mining companies in SA, the industry body in a form the MINCOSA, as well as the DMRE, who regulates the SA mining industry. According to 88% of the junior coal miners interviewed, the lack of access to funding is the main challenge facing the SA junior coal mining sector. This is followed by the lack of access to markets (63%), the lack of access to good quality coal resources and reserves (50%) as well as lawlessness at all levels (25%). These are the top four challenges that put the sustainability of the sector at risk according to the junior coal miners. It is worth noting that the lack of access to funding, and the lack of access to good quality resources agrees with the top four challenges raised by the previous work done by Mitchell (2016), Kriel (2019) as well as the challenges raised by the DMRE (2020), and Ryan (2020). It is also worth highlighting the falling away of the “lack of mineral policy enabling the investment in mining” and the “dominance of the sector by the few major producers” from the challenges raised by the work done between 2016 and 2020 by Michell (2016) and Kriel (2019).

When it comes to the falling away of these two challenges raised by the previous studies, this study cannot rule out the impact of the trends observed in the SA coal mining industry. The first trend is from a policy perspective, where we observed the introduction of the revised Mining Charter in 2018. The 2018 Mining Charter was friendlier towards junior miners. The second trend is the exchange of ownership of large coal mining assets between the major multi-national mining companies and newly formed SA based coal mining companies. It was under this trend that we observed the major global mining companies like Total Coal SA, Anglo American and South32 exiting the SA coal mining industry, which resulted in the formation of Seriti Resources, Thungela and the growth of Overlooked Colliery. Overlooked Colliery is a newly formed junior coal miner who acquired the coal operations under Forzando Mines. Forzando Mines was a subsidiary of Total Coal SA.

The existing of SA coal industry by these multinational global companies, did not just result in the formation of the three companies mentioned above, but opened new opportunities for other junior miners and new entrants in the SA coal mining sector. Some of the new entrants and junior miners became beneficiaries of some of the conditions attached to the approvals of these transactions by the SA competition Commission, which compelled certain assets to be divested to the junior miners and new entrants as part these large transactions involving the exchange of ownership of coal assets in the country. The emergence of new challenges in a form of “lack of access to markets”, and “lawlessness at all levels” from the current study is also worth noting and these are further discussed with the root causes in the paragraphs below.

According to the junior coal miners interviewed, the underlying root cause for the lack of access to funding is the drying out of traditional funding sources because of the global and local campaign to move away from using coal to generate electrical power, and transition to renewable energy sources like solar and wind. Although this challenge was raised in previous studies by Mitchell (2016 and Kriel (2019), the root cause completely differs from the root cause highlighted by Kriel (2019) study. Kriel (2019) indicated that the main cause of lack of access to funding was the “uncertain policy environment in SA”. In this study, the junior coal miners pointed out that all major coal producers have taken all the good quality resources and reserves as they have stronger balance sheets which enable them to invest in exploration activities and highlighted this

as an underlying root cause for the SA junior coal miners' lack of access to good quality resources and reserves. The lack of exploration data, which links to availability of good quality resources, is highlighted as a challenge in Kriel (2019) study, and the lack of investment in exploration was identified as a root cause to this challenge. Based on the current trends, which favours moving away from coal, this study is of the view that, funding exploration for new coal deposits will remain a challenge in the foreseeable future, and junior coal miners should first address the challenge of lack of access to funding to develop new projects, and then use cash flows from those projects to fund exploration.

Coming back to the emergence of new challenges in a form of “the lack of access to markets” and “lawlessness”, this study shows that the SA junior coal mining sector believes that the root cause for lack of access to domestic market is due to lack of enforcement of preferential procurement policy by government to ensure that Eskom procures a certain quantity of Eskom's annual coal consumption from junior miners. The sector believes that the root cause for lack of access to the export market is the lack of access to Transnet Freight Rail and the Port allocation at Richards Bay Coal Terminal. The other emerging challenge, “lawlessness”, is in line with the latest trends observed around an alarming increase in service delivery protests in the country, which often result in mining companies being unfairly targeted by some of the community members, especially those who do not understand the functioning of the Social and Labour Plans.

The DMRE agrees with the SA junior coal miners on the top three challenges facing the sector, however, MINCOSA believes that the main challenge facing the sector is that the sector is under-resourced in many aspects, highlighting the lack of human resources, technical and social skills, as well as lack of financial resources as the main challenges for this sector. The sector, MINCOSA and the DMRE were interrogated to answer the research question 1 to achieve the research objective 1. It is worth highlighting that, the main challenges and their root causes facing the sector as highlighted by the junior coal miners, MINCOSA and the DMRE do not point out directly to the lack of enabling mineral policy as shown by the NORAD problem tree analysis of the challenges and undesirable effects highlighted in the literature review. Both the junior coal miners, MINCOSA and the DMRE were asked about the issues of policy, and they all

highlighted that most of effort has been put into improving the policy, and if there's any weaknesses, it is on the execution part of the policy. Some of the changes effected in the 2018 Mining Charter was highlighted by the SA junior coal miners as good example in this regard.

With regards to further questions posed to the participating junior coal mining companies (Category B questions), to understand some of the mineral policy related challenges they encounter along the mining projects development value chain, with special focus on applications for prospecting rights, mining rights and running operational mines, it is worth highlighting that with regards to the practical experience by coal junior miners in applying for prospecting rights, it is worth noting the lack of consistency in terms of the lead time to obtain approval for applications by the DMRE. According to the junior coal miners the lead time ranges between 6months to 7years from the submission of an application is accepted to receiving the granting of a prospecting rights. This is in line with the challenges raised by prior studies by Mitchell (2016).

When it comes to practical experience on the application process and interacting with the DMRE, the junior miners highlighted the manual application process as a challenge due to high volumes of documents that need to be submitted and end up being lost in the system. The sector strongly believes that this can be resolved by fully automating the online mineral rights application system. There is also lack of consistency on the time it takes to obtain approvals for applications for mining rights, and the challenge here is the long lead time it takes to approve the EA and the WUL. The results show that the lead time for obtaining a mining right from the date the application is submitted to the time the DMRE approves the application ranges between 12 months to more than 5 years.

In terms of the practical experiences on the regulatory burden, issues of compliance and what is working and not working with the MPRDA at operational mine phase, the junior miners raised concerns about the inconsistency on the application of the Mine Health and Safety Act. The concern raised is that the DMRE tends to use the best practice implemented by the major coal producers to judge them and not assessing them in terms of the junior miners' compliance with minimum health and safety requirements as per Mine Health and Safety Act.

### **5.3 The enablers of sustainable junior coal mining sector**

The objectives 1 and 2 set the aim of this study. The objective 2 of the study was to understand the key enablers of a sustainable junior coal mining sector in SA. The results of this study show that according to the SA junior coal mining sector, the key enablers of sustainable sector are access to markets, access to funding and the prevention of lawlessness. The sector believes that access to markets can unlock other challenges, as one is able to raise funding if one has access to the markets, and that the business and operations maybe well-resourced to address the challenges posed by the trading environment if the company has strong cash flows to fund the operational needs of the business.

There is little literature available on key enablers of a sector. The results of this study also show that MINCOSA and the DMRE agree with the sector that, “access to markets” and the “access to funding” are the key enablers for a sustainable junior mining sector. In addition to these, MINCOSA also believes that a stable trading environment is also a key enabler for a sustainable junior mining sector, highlighted continuous power supply interruptions and above inflation increases in cost of electricity as a hindrance to a sustainable junior coal mining sector in SA.

It is in this research objective that, the junior coal mining sector, MINCOSA and the DMRE all agree that the issue of key enablers should be addressed at a policy level, however, all three parties agree that the lack of enabling policy is not an issue, and that the challenge remains the enforcement on the execution part of the policy. The DMRE agrees with the literature review that the sector remains fragmented, does not speak with one voice and strongly believes that some of the key challenges facing the sector like lack of access to funding can be overcome if the junior miners can collaborate more and share some of the resources and infrastructure to reduce funding requirements. The DMRE gave an example about some areas where one finds junior miners operating coal processing plants at half capacity near each other, instead of pulling their resources together and sharing these facilities to reduce their capex requirements as well as their operating unit costs. This is something that one hardly finds in areas where major coal producers operate near each other. There is little literature on the key enablers of a

sustainable junior coal mining sector, as most of the previous work focused mainly on the challenges.

In summary, the SA junior mining sector needs to find its voice to address some of the practical challenges related to applications of mineral rights, compliance with SLP with the DMRE as a collective, collaborate more to overcome some of their challenges around funding and access to resources and the DMRE as a regulator and government need to address the issue of lack of policy execution.

#### **5.4 The potential of SA junior coal mining sector**

Lastly, once the challenges and key enablers of a sustainable SA junior coal mining sector were understood, Objective 3 was to produce a roadmap for a sustainable junior coal mining sector, and this was achieved by answering the research question, what is the potential of the SA junior coal mining sector, and what does it take to make it sustainable? The South African junior coal mining sector has a potential to assist the country to reduce the three wicked problems in this country, that is unemployment, poverty and inequality, as well as supplying the quantity of coal required for the country's electrical power generation.

The key question is, what will it take to achieve this objective? It will take an acknowledgement by all key stakeholders that there are challenges facing the SA junior coal mining space and making commitments to supporting this sector to reach its potential. The key stakeholders include coal producers, government, industry bodies, trade unions, mine-host-communities, coal logistics service providers, other service providers and coal end users in the country. This was determined through literature review and interviews conducted with some of the key stakeholders in the sector.

#### **5.5 Conclusion**

This Chapter discussed the research findings presented in Chapter 4, focussing on the three research questions relating to the challenges and enablers of a sustainable junior SA coal mining sector, as well the potential of the sector and what does it take to the sector reach its potential. The Chapter further linked the findings of this study to the work from the previous studies on comparable topics.

Regarding the research objective 1, which focussed on the challenges facing the sector, the results of the study showed that there are four main challenges facing the SA junior coal mining sector. Two of the four challenges remain persistent as they were raised in the previous studies by Mitchell (2016), Kriel (2019), and the DMRE (2020), and these are the “lack of access to funding” and the “lack of access to good quality resources”. The lack of access to funding was pointed as the main challenge by 88% of the junior miners interviewed, supported by the DMRE. This is in not in line with the main challenge raised by 64% of respondents in Kriel’ 2019 study, which showed that the main challenge facing the entire junior coal mining sector in the country was uncertain regulatory environment.

The results also showed that two of the main challenges from the previous studies by Mitchell (2016), Kriel (2019), DMRE (2020) and Ryan (2020) have fallen off, and these are the “lack of mineral policy that enable investments in SA mining” and the “dominance of the sector by few major producers”. This was not a surprise as it was in line with the trends observed in this study, which have shaped and transformed the SA coal mining industry and its junior mining sector since 2018 to date. The underlying root causes of the main challenges have also been discussed, and the root cause the main challenge facing the sector “lack of access to funding” is the drying out of the traditional funding sources due to the global campaign to move away from fossil fuels like coal and transition to renewable energy sources like solar and wind. This is in line with Ryan (2020)’s observations, and this trend will continue to shape the coal mining industry globally and locally in the future. The root cause for lack of access to good quality resources discussed in the result is in line with the findings of the earlier studies by Mitchell (2016) and the DMRE (2020). The results presented shows that this is a global problem as there is a general decline in investment in exploration globally, but the rate of decrease in SA is alarming.

Two new, emerging challenges facing the sector, which is “the lack of access to markets” and “lawlessness” were presented and discussed, as well as some of the practical hardships and issues experienced by the junior miners when it comes to the applications of prospecting rights and mining rights, as well as their interactions with the DMRE during the application process and running of the operational mines. The long lead times to obtain the regulatory approvals from the DMRE, and the pain of

regulatory burden on compliance with the SLP requirements remains a thorny issue and this is in line with the previous studies by Mitchell (2016), Kriel (2019) and the DMRE (2020). The surprise from the results, was a concern raised around the DMRE using best practice from major mining producers to judge the junior miners and not minimum requirements the Mine Health Safety Act. Despite all these, the sector still listed the lack of access to funding, lack of access to markets and the lack of access to good quality resources and reserves as the top three main challenges threatening the sustainability of the junior coal mining sector SA.

As for research objectives 2 and 3, which focussed on the key enablers of a sustainable SA junior coal mining sector, the potential and what does it take for this sector to reach its potential, there is little literature available on these as prior studies focussed mostly on the challenges facing this sector. This study indicated that access to markets, access to funding and the prevention of lawlessness are the key enablers of a sustainable junior coal mining sector in SA. The study further shows that the SA Junior coal mining sector has a potential to assist the country to reduce the three wicked problems in this country, which are unemployment, poverty and inequality, as well as supplying the quantity of coal required for the country's electrical power generation. It will take an acknowledgement by all key stakeholders that there are challenges facing the SA junior coal mining space and making commitments to supporting this sector to reach its potential. The discussed research findings are summarised and concluded in Chapter 6.

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## **CHAPTER SIX: SUMMARY, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS**

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### **6.1 Introduction**

This Chapter summarises the research that investigated the challenges and enablers of sustainable SA junior coal mining sector. As outlined in Chapter 1, the SA junior coal mining sector is fragmented, struggling, unorganised and has little influence on the country's mineral policy. The SA junior coal mining sector forms a critical part of SA's coal mining industry. Despite all the challenges facing this sector, there are small portions of coal resource blocks that cannot be mined cost effectively by the major mining producers due to the type of equipment they are using, which are mainly suited for large coal resource blocks. Major coal producers, through partnerships with junior miners, can unlock value from these small resources and create the much-needed jobs and business opportunities in the impoverished mine host communities. On that basis, the challenges facing the SA junior coal mining sector cannot be left unchallenged, as they pose a risk to this sector that contribute significantly to the broader SA mining industry and the economy. Hence, the purpose of this research was to examine the challenges facing this sector and understand the underlying root causes as well as the key enablers for a sustainable junior coal mining sector in SA. This is followed by the conclusions drawn from the research findings, the limitation of the research, recommendations and suggestion of the focus areas for future research.

### **6.2 Summary**

This research attempted to understand the deep underlying issues that contribute to the challenges, as well as the key enablers for a sustainable junior coal mining sector in SA. To achieve this, the following three research objectives were established, namely: research objective 1 was “to understand the main challenges facing the SA junior coal mining sector”, research objective 2 was “to understand the key enablers of a strong, thriving and sustainable junior coal mining sector in SA” and the research objective 3 was “to produce a roadmap towards the establishment of a sustainable junior coal mining sector in SA”. Three research questions were set to assist the study to achieve the research objectives. For research objective 1, the research question 1 “what are the main challenges facing the SA junior coal mining sector, as well as their underlying root causes”? was asked. The research proposition of research question 1 was as follows:

“eliminate the root causes of the challenges facing the junior coal mining sector to build a strong and sustainable junior coal mining sector”. The research question 2 “what are the key enablers of a strong, thriving and sustainable junior coal mining sector in SA”? was asked to achieve the research objective 2. The accompanying research proposition for the research question 2 was: “good quality, accessible coal resources; transparent and efficient mineral regulation administrative processes, enabling mineral policy, access to funding, availability of necessary skills, well developed and logistics infrastructure and accessible coal markets are some of the key enablers of a sustainable junior coal mining sector”. Lastly, for the research objective 3, the research question 3 “what is the potential of SA junior coal mining sector, and what does it take to reach this potential”? was posed. The associated research proposition to research question 3 was that all the key stakeholders in coal mining value chain should acknowledge the changes facing the sector and agree to cooperate and work together to address the challenges.

The literature review of similar studies, which have investigated the challenges facing this sector of the SA mining industry was interrogated. The literature reviewed indicated that the South African junior coal mining sector is a critical sector within the South African coal mining industry. The literature also confirmed that there are challenges facing the sector. These challenges have several underlying causes, and a stagnant and unsustainable junior coal mining sector is just a symptom of these challenges. An in-depth analysis of these underlying causes indicated that they stem from a root cause, which is the lack of an enabling mineral policy. The literature review also showed that, the consequences of these challenges, manifest in a form of under-capitalised mining operations, revenue losses which affect the profitability of the operations, community protest, long lead time to develop projects as well as high input costs of mining.

(Mitchell, 2016), (Kriel, 2019) and (Ryan, 2020) agree on the challenges facing the sector, although Ryan (2020) highlighted the issue of the global campaign to move away from coal generated power to renewable energy as a serious challenge to the coal mining industry at large. The DMRE does not believe that mineral policy alone can eliminate all the challenges facing the junior miners, however, the department acknowledges that there are challenges related to mineral policy and such challenges, for example, long turnaround times related to permitting and licensing are being addressed as a matter of priority (Department of Minerals and Energy, 2020). It was established from the

literature review that an interpretive framework can be used to understand the underlying root cause of the challenges facing the SA junior coal mining sector.

Research strategy refers to a way research is carried out (Bryman, 2012). In 2016, Grant Mitchell adopted a qualitative research strategy in conducting a similar study commissioned by MINCOSA, which was then called the South African Chamber of Mines. Based on the literature reviewed, the qualitative research strategy was adopted for this study. The data was sourced and obtained through studying existing literature, observations and conducting interviews with different key role players in the South African junior coal mining sector. Qualitative research strategy was beneficial for this research on the challenges facing the South African junior coal mining sector, as it offered an opportunity to develop specific insights about the industry, and it does not require a large sample size in collecting the relevant data about the sector. Research design provides a structure of how research will be carried out (Bryman, 2012). The longitudinal research design was used for this study, which entailed qualitative content analysis of literature relating to different periods and interviewing the key stakeholders and role players in SA junior coal mining sector to gain more insights on the sector.

The research procedure and methods are about the actual procedure and the methods employed in research to collect, collate, process, and analyse the resultant data (Bryman, 2012). In terms of research procedure and methods, this study utilised the interview schedule research data collection instrument. A semi-structured interview schedule data collection instrument was employed, where a set of questions was prepared and shared with the respondent prior to the interview taking place. This assisted the researcher with ensuring that the interview is structured in terms of addressing the research questions, and that there is added flexibility to obtain deeper meaning of the concepts during the live interview process. The questions for the research data collection instrument were divided into categories A and B. Category A entailed research questions that were treated as broad questions and posed to all the key role players in the junior coal mining sector who were part of the target population. The target population for this study included junior coal mining companies with active coal mining projects at various development stages, as well as operating mines in South Africa, MINCOSA, which is an industry body representing the interests of most mining companies in SA, as well as the regulator in a form of the DMRE. The category B questions were specific and classified

according to the following groups: for companies with projects at exploration phase, for companies with projects at development phase, for the DMRE and MINCOSA. The owners, directors and owners of eight out twelve junior miners who were identified as part of the target population participated in the study.

With regards to the results of the study, objective 1, which was about the understanding the challenges facing the SA junior coal mining sector, set out the research question 1, ‘what are the main challenges facing the SA junior coal mining sector, and their underlying root causes?’ The study indicates that challenges facing this sector are the lack of access to funding, the lack of access to markets and the lack of access to good quality coal resources and reserves. The underlying root causes of these challenges are the drying out of traditional funding instruments because of the global and local campaign to move away from using coal to generate electrical power as part of just energy transition to renewable energy sources like solar and wind, lack of enforcement of preferential procurement policy by government to ensure that Eskom sources a certain quantity of Eskom’s annual coal consumption from junior coal miners and unavailability of good quality resources and reserves as they are mainly already taken by major coal producers respectively. The DMRE agrees with the SA junior coal miners on the top three challenges facing the sector, however, MINCOSA believes that the main challenge facing the sector is that the sector is under-resourced in many aspects, highlighting human resources, technical and social skills, as well as lack of financial resources as the main challenges for this sector.

Due to these challenges facing the sector, objective 2, focused on understanding the key enablers of sustainable junior coal mining sector in SA. The research question 2, ‘what are the key enablers of a strong, thriving and sustainable junior coal mining sector in SA?’ was asked to the same population that was asked research question 1. According to the SA junior coal mining sector, the key enablers of sustainable sector include access to markets, access to funding and prevention of lawlessness. The sector believes that access to markets can unlock other challenges, as one is able to raise funding if one has access to the markets, and this answers research question 2. MINCOSA and the DMRE agree with the sector that, access to markets and funding are the key enablers for a sustainable junior mining sector. It is in research objective 2 that, the junior coal mining sector, MINCOSA and the DMRE all agree that the issue of key enablers should be

addressed at a policy level, however, all three parties agree that the lack of enabling policy is not an issue, and that the challenge remains the enforcement on the execution part of the policy.

With the main challenges and key enablers of a sustainable sector understood, objective 3 focussed on a roadmap required towards establishing a sustainable junior coal mining sector in SA, which led to research question 3, “what is the potential of SA junior coal mining sector and what does it take to reach this potential?”. The South African junior coal mining sector has a potential to assist the country to reduce the three wicked problems in this country, which are unemployment, poverty and inequality, as well as supplying a significant portion of the quantity of coal required for the country’s electrical power generation. It will take an acknowledgement by all key stakeholders that there are challenges facing the SA junior coal mining sector and making commitment to collaborate and support the sector to reach its potential for the benefit of the country.

In terms of research findings, this study clearly shows that the lack of access to funding is the main challenge facing the sector. This challenge remains persistent as it was raised in previous studies by Mitchell (2016), Kriel (2019), as well as observations by the DMRE (2020) and Ryan (2020). According to this study, the root cause of the lack of access to funding is the shrinking pool of traditional sources of funding because of the global campaign to move away from the fossil fuels and transition to renewable energy sources like solar and wind. This is in line with Ryan (2020)’s observations. However, it is worth highlighting that the root cause is different from the causes by Kriel (2019), which identified the uncertain regulatory environment in SA among other causes as the main reason for the failure of SA junior miners to attract funding. The lack of access to good quality coal resources and reserves is another persistent challenge facing the sector. It was raised by Mitchell (2016) and the DMRE (2020) as one of the main challenges facing the sector. This study also shown that two of the four main challenges facing the sector raised by Kriel (2019) have fallen of, and there is an emergence of two new challenges in a form of lack of access to markets and lawlessness threatening the sustainability of the sector. This study also shows that this shift in challenges facing the SA junior coal mining sector is in line with the global and local trends observed in the last three to four years, which will continue to shape the transformation and the future of SA coal mining industry and its junior mining sector. The study indicates that the

access to markets and the prevention of lawlessness are the key enablers of a sustainable junior coal mining sector in SA. The study also shows that the SA junior coal mining sector is critical to the SA economy as it has a potential to assist the country to address the country's three wicked problems of high unemployment rate, poverty and inequality, and that the sector needs the identified key enablers as identified by this study to be implemented as well as the need for collaboration by key stakeholders working towards a sustainable junior coal mining sector in SA.

### **6.3 Conclusions**

The previous literature on challenges facing the junior coal miners in SA has been interrogated. From the problem research analysis, the literature indicate that the challenges facing the SA junior coal mining sector highlighted by Mitchell (2016) and Kriel (2019), could be traced back to one root cause, which is the lack of mineral policy that enables investment in mining in South Africa. However, as indicated in this study, the studies by Mitchell (2016) and Kriel (2019) were limited only to junior miners affiliated to MINCOSA emerging and junior miners desk, were more prescriptive and not allowed the junior miners the freedom to raise the challenges that might be unique to their sectors or common challenges that need fundamental shift in the country's mineral policy. The studies also only focussed on the challenges, and not the enablers of a sustainable junior mining sector. On that basis, this study built on the existing research by involving all the junior miners along the mining and mineral value chain in coal, and provided them with a platform to raise the challenges as they experienced them and not limit them to select from a pre-determined list of perceived challenges. The regulator in the form of the DMRE and an industry body in a form of MINCOSA were also provided with an opportunity to raise the challenges facing this sector as they understand them. The study deeply explored some of the components of the South African mineral policy that have been highlighted by Mitchel (2016), Kriel (2019), DMRE (2020) and Ryan (2020). The understanding of the challenges facing the SA junior coal mining sector, their underlying root causes as experienced and understood by the junior coal mining sector as well the key enablers of a sustainable sector remained a knowledge gap and this was explored in detail by this study.

In closing the research gap knowledge, the findings of this study clearly show that some changes were effected in SA mineral policy in the last 3 to 4 years, which made a

positive impacts on the SA mineral policy environment, and that the lack of enabling mineral policy is no longer the main challenge facing the sector. However, the study confirms that there is still some room for improvement on the mineral policy implementation part in SA. The study indicates that the main challenge facing the SA junior coal mining sector is the lack of access to funding, and its root cause is the shrinking of the traditional pool of sources of funding due to the current global campaign to move away from fossil fuels and transition to renewable energy sources of energy like solar and wind. The study further shows that access to funding and prevention of lawlessness are the key enablers of a sustainable junior coal mining sector in SA. It also showed that the SA junior coal mining sector has potential to assist the country to reduce the high unemployment rate, level of poverty and inequality and that the implementation of the key enablers identified by this study and collaboration of all stakeholders is needed to assist the sector to reach its potential.

In comparing the research findings of this study to other similar studies, it is worth highlighting that the main challenge facing the sector, which is the lack of access to funding has been persistent in the last six years. It was raised in the previous studies by Mitchell (2016), Kriel (2019), DMRE (2020) and Ryan (2020). It is also worth highlighting that, the root cause of the same challenge as identified by this study differs from the root cause from the previous studies. The current study indicate that the underlying root cause of the lack of access to funding is the shrinking pool of traditional funding as a result of the global campaign to move away from fossil fuels and transition to renewable energy sources such as solar and wind. This root cause is in line with Ryan (2020)'s observation, however it differs with Kriel (2019) observation, which identified the uncertain regulatory environment in SA among other causes as the main reason for failure of SA junior miners to attract funding. The other persistent challenge facing the sector raised by this study is the lack of access to good quality resources and reserves. This challenge was raised as one of the top four challenges facing the sector in the previous studies by Mitchell (2016) and the DMRE (2020). According to this study, the lack of access to good quality resource is as a result of all good resource blocks having been taken by major producers who have financial resources to invest in exploration. According to Mitchell (2016) and the DMRE (2020) the underlying root cause for this is the lack of investments in exploration in SA. The study by Mitchell (2016) and the DMRE (2020) indicate this is a global challenge, and it is one of the

trends that will continue to transform and shape the future of SA junior coal mining in the future.

## **6.4 Limitations**

SA is endowed with minerals and has well developed mining industry, made up of different sectors such as deep level gold mining, Platinum Group Metals, Ferrous Metals, Base Metals, Mineral Sands, Precious Stones (Diamond), Industrial Minerals and others. This study is limited in that its scope focussed primarily on the junior coal mining sector, with little peer reviewed literature available on this subject in South Africa. The available literature is in a form of reports by industry bodies, experts and the regulator and focused more on the challenges facing the sector, and not necessarily the key enablers and what need to be done to establish a sustainable junior coal mining sector in SA.

## **6.5 Recommendations**

Based on the conclusions that the SA junior coal mining sector, DMRE and MINCOSA agree on the challenges facing the sector, the key enablers of a sustainable sector, and that a lot of effort has been put into addressing the lack of enabling mineral policy, however, the lack of execution in the process of policy implementation remains an obstacle in unlocking the key enablers of a sustainable junior coal mining sector in SA, it is recommended that, further studies focus on SA mining and minerals policy implementation plan and execution thereof, with an understanding of the current challenges facing the sector. This is justified by the persistent challenges that have been raised by the previous studies, and the failure of certain policy interventions like the introduction of an online mineral rights application system to reduce the lead time for applications and approvals of regulatory permits like prospecting rights, mining rights, Environmental Authorisations and the Water Use Licences. Future research should be taken in the context of the current just energy transition campaign, as the country prepares to invest more in renewable energy sources like solar and wind and move away from fossil fuels (coal) as the country's primary generator of electricity. Some of the regulatory permits like Environmental Authorisations will still be needed in the new

dispensation, and seamless execution plan will be even more critical as some of the renewable energy sites overlap with existing mineral rights areas.

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## APPENDICES

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## Appendix 1.1: Data collection instrument(s)

Respondent authentication questions will gather the following information: project phase in the mineral value chain (exploration project, development project or operating mine), role of the respondent in the company (director/executive, manager or specialist) and years of experience in the mining industry (less than 20, 20 – 30 or more than 30 years).

The following questions will be asked in the semi-structured interviews:

<b>Category A: General Questions for the Interviews</b>					
<b>Participants</b>	<b>All Key Role Players in the Junior Coal Mining Sector</b>				
<b>Questions</b>	<p>The literature review on South African junior coal mining sector indicates that lack of mineral policy that enables investments in mining is the root cause of the challenges facing the sector, in your view:</p> <ol style="list-style-type: none"> <li>1. what is the main challenge facing the South African junior coal mining sector, and what is the root cause of this challenge?</li> <li>2. What are the key enablers of a sustainable junior coal mining sector in South Africa?</li> </ol>				
<b>Category B: Specific Questions for the Interviews</b>					
<b>Participants</b>	<b>Companies with Projects at Exploration Phase</b>	<b>Companies at Projects at Development Phase</b>	<b>Companies with Operating Mines</b>	<b>Department of Mineral Resources and Energy</b>	<b>Industry Body (Minerals Council of South Africa)</b>
<b>Questions</b>	<ol style="list-style-type: none"> <li>1. How long did it take to obtain your Prospecting Right?</li> <li>2. What was your</li> </ol>	<ol style="list-style-type: none"> <li>1. How long did it take you to obtain your Mining Right?</li> <li>2. What was your</li> </ol>	<ol style="list-style-type: none"> <li>1. What do you think the DMRE can do to reduce regulatory burden on junior miners?</li> </ol>	<ol style="list-style-type: none"> <li>1. Why does the processing application for regulatory permits take longer than</li> </ol>	<ol style="list-style-type: none"> <li>1. What is the industry body doing to assist the struggling junior mining sector</li> </ol>

	<p>experience with the process and your interaction with the DMRE?</p> <p>3. Do you think there's any room for improvement in the application process?</p>	<p>experience with the process and your interaction with the DMRE?</p> <p>3. Do you think there's any room for improvement in the application process?</p> <p>4. Were the other regulatory permits like the environmental authorisation and water use license awarded on time?</p>	<p>2. What is the most difficult part when it comes to complying with the conditions of your regulatory permits?</p> <p>3. What is working and not working about our current mining legislature, with special focus on the MPRDA?</p>	<p>anticipated?</p> <p>2. What is the department (Regulator) doing to enable the junior miners from a mineral policy perspective?</p>	<p>from a policy perspective?</p> <p>2. Does the industry body believe that junior miners should be subjected to the same regulatory requirements as the major coal producers?</p>
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## **Appendix 2.1: Bio summary of the researcher and declaration of interest**

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Festus Leteane is a qualified Mining Engineer, with just over 15 years industry experience, spanning from operations, applied research and development, consulting, investments management, mergers and acquisitions, private equity and commercial transactions. He is currently working as Group Business Development Manager at Seriti Resources.

The researcher's interest in the study is for academic purposes and neither the researcher nor his employer, who is funding the MBA studies will benefit commercially from this research. Ethical considerations as highlighted by Bryman (2012) were observed and complied with.



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## Appendix 2.2: Ethics documentation – Clearance Certificate

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Graduate School of Business Administration  
University of the Witwatersrand, Johannesburg



Wits Business School Ethics Committee  
Constituted under the University Human Research Ethics Committee (Non-Medical)

### Ethics Clearance Certificate

Ethics protocol number: WBS/BA9910706F/701

*This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).*

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title Challenges and enablers of a strong and sustainable junior coal mining sector in South Africa

Investigator / Researcher Mr Festus Leteane

Nature of Project MBA (Research Article)

Decision of the Committee Approved unconditionally

Issue Date of Certificate 2021-03-03

Expiry date Date of submission of the project report

Chairperson Prof Anthony Stacey  
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✉ Anthony.Stacey@wits.ac.za

A handwritten signature in black ink, appearing to read 'A Stacey'.

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#### Declaration by Researcher

*One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.*

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

A handwritten signature in black ink, appearing to read 'F Leteane'.

Signature

03 March 21

Date: